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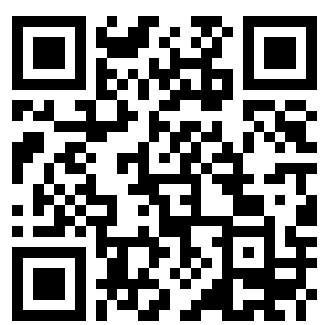

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1 meter = 3.281 feet
1 kilometer = 0.622 miles
1 hectare = 2.471 acres
1 kilogram = 2.205 pounds

1 foot = 0.3048 meters
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1 acre = 0.405 hectares
1 pound = 0.454 kilograms

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PROJECT STA 082A-008
STATE HIGHWAY 82 ENTRANCE TO ASPEN
PITKIN COUNTY, COLORADO

FINAL ENVIRONMENTAL IMPACT STATEMENT
SECTION 4(f) EVALUATION

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ASPEN CITY COUNCIL	ROARING FORK TRANSIT AGENCY
BUREAU OF LAND MANAGEMENT	U.S. ARMY CORPS OF ENGINEERS
COLORADO DIVISION OF WILDLIFE	U.S. ENVIRONMENTAL PROTECTION AGENCY
FEDERAL AVIATION ADMINISTRATION	U.S. FISH AND WILDLIFE SERVICE
FEDERAL TRANSIT ADMINISTRATION	U.S. FOREST SERVICE

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ABSTRACT

This Final Environmental Impact Statement is a culmination of the Entrance to Aspen Environmental Impact Statement process that began with the Draft Environmental Impact Statement and continued with the Draft Supplemental Environmental Impact Statement. This document presents the Preferred Alternative and also includes a summary of alternatives previously evaluated for the State Highway 82 Entrance to Aspen Transportation Improvement Project. The project corridor is 6.9 kilometers (4.3 miles) in length, and lies entirely within Pitkin County, Colorado. The western project limit is MP 37.2 west of Service Center Road. The eastern project limit is Rubey Park on Durant Avenue in the City of Aspen. This Final Environmental Impact Statement describes and evaluates the alternatives that have been presented throughout the Environmental Impact Statement process. It also documents the social, economic, and environmental impacts the alternatives may create. Impacts that may be created by any of the alternatives are noted with appropriate mitigation measures.

Comments on this Final Environmental Impact Statement are due by August 31, 1997 and should be sent to Mr. Ralph Trapani, Colorado Department of Transportation, Mount Sopris Transportation Project, at the address listed above.

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NOTE TO THE READER: This Final Environmental Impact Statement/Section 4(f) Evaluation (FEIS) is organized to follow Federal requirements. A careful review of the **Table of Contents** or **Chapter X: Index** will help the reader locate specific sections and topics. In addition to this document, the Draft Environmental Impact Statement, Draft Supplemental Environmental Impact Statement, and technical documents support the environmental analysis. These reports are listed in **Chapter VIII: Availability of Technical Reports**, along with the locations where they may be reviewed.

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Summary

DESCRIPTION OF PROPOSED ACTION

The Entrance to Aspen Final Environmental Impact Statement (FEIS) and Section 4(f) Resources Evaluation has been prepared by the Colorado Department of Transportation (CDOT) in cooperation with the Federal Highway Administration (FHWA). This document evaluates transportation solutions that address the present and future transportation inadequacies within the project corridor. The format and organization of this Environmental Impact Statement (EIS) follows FHWA guidelines for preparing environmental and Section 4(f) documents. The project corridor lies entirely in Pitkin County, Colorado along Colorado State Highway 82 between the Pitkin County Airport and Rubey Park (located in downtown Aspen). Figure S-1 shows the project corridor and key landmarks.

The primary purpose of this project (the Entrance to Aspen EIS) is to develop and evaluate potential solutions that will improve transportation and safety within the State Highway 82 project corridor. In addition to this general goal, each of the potential alternatives in this process are evaluated against the ten project objectives developed as part of the scoping process. The topic of each of these objectives is listed below:

- Community Based Planning
- Safety
- Community Acceptability
- Clean Air Act Requirements
- Livable Communities
- Transportation Capacity
- Environmentally Sound Alternative
- Financial Limitations
- Emergency Access
- Project Phasing

The State Highway 82 Entrance to Aspen Draft Environmental Impact Statement (DEIS) was released in August, 1995. The DEIS evaluated three alternatives between the Buttermilk Ski Area and Maroon Creek Road, and seven alternatives between Maroon Creek Road and the intersection of 7th Street and Main Street.

Following the release of the DEIS, new alternatives were presented for improvements to State Highway 82. According to Federal regulations, a Draft Supplemental Environmental Impact Statement (DSEIS) is required if FHWA determines there are changes in the proposed action or new information or circumstances relevant to environmental concerns and bearings on the proposed action (or its impacts) that could result in significant environmental impacts not evaluated in the DEIS. The alternatives evaluated in a DSEIS received the same comparative level of analysis as the alternatives in the DEIS. The State Highway 82 Entrance to Aspen DSEIS was released in July, 1996. This document evaluated four additional alternatives between the Pitkin County Airport and Rubey Park (located in downtown Aspen).

The Preferred Alternative described in the FEIS is a variation of the Modified Direct Alternative evaluated in the DSEIS. The Preferred Alternative is a combination of highway improvements and a light rail transit (LRT) system. The highway consists of a two-lane divided highway that generally follows the existing alignment, except across the Marolt-Thomas Property. The major highway improvements and modifications include a new Maroon Creek Bridge north of the existing bridge, realignment of the highway across the Marolt-Thomas Property using a cut and cover tunnel, and a roundabout at Maroon Creek Road.

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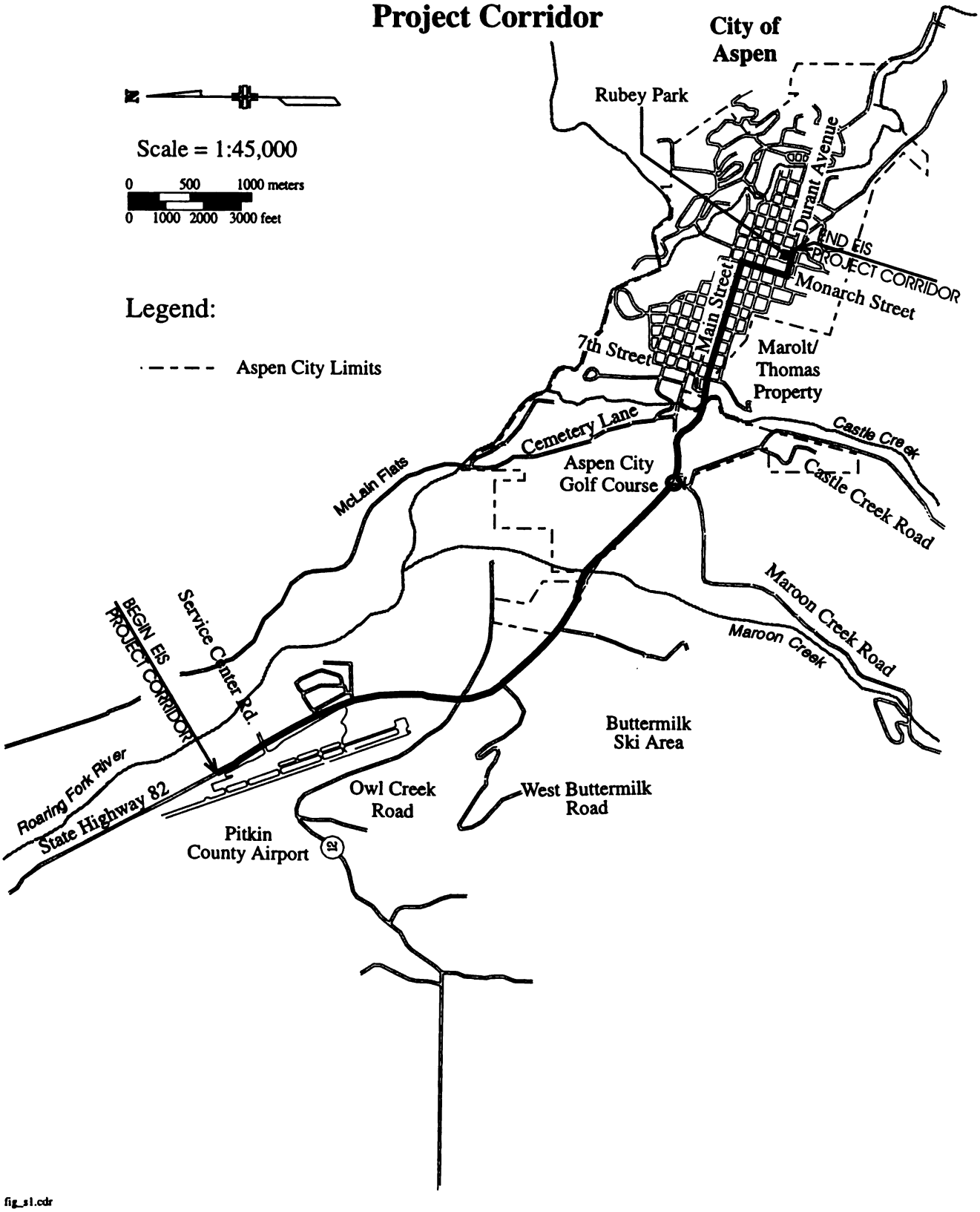
Figure S-1
State Highway 82 Entrance to Aspen FEIS
Project Corridor



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The Preferred Alternative provides a light rail system from an LRT Maintenance Facility near Service Center Road to Rubey Park in downtown Aspen. The LRT alignment is generally parallel and south of the highway alignment. Exceptions to this are near the Pitkin County Airport, at the roundabout (where the LRT turns southeast around the roundabout), and on Main Street (where the LRT is in the center of Main Street).

OTHER ACTIONS PROPOSED BY GOVERNMENTAL AGENCIES

Basalt to Buttermilk Final Environmental Impact Statement

In October 1993, CDOT, in conjunction with FHWA, released the ***State Highway 82 East of Basalt to Buttermilk Ski Area Final Environmental Impact Statement*** (BBFEIS). The Record of Decision (ROD) for this project was released in December 1993. The Preferred Alternative includes widening State Highway 82 from two to four lanes just east of Basalt to the Buttermilk Ski Area, with two of the four lanes between Gerbazdale and Buttermilk Ski Area operating as bus/high occupancy vehicle (HOV) lanes during peak travel periods. Other improvements include a bicycle/pedestrian/recreational trail that parallels the State Highway 82 corridor, park and ride lots, provision for a future fixed guideway transit envelope along the corridor, and other transportation-related commitments. This project is currently in the design stages.

State Highway 82/Airport Realignment

The Federal Aviation Administration (FAA), in conjunction with Pitkin County and CDOT, relocated State Highway 82 approximately 137 meters (450 feet) northeast of its previous alignment at the north end of the airport. Construction was completed in the summer of 1995.

Snowmass Ski Area Expansion

In spring 1994, the United States Forest Service (USFS) released the FEIS and the ROD for the Snowmass Ski Area Expansion Project. The selected alternative includes upgrading the existing facility on Bald Mountain and expanding the ski area onto Burnt Mountain.

Snowmass Village is located northwest of Aspen and southeast of Basalt. It is approximately 8 kilometers (5 miles) west of State Highway 82 and is accessed primarily from Brush Creek Road with secondary access from Owl Creek Road.

Aspen to Snowmass Transportation Project

In 1992, the Aspen City Council, the Town of Snowmass Village, and the Pitkin County Board of Commissioners completed a joint resolution (Intergovernmental Resolution No. 396) that set up a framework and committee for working on upvalley transportation needs. The mission of this decision-making committee included reducing and/or managing the volume of vehicles on the road system and developing a long range strategy to ensure a convenient and efficient transportation system.

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Both City of Aspen and Pitkin County voters passed a 1/2 percent sales tax in 1993 for transportation improvements. The transportation improvements proposed included a dedicated, separate transitway from Aspen to the Buttermilk Ski Area and continuing to Snowmass Village, increased bus service, construction of park and ride lots, and purchase of the remaining Denver & Rio Grande right-of-way for future rail use.

As a result of the 1992 Intergovernmental Resolution No. 396 and the 1993 1/2 percent transportation sales tax, the Aspen to Snowmass Transportation Project Plan was prepared in 1994 for public vote to obtain bonding approval. This plan was based on a design/vendor competition and focused on selecting the best affordable transitway link between Aspen and Snowmass Village. The winner of the competition proposed separate busway/dedicated vehicle lanes that could be converted to rail in the future between Aspen and Buttermilk Ski Area, and combined busway/dedicated vehicle lanes from Buttermilk Ski Area to Snowmass Village. The dedicated busway/vehicle lanes were proposed to cross the Marolt-Thomas Property into Aspen and follow the existing State Highway 82 alignment between Buttermilk Ski Area and Maroon Creek Road.

In November of 1994, both City of Aspen and Pitkin County voters defeated the measure that would have given bonding approval to use the 1993 1/2 percent transportation sales tax for the Aspen to Snowmass Transportation Project. Voters also defeated two other transportation-related measures. The FEIS analysis includes the portions of the Aspen to Snowmass Transportation Project which are part of the EIS study corridor.

Entrance to Aspen Resolutions

In February of 1995, the Aspen City Council agreed to ten project objectives. They then developed the project need and intent statements for the Entrance to Aspen EIS. The project need and intent statements are shown below.

Project Need

"The capacity of the existing transportation system is insufficient during peak periods. Safety, clean air, the visitor's experience, and residents' quality of life are compromised."

Project Intent

"To provide a balanced, integrated transportation system for residents, visitors, and commuters that reduces congestion and pollution by reducing and/or managing the number of vehicles on the road system. The system should reflect the character and scale of the Aspen community.

Through a process responsive to community-based planning, the EIS shall identify, analyze, select, and implement the best transportation alternative for the short- and long-term goals of community compatibility, safety, environmental preservation, clean air, quality of life, and transportation capacity. The alternative chosen should be consistent with the Aspen/Snowmass/Pitkin County goal of limiting vehicles in 2015 to levels at or below those of 1994."

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As part of its involvement in the EIS process, the Aspen City Council passed Resolution No. 42 (1995 Series) regarding the Entrance to Aspen project on June 26, 1995. The resolution specifically requested the inclusion of an alternative (Alternative G) which analyzed two improved lanes on the existing alignment from Maroon Creek Road to the intersection of 7th Street and Main Street and a transitway across the Marolt-Thomas Property. Following the passage of the City's resolution, the Pitkin County Commissioners passed a resolution that also stated that Alternative G should be included in the EIS analysis. Alternative G is evaluated in the DEIS.

On December 18, 1995, the Aspen City Council passed Resolution No. 87 (1995 Series) regarding the Entrance to Aspen project. The resolution specifically requested its alternative (Interim Alternative H) to be the Preferred Alternative in the FEIS, endorsed certain comments relating to the DEIS, and authorized the City Manager to forward comments to CDOT on behalf of the City of Aspen. Copies of these three resolutions are included in Volume 2 of the FEIS. Alternative H (a variation of the City's Interim Alternative H) is evaluated in the DSEIS.

PREFERRED ALTERNATIVE

The Preferred Alternative is a variation of the Modified Direct Alternative evaluated in the DSEIS. The Preferred Alternative is a combination of highway improvements, an LRT system, and a transportation management (TM) program.

Each of these elements are described below. Figure S-2a and Figure S-2b show a schematic of the Preferred Alternative alignment. The highway alignment consists of a two-lane divided roadway. The alignment follows the existing State Highway 82 alignment from Buttermilk Ski Area to the vicinity of Maroon Creek Bridge, where the alignment shifts to the north. The highway crosses Maroon Creek on a new bridge, north of the existing bridge. The highway then returns to the existing alignment and continues east to a roundabout located at the Maroon Creek Road intersection. The highway then shifts to the southeast across the Marolt-Thomas Property and through a 122 meter (400 foot) cut and cover tunnel to connect with the intersection of 7th Street and Main Street. The proposed Main Street consists of two travel lanes in each direction with the LRT in the center. The proposed Main Street cross section is within the existing curb lines. The Preferred Alternative also includes relocating existing Owl Creek Road and West Buttermilk Road to create a new combined intersection with State Highway 82 near the Buttermilk Ski Area.

The Preferred Alternative provides a light rail system from the LRT Maintenance Facility near Service Center Road to Rubey Park in downtown Aspen. The LRT alignment leaves the maintenance facility and crosses State Highway 82 west of Service Center Road, then turns east toward the Aspen Airport, heading into the Airport Terminal LRT Station. The LRT at this point, is parallel to and on the south side of State Highway 82. The LRT leaves the parallel alignment from State Highway 82 near Owl Creek Road to enter the Buttermilk LRT Station and multimodal facility. The LRT alignment then returns to the south side and parallel to State Highway 82, crossing Maroon Creek on the existing bridge. As the alignment approaches the Maroon Creek Road roundabout it shifts to the south, bypassing the intersection and crossing Maroon Creek Road and Castle Creek Road. It then returns to the south side alignment. The LRT alignment parallels the proposed highway alignment across the Marolt-Thomas Property, through the cut and cover tunnel, to the intersection of 7th Street and Main Street. At this intersection, the LRT crosses over from the south side of Main Street to the center. The LRT alignment runs down the center of Main Street to

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Figure S-2a
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment

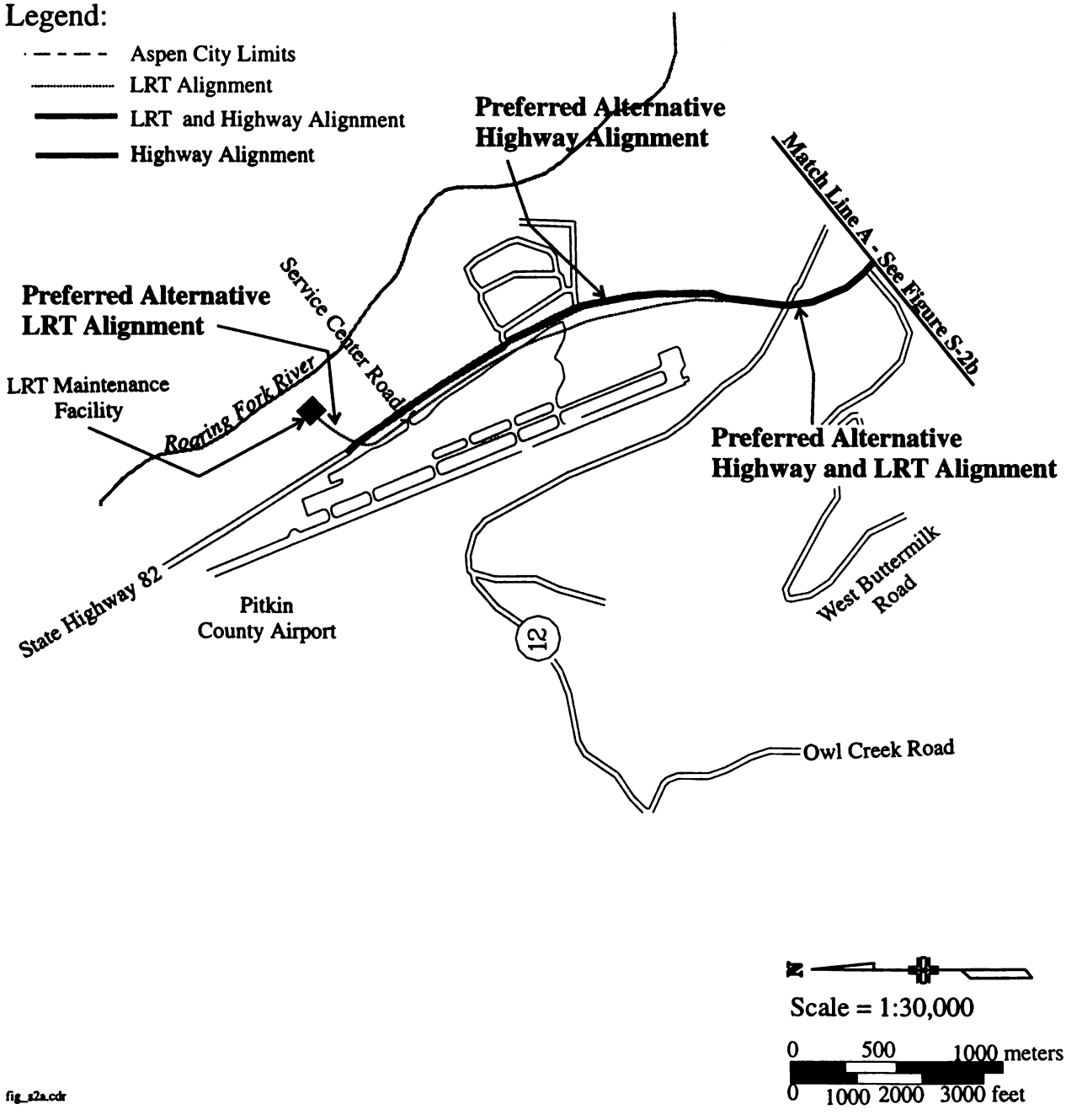

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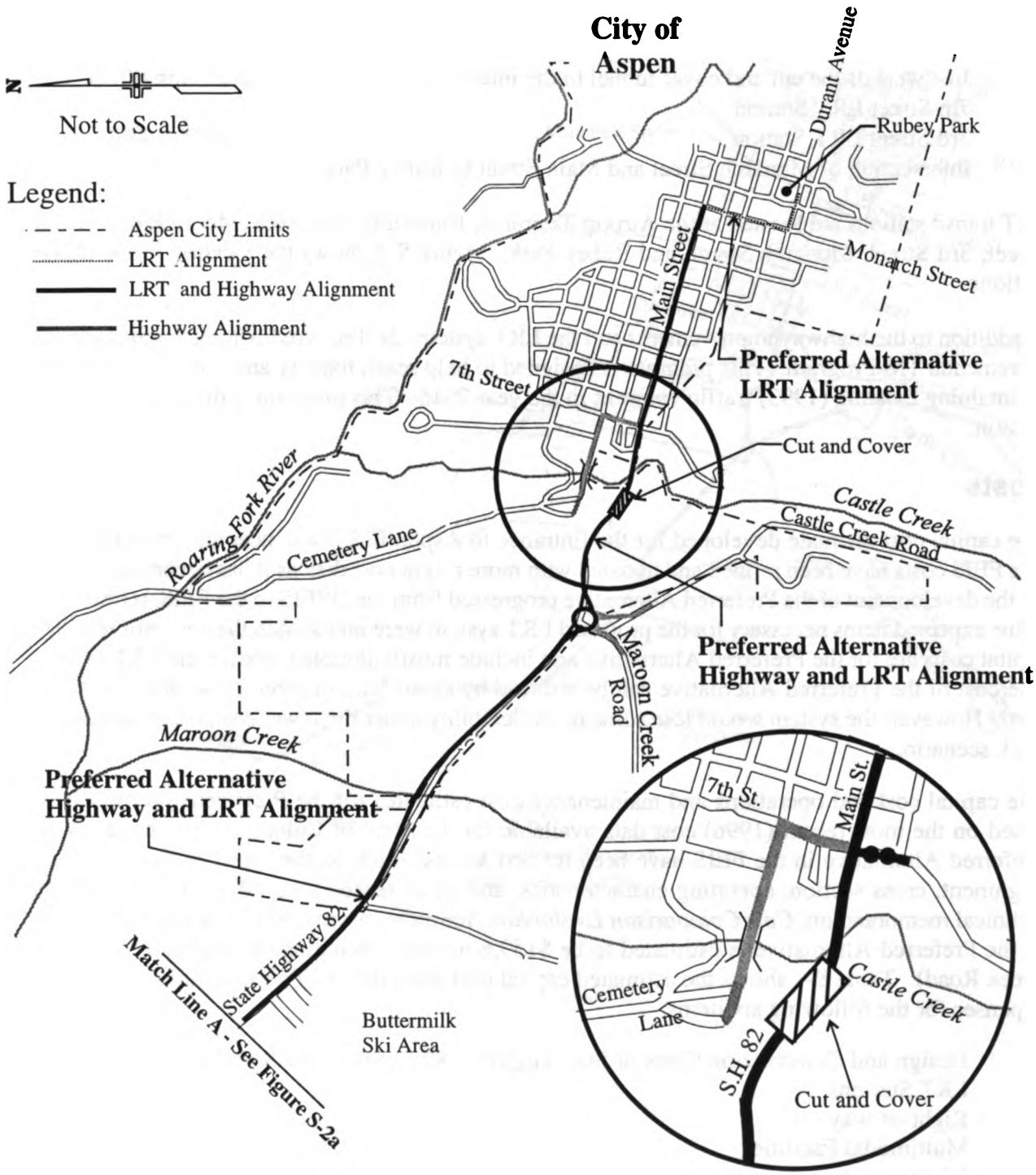
Figure S-2b
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment



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Monarch Street, turning south onto the east side of Monarch Street. At Durant Avenue, the LRT turns east along the north side of Durant Avenue and ends at Rubey Park.

The LRT line consists of double track except for the six areas of single track identified below:

- LRT Maintenance Facility to the Pitkin County Airport
- Maroon Creek Bridge
- Just west of the cut and cover tunnel to the intersection of 7th Street and Main Street
- 7th Street LRT Station
- 3rd Street LRT Station
- Intersection of Monarch Street and Main Street to Rubey Park

LRT transit stations are located at the Airport Terminal, Buttermilk Ski Area, Moore Property, 7th Street, 3rd Street, Monarch Street, and Rubey Park. Figure S-3 shows the location of the transit stations.

In addition to the highway improvements and the LRT system, the Preferred Alternative includes an Incremental TM Program. This program is designed to help reach the city and community goal of maintaining existing (1993) traffic volumes in the year 2015. This program is discussed in a later section.

Costs

The capital cost estimate developed for the Entrance to Aspen EIS is a conceptual level estimate. The FEIS costs have been refined and updated with more recent cost data as it has become available. As the development of the Preferred Alternative progressed from the DSEIS to the FEIS, refinements of the expected items necessary for the proposed LRT system were included in the cost estimate. The capital costs are for the Preferred Alternative and include mostly double track for the LRT system. The cost of the Preferred Alternative can be reduced by about $2.6 million if less double track is used. However, the system would lose some of its flexibility under the lower cost, minimum double track scenario.

The capital cost and operations and maintenance cost estimates for the Preferred Alternative are based on the most recent (1996) cost data available for the State of Colorado. The costs for the Preferred Alternative in the FEIS have been refined several times as the result of changes to the alignment, cross section, operating characteristics, and an increased level of detail. Refer to the technical memorandum, ***Cost Comparison Evaluation,*** for more information. The total capital cost of the Preferred Alternative is estimated to be $159.6 million (including the realignment of Owl Creek Road). Table S-1 shows the estimated capital cost breakdown. This cost estimate includes expenses for the following six items:

1. Design and Construction Costs of State Highway 82 and the LRT System
2. LRT Stations
3. Right-of-way
4. Multimodal Facilities
5. LRT Vehicles
6. Design and Construction costs for the Realignment of Owl Creek Road and West Buttermilk Road

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Figure S-3
State Highway 82 Entrance to Aspen FEIS
Station Locations for the Transit System

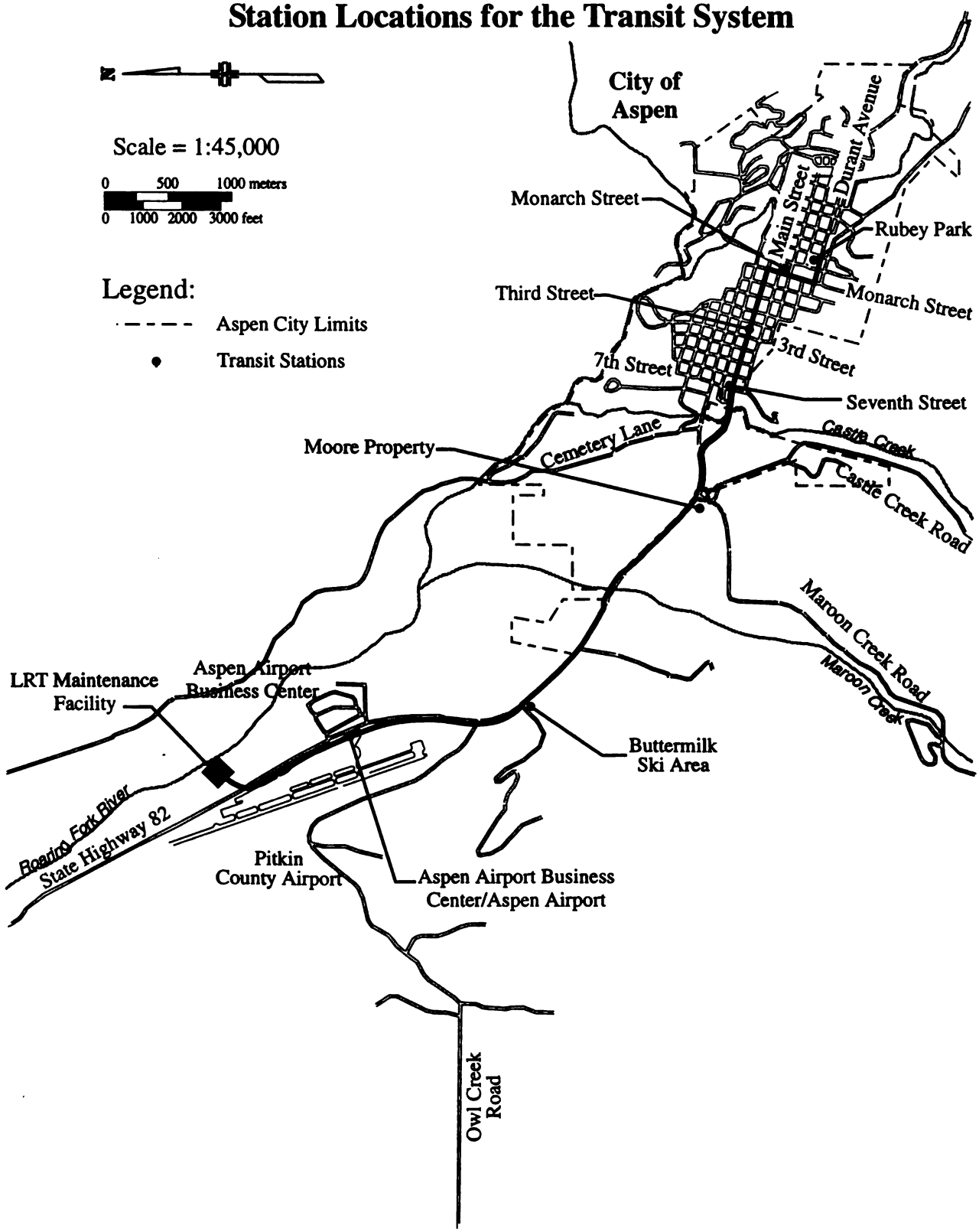

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Table S-1
Summary of Capital Cost Estimate for the Preferred Alternative

State Highway 82	*($ Millions)*
1. Construction Cost	
Highway	$30.8
LRT	$35.3
Subtotal	**$66.1**
2. LRT Stations	**$2.2**
3. Right-of-Way	
Highway/LRT	$2.6
LRT Stations	$3.0
Subtotal	**$5.6**
4. Multimodal Facilities	
Airport	$60.0
Buttermilk	$8.5
Subtotal	**$68.5**
5. LRT Vehicles	**$13.9**
Total	***$156.3***

6. Realigned Owl Creek Rd. and West Buttermilk Rd.	*($ Millions)*
Construction Cost	$0.5
Right-of-Way	$2.8
Total	***$3.3***
Grand Total	***$159.6***

The operations and maintenance cost estimate was derived from costs of transit agencies currently operating an LRT system. Table S-2 shows the estimated operation and maintenance cost of the Preferred Alternative. The cost estimate includes expenses for the following five items:

1. Administration
2. Transportation
3. Vehicles and Facilities Maintenance
4. Track Maintenance
5. Roaring Fork Transit Agency (RFTA) Administration Credit[1]

[1] Cost data from earlier projects has demonstrated that RFTA previously has been able to operate at lower costs in comparison to other transit agencies. It is expected that RFTA will perform certain administrative and management functions for the light rail system, resulting in economies to the light rail operations. For these reasons, this administration credit is included to provide a more accurate cost estimate for this light rail system.

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Table S-2
Annual Operation and Maintenance Costs for the Preferred Alternative ($ Millions)

O&M Cost Item	*15 Minute Peak/ 30 Minute Base*	*10 Minute Peak/ 20 Minute Base*
1. Administration	$ 0.10	$ 0.14
2. Transportation	$ 0.56	$ 0.80
3. Vehicle and Facilities Maintenance	$ 0.72	$ 0.97
4. Track Maintenance	$ 0.32	$ 0.41
5. RFTA Administration Credit	$ (0.05)	$ (0.05)
Total	**$ 1.65**	**$ 2.27**

Implementation of the Preferred Alternative is contingent on actions by the City of Aspen, Pitkin County, Snowmass Village, CDOT, FHWA, and the private sector. Both CDOT and FHWA are legally restricted to implementing only transportation improvements. Neither agency has a legal basis for controlling land use decisions or implementing demand management policies such as increasing parking fees or changing the transit routing and scheduling. CDOT can only use state gas tax funds for highway related projects. To support the transit component of this project, local officials have committed to the use of existing local transit taxes to fund the design and construction costs of the LRT system, including the maintenance facility, LRT vehicles, LRT stations, and the rail bed. Due to complexities and uncertainties associated with the multimodal facilities, a combination of private and public funds will likely be used for these facilities. All agencies must work together to successfully implement the Preferred Alternative.

SYSTEM MANAGEMENT

System management refers to the coordination of various transportation factors, including TM programs, parking demand, and transit ridership characteristics. TM refers to programs and policies designed to reduce travel demand and improve utilization of the transportation system. TM incorporates transportation demand management (TDM) (actions that reduce travel demand), and transportation systems management (TSM) (actions that improve the use of the existing transportation system). TM can be applied to any alternative under consideration, but the success of the TM programs requires local initiation and implementation. Parking demand refers to the parking requirements for the Aspen Airport Business Center (AABC)/Airport LRT Station and the Buttermilk LRT Station. The parking demand is based on meeting the zero-growth traffic goal for a 2015 summer high-growth scenario. Transit ridership characteristics refer to the changes in the community and RFTA that will occur with the implementation of the LRT and the Incremental TM Program.

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TM Program

The Preferred Alternative includes an Incremental TM Program. This program is designed to maintain future traffic volumes at 1993 traffic levels. The Preferred Alternative Incremental TM Program consists of incentives, disincentives, and supporting measures to encourage use of transit, carpools, bicycles, and walking. Currently, the City of Aspen is using TM measures such as increased transit service (incentive), paid parking (disincentive), and information programs (supporting).

The Incremental TM Program consists of monitoring the traffic volumes to verify that the goal of maintaining existing levels of traffic is being met. If the traffic volumes are at or below the existing levels then no action is taken. If the traffic volumes exceed the existing (1993) levels then one or more TM measures are implemented. The degree to which the traffic volumes exceed the existing (1993) levels determines the level of TM required to meet the zero-growth target. The three levels of TM, in addition to other supporting actions are shown below.

- Level 1 - The measures in this level of TM are starter level actions that are implemented when the zero-growth level is first exceeded. If the zero-growth target is exceeded after Level 1 is implemented, then the next level of TM is added. Examples include ridematching programs, trip planning programs, transit literature, etc.

- Level 2 - This level of TM is implemented when the traffic volumes exceed the zero-growth target between 0 and 5 percent or if Level 1 measures do not reduce traffic volume to below the zero-growth target. Examples include improved transit system (shorter headways, increased subsidies), demand responsive transit, minor increases in internal parking rates, etc.

- Level 3 - This level of TM is implemented when the traffic volumes exceed the zero-growth target between 5 and 10 percent. Examples include limiting the number of internal parking spaces, auto-free zones, major increases in internal parking rates, etc.

- Supporting Actions - These refer to actions that, by themselves, are not expected to cause a mode shift, but rather enhance other actions. Examples include guaranteed ride home program, park and ride lots to meet demand, bicycle and pedestrian facilities, etc.

Figure S-4 is a flow chart of how an incremental program could work.

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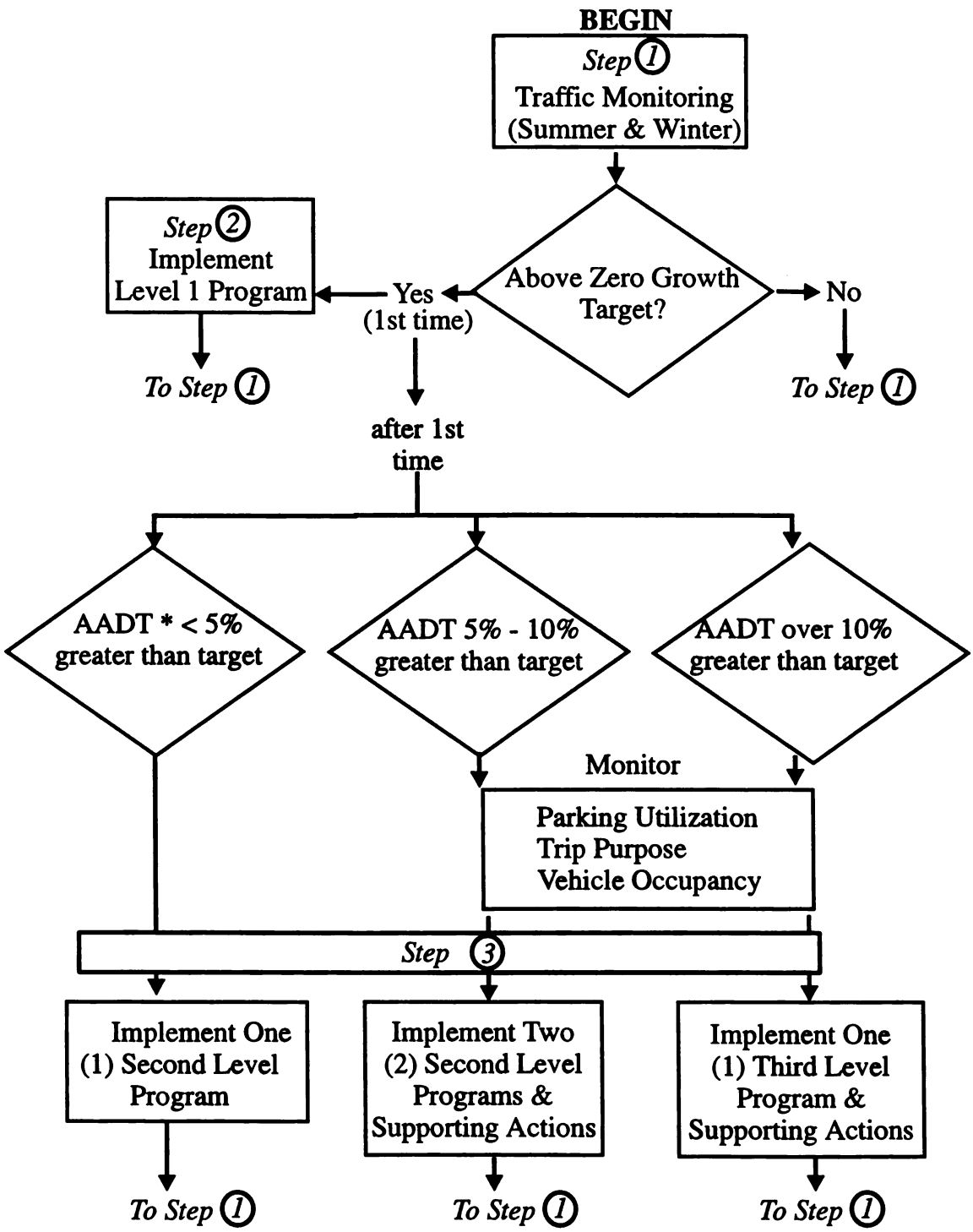
Figure S-4
Incremental TM Program
Monitoring and Implementation



* AADT - Average Annual Daily Traffic

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Parking Demand

The Preferred Alternative includes two parking facilities: the airport multimodal center and the Buttermilk multimodal center. These facilities are designed for the parking demand based on the zero-growth policy and summer high-growth scenario. To meet the projected 2015 summer high growth demand (assuming no downvalley extension of the light rail system), approximately 3,600 spaces are required at the airport multimodal center, and approximately 750 spaces are required at the Buttermilk multimodal center. Initially, the construction of these multimodal facilities would not need to provide this worst-case capacity. Instead, the number of parking spaces at the multimodal facilities could be developed as the parking need arises. This is especially true at the airport where the planned facility could eventually have 3,600 parking spaces under the worst-case growth assumptions outlined above.

Transit Ridership Characteristics

Although RFTA is experiencing an increase in ridership over the last few years, traffic volumes are not decreasing. Winter traffic has grown at a rate of 1.2 percent per year and summer traffic at a rate of 1.3 percent per year. To meet the goal of maintaining existing 1993 traffic volumes for future years, transit ridership must increase dramatically (36 percent more than existing trend). This may be accomplished through a combination of the LRT system, Incremental TM Program, and the multimodal facilities.

PROJECT OBJECTIVES

CDOT and FHWA have chosen the Preferred Alternative because it best meets the local communities' needs and desires, fulfills the project objectives, and provides flexibility in future design decisions. A short description of how the Preferred Alternative meets the project objectives (shown in italics) follows.

1. ***Community Based Planning.*** *Provide a process which is responsive to local community-based planning efforts, including the Aspen to Snowmass Transportation Project and the Aspen Area Community Plan, with special attention focused on limiting vehicle trips into Aspen to create a less congested downtown core.*

   The Preferred Alternative has been developed through an extensive and continuous public involvement process with both local citizens and elected officials. The adoption of the Incremental TM Program as an integrated part of the Preferred Alternative provides for the goal of limiting future vehicle trips to existing levels while providing flexibility in the adoption of stronger incentives and disincentives.

2. ***Transportation Capacity.*** *Provide needed transportation capacity for the forecasted person trips in the year 2015. In doing this, this project will identify a combination of travel modes,*

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alignments and transportation management actions to seek to achieve the stated community goal of limiting the number of vehicles in the year 2015 to levels at or below those in 1994[2].

With the incorporation of the Incremental TM Program, the Preferred Alternative will provide for future transportation capacity. Though the highway system will operate under congestion, this congestion is considered part of the disincentive for single occupancy vehicle (SOV) travel and will increase transit usage.

3. ***Safety.*** *Reduce the high accident rate on State Highway 82 and the existing S-curves at State Highway 82/7th Street/Main Street and provide safety improvements for bicyclists and pedestrians. Provide safe access at all intersections for all movements.*

   The removal of non-local traffic from the substandard S-curves and the addition of a landscaped median separating inbound and outbound traffic will reduce the high accident rate on State Highway 82.

4. ***Environmentally Sound Alternative.*** *Develop an alternative which minimizes and mitigates adverse impacts. A process will be used which follows the National Environmental Policy Act (NEPA), the 1990 Clean Air Act Amendments (CAAA), the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), and all pertinent legislation.*

   The Preferred Alternative minimizes and mitigates adverse environmental impacts. The Preferred Alternative exceeds the requirements of the CAAA and is one of the least harmful alternatives evaluated in the EIS. The Preferred Alternative mitigates the Section 4(f) resources impacts with the cut and cover tunnel, relocates all trails that are impacted, avoids impacts to the Holden Smelting and Milling Complex, and compensates for impacts by returning some existing highway right-of-way to the City of Aspen.

5. ***Community Acceptability.*** *Develop an alternative which fits the character of the community and is aesthetically acceptable to the public.*

   The Preferred Alternative reflects the agreements reached to date between the communities while accommodating future decisions based on local discussions and elections.

6. ***Financial Limitations.*** *Develop an alternative that is financially realistic with respect to current and expected funding levels and programs, while being responsive to both the community's character and prudent expenditures of public funds.*

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[2] This objective sets the goal of limiting 2015 volumes to levels at or below those in 1994. However, throughout this document the traffic volumes are referred to as levels at or below those in 1993. Levels are set at 1993 because the traffic model for the Entrance to Aspen EIS is based on 1993 traffic volumes. The difference between 1993 and 1994 traffic volumes was minimal.

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The Preferred Alternative is financially realistic, sensible, and responsible with respect to the current and expected funding levels and programs as determined by the City of Aspen and Pitkin County.

7. ***Clean Air Act Requirements.*** *Since the Aspen area is a PM_{10} air quality non-attainment area, the Preferred Alternative must meet the requirements of the CAAA by demonstrating project conformity.*

   The Preferred Alternative exceeds the requirements of the CAAA.

8. ***Emergency Access.*** *Respond to the need for an alternate route for emergency response to incidents inside and outside of Aspen.*

   The Preferred Alternative improves emergency access by providing an additional bridge across Castle Creek. The existing State Highway 82 right-of-way could be used as an emergency access route to and from the existing bridge if the new bridge becomes inaccessible.

9. ***Liveable Communities.*** *Provide a system which reflects the small town character and scale of the Aspen community and which enhances the quality of life for residents and visitors. The system shall provide more accessible transportation which increases the mobility of the community and therefore provides for a more livable community.*

   The Preferred Alternative is consistent with the goals of maintaining a small town character and enhances the quality of life for the residences and visitors by limiting vehicle traffic to existing levels. The provision of an improved, efficient LRT system further enhances the livability and mobility of the community.

10. ***Phasing.*** *Provide an alternative which allows for future transit options and upgrades.*

    The Aspen community has long expressed a desire for the high quality transit system that is included in the Preferred Alternative. The ultimate goal of the Roaring Fork Valley is to develop a fixed guideway system that connects Glenwood Springs to Aspen. The Entrance to Aspen LRT system may be the first step towards a realization of this goal.

PROJECT NEED AND INTENT

The Preferred Alternative fulfills the agreed-upon project need and intent statements in the following manner:

- In concert with the Incremental TM Program, the Preferred Alternative provides the needed person trip capacity for all foreseeable growth in the number of trips to and from Aspen through the year 2015. This is accomplished through highway improvements combined with

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a safe, high-quality, fast, and frequent transit system that will enhance the visitor's experience, expedite commuting, and preserve the residents' quality of life.

- It is a balanced transportation system that integrates highway, transit, and transportation management solutions to reduce congestion and pollution.
- It reflects the character and scale of the Aspen community by minimizing the number and width of the needed highway lanes while meeting person trip capacity needs with an LRT system.
- It is responsive to community-based planning in fully considering community, elected official, and project team comments and concerns. The Preferred Alternative was initially conceived during the public comment period following the release of the DEIS in August, 1995. The Preferred Alternative has the least impact on open space, historic structures, and residences. Impacts can be mitigated through a commitment to design excellence and high-quality construction materials and methods.
- It is a flexible system designed to meet both the short- and long-term goals of community compatibility, safety, environmental preservation, clean air, quality of life, and transportation capacity.
- It is entirely consistent with the Aspen, Snowmass Village, and Pitkin County goal of limiting traffic in 2015 to levels at or below existing levels. The Preferred Alternative's proactive approach of integrating an attractive, high quality transit system with a goal-responsive package of adjustable transportation demand management measures offers an opportunity for the Aspen community to reduce the attractiveness of the personal auto while fully accommodating the mobility needs of residents, visitors, and commuters.
- The Preferred Alternative is consistent with the goals of maintaining a small town character and enhancing the quality of life for the residences and visitors by limiting vehicle traffic to existing levels. The provision of an improved, efficient LRT system further enhances the livability and mobility of the community.

MAJOR ENVIRONMENTAL IMPACTS

Beneficial Impacts

Major beneficial impacts for the Preferred Alternative includes:

- A safer transportation corridor and all-weather transit system resulting in reduced accident rates.
- Increased transportation capacity to provide for both existing and future demands.
- Reduced air pollution.

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Adverse Impacts

Major adverse impacts for the Preferred Alternative include:

- Encroachment on recreational and open space lands.
- Encroachment on wetland areas.
- Right-of-way encroachment on sites listed on or eligible for the National Register of Historic Places.
- Restriction or elimination of some desired person trips (shopping, recreational, etc.) to the Aspen area.
- Removal of some parking on Main Street and Monarch Avenue.
- Noise impacts in the vicinity of the 3rd Street and Monarch LRT stations.

Mitigation

Mitigation measures to reduce or eliminate significant impacts as a result of the Preferred Alternative include, but are not limited to:

- Avoidance of historic and 4(f) resources where possible through alignment shifts, the reduction of right-of-way widths, and every reasonable effort to replace or compensate for the loss of any parkland.
- Relocation, improvement, or replacement of existing sidewalks and recreational trails impacted by the alternatives.
- Use of single-track LRT sections where possible to reduce the width of the cross section.
- Return of the abandoned portions of existing roadways to open space where possible.
- Provision of intercept parking lots and park and ride facilities in downvalley locations.
- Minimal use of LRT warning horn and construction of noise barriers where feasible.
- Use of cut and cover tunnel to preserve the continuity of the Marolt-Thomas Open Space.
- Replacement of permanently destroyed wetlands.

PUBLIC INVOLVEMENT

CDOT, as the lead agency in the development of the EIS, has worked closely with the citizens and elected officials in the State Highway study corridor between Aspen and Glenwood Springs for many years. The work in the State Highway corridor has been ongoing since 1974. A significant amount of public participation was conducted between 1987 and 1991 with the environmental analysis conducted for the original 1989 ***State Highway 82 East of Basalt to Aspen DEIS***. From 1991 through 1993, through the opening of a local office (called the Mount Sopris Transportation Project), CDOT completed the BBFEIS. The BBFEIS provided an important foundation for the Entrance to Aspen EIS. The approved BBFEIS calls for the widening of State Highway 82 between Basalt and Buttermilk Ski Area to four lanes, with two of these lanes between Gerbazdale and Buttermilk being bus/HOV lanes during peak periods.

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The continued debate over how to improve the Entrance to Aspen led CDOT to conduct an extensive public involvement program as an integral part of the scoping and development of the Entrance to Aspen DEIS. The public involvement program recognized areas of agreement reached by the community through the Aspen Area Community Planning Process and the Aspen to Snowmass Transportation Project. There were five community agreements which were considered in the development of this DEIS. These were agreed to by elected officials, June 21, 1994, and presented to community focus groups for their approval on June 22-23, 1994.

- The community agrees that something must be done to accommodate the increased trips into and out of Aspen. Residents want a workable solution that is implemented soon.
- An unrestricted four-lane is not compatible with a systems approach because it does not provide incentives for transit use. The Preferred Alternative for the BBFEIS has two bus/HOV lanes up to the Buttermilk Ski Area.
- The connection between the Buttermilk Ski Area and Aspen must include a variety of measures to reduce the actual number of automobile trips into and out of Aspen. Dedicated busways, HOV lanes, a fixed guideway system, and other measures that reduce the actual number of trips in a SOV must all be considered.
- All transportation solutions must comply with the 1990 CAAA. A combination of travel modes, alignments, and transportation demand management actions should be identified that meet the stated community goal of limiting the number of vehicles in 2015 to levels at or below those in 1993.
- Residents remain very concerned about getting something done to address the following three transportation issues: traffic congestion, traffic safety, and air pollution.

With a long history of controversy and debate, the DEIS public involvement process was directed toward resolving the following problem statement:

> *How can the community, working in partnership with CDOT, collectively resolve the fact that there are competing interests regarding how to develop a better transportation link into Aspen?*

The public involvement process went far beyond the normal National Environmental Policy Act (NEPA) requirements. The public participation program included the following techniques:

- Open house public meetings and workshops.
- Focus group meetings with affected interests.
- Periodic reconnaissance interviews with elected and appointed officials and area staff.
- Confidential interviews with a cross section of the community.
- Participation in one- and two-day transportation symposiums and round table discussions sponsored by the City of Aspen.
- Technical Advisory Committee (TAC) meetings with area staff.
- Regularly scheduled project status reports and dialogue with the Pitkin County Board of Commissioners, Aspen City Council, and the intergovernmental group of elected officials known as the Decision Makers or Elected Officials Transportation Committee (EOTC).
- Roaring Fork Forum Transit Council briefings.

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- Development of a community-based information sharing/consensus building process with Leadership Aspen, the Rocky Mountain Institute, and the City of Aspen.
- Presentations to area civic organizations, neighborhoods, and special interest groups on an as-requested basis, with written questionnaires.
- Periodic newsletters distributed as an insert to the local papers.
- A 24-hour hotline for area citizens to call with comments and suggestions or to request additional factual information.
- A comprehensive ongoing display at the Pitkin County Library and other public facilities in the Roaring Fork Valley, explaining project objectives, the screening process, potential alternatives, transportation management principles, and Section 4(f) properties.
- Ongoing media coverage through the two local papers, Grass Roots TV, and the local radio station.
- Additional public opinion surveys (formal attitudinal survey using telephone interviews) to ascertain public attitudes regarding the Entrance to Aspen EIS project.
- Meeting with members of the Citizen's Light Rail Design Task Force committee to review the DSEIS alternatives, which were developed following public review of the DEIS.

The Citizen's Light Rail Design Task Force prepared ***A Report on the Valley-Wide Light Rail System: Brush Creek Road to Rubey Park.*** This report outlines the findings of a 20-member committee established to review alternatives for the EIS. The general findings of the Citizen's Task Force included a consideration of this project (and including the extension to Brush Creek Road) to be the first part of an Aspen to Glenwood system. The majority of proposed elements in the Preferred Alternative are in agreement with the Citizen's Light Rail Design Task Force recommendations. Exceptions are the location of the LRT on Main Street (Preferred Alternative is center - Citizen Task Force recommended south side) and the length at the cut and cover tunnel on the Marolt-Thomas Property (Preferred Alternative is 122 meters [400 feet] long - Citizen Task Force recommended a 61 to 76 meter [200 to 250 foot] extension).

Summaries of these meetings, in addition to a chronology of the project history, are included in **Volume 2** of the FEIS.

CONTROVERSIAL ISSUES

Project History

The need for a safer, less congested transportation connection into Aspen from the vicinity of the Buttermilk Ski Area has been debated in the upper end of Pitkin County since the late 1960s. A number of formal votes and adopted local government resolutions regarding how to improve the 6.9 kilometers (4.3 miles) of highway have been made with no clear decision on how to proceed with the needed improvements. In 1970, Pitkin County voted to widen State Highway 82 to four lanes and the City of Aspen voted against four lanes. In 1982, the City of Aspen voted against using the Marolt-Thomas Property for four-lane improvements. In 1984, the County voted for four-lane improvements between Brush Creek Road and Aspen. In June of 1984, the Aspen City Council adopted a resolution to upgrade State Highway 82 along its current route. In 1986, two choices to

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improve State Highway 82 were put to the voters: provide a new direct connection into Aspen across the Marolt-Thomas Property or widen the existing S-curve alignment. Both lost at the polls, the direct connection by 10 votes. In February 1989, the Aspen City Council adopted a resolution stating the Council's preference for an improved four-lane along the existing State Highway 82 alignment. A year later, the Aspen voters approved a direct four-lane alignment across the Marolt-Thomas Property. As part of this vote, voters also favored the acquisition of city-owned parkland and open space for the improved transportation corridor.

The passage of the ISTEA and changes in the Clean Air Act, coupled with a growing concern over increased traffic congestion and quality of life issues, led to re-evaluating an approach to the transportation link into Aspen. In 1991, the three upper valley governments--the City of Aspen, Pitkin County, and the Town of Snowmass Village--adopted a joint resolution to collectively address and solve the three main transportation issues: traffic congestion, traffic safety, and air pollution. Working collectively during an 18-month period the elected officials representing the three jurisdictions, adopted Resolution No. 396 in October of 1992. This intergovernmental resolution established a framework for an overall transportation system responsive to both ISTEA and the changes in the CAAA. The following are the three components of the adopted intergovernmental agreement:

- Travel demand management strategies.
- Transportation enhancements to the existing roadway system for both automobiles and buses.
- The development of a fixed guideway system as an alternative transportation link between downtown Aspen, the airport, and the Snowmass Village Mall.

In 1993, both Pitkin County and the City of Aspen approved a 1/2 percent transportation sales tax for transit improvements. In 1994, both the City of Aspen and Pitkin County voters defeated several transportation measures on the ballot. One measure proposed using the 1993 1/2 percent transportation sales tax to provide bonding for a dedicated bus transitway between Aspen and Buttermilk Ski Area across the Marolt-Thomas Property. Other measures defeated included conveyance of open space lands for highway-only transportation improvements and the relocation of State Highway 82 alignment to the Marolt-Thomas Property. In 1996 the City of Aspen voted to use Marolt-Thomas Open Space for transportation improvements in the context of an LRT system. A summary of the Pitkin County and City of Aspen votes related to the project corridor is included in **Volume 2: Comments and Coordination** of the State Highway 82 Entrance to Aspen FEIS.

Recreational Lands, Open Space Lands, and Historic Resources

Concerns have been raised over potential adverse impacts to recreational and open space lands and to historic properties located throughout the project corridor. Within the Entrance to Aspen corridor there are three open space parcels, one designated park, five historic sites on or eligible for inclusion on the National Register of Historic Places, three additional properties locally designated as historic, three golf courses, and an extensive recreational trail system. The Preferred Alternative will impact some of these resources to some degree. Every effort has been made to avoid or minimize these impacts to the extent possible and these efforts will continue throughout the project design process.

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OTHER FEDERAL ACTIONS REQUIRED

Construction of some of the transportation improvements will require issuance of a Section 404 dredge and fill permit by the Army Corps of Engineers (ACOE).

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I. Purpose and Need

A. FOREWORD

The purpose of the Entrance to Aspen Environmental Impact Statement (EIS) process is to develop a transportation solution that addresses the transportation capacity inadequacies and safety problems of the study corridor while avoiding or minimizing adverse environmental impacts. The study corridor is located on Colorado State Highway 82 between the Service Center Road (Milepost 37.2, west of the airport) and Rubey Park Transit Center in the City of Aspen, a distance of 6.9 kilometers (4.3 miles). Figure I-1 shows the project corridor and several key landmarks for identification, including Buttermilk Ski Area, the historic Maroon Creek Bridge, the Aspen City Golf Course, Castle Creek Bridge, and the existing State Highway 82 S-curves at the Entrance to Aspen. The S-curves refer to the portion of State Highway 82 between Cemetery Lane and the intersection of 7th Street and Main Street in the City of Aspen.

The capacity of State Highway 82 within the project corridor is limited by the existing substandard roadway which does not sufficiently accommodate the travel needs of the residents, employees and visitors of Aspen. Currently, during peak periods, State Highway 82 is extremely congested and operates at failing (stop and go) conditions. The safety of the highway in the analysis corridor is extremely poor when compared to similar Colorado highways. The accident rate on the S-curves is 386 percent of the state rural highway accident rate average and 149 percent of the state urban highway rate. Insufficient roadway features in the analysis corridor are evidenced by narrow laneage, narrow and non-existent shoulder width, over-capacity intersections, and sharp right-angle turns with high speed approaches. All of these items contribute to the lack of capacity and a poor safety record for the existing highway.

Transportation demand forecasts indicate that traffic demand will continue to rise and the system will be operating over the available capacity of the corridor for large portions of the day. The transportation problems associated with State Highway 82 have been recognized since the late 1960s. There is a strong understanding in the community that these serious and significant transportation problems need to be addressed and that these problems have become worse over the years. Numerous studies and reports that attempted to develop solutions to State Highway 82 inadequacies have been completed since the early 1970s.

B. PROJECT OBJECTIVES

The primary purpose of the EIS process is to develop solutions that will improve transportation and safety along the State Highway 82 corridor between the airport and Aspen while avoiding or minimizing adverse environmental effects. The project objectives are the foundation of the EIS process and must be met by the proposed transportation improvements.

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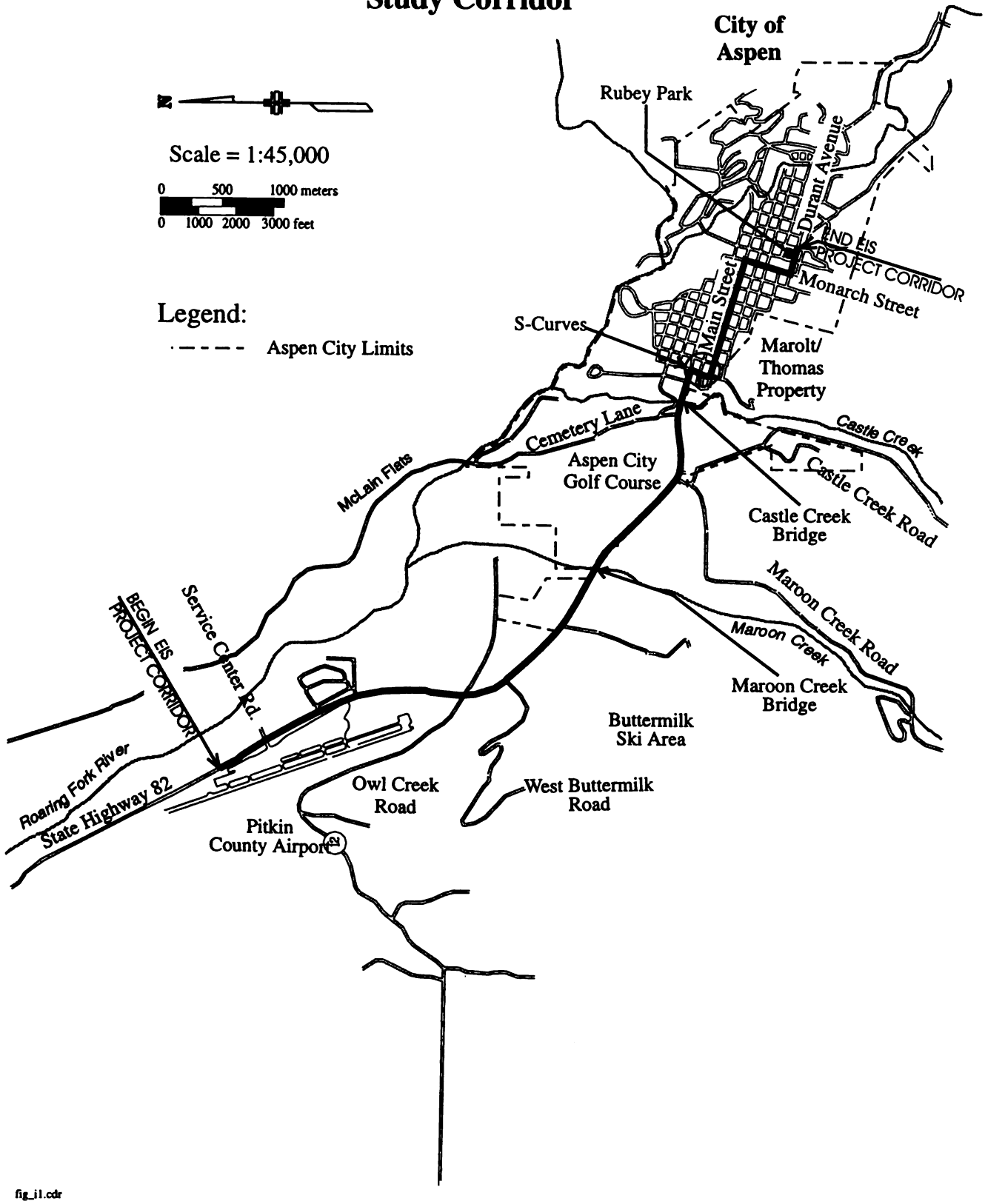
Figure I-1
State Highway 82 Entrance to Aspen FEIS
Study Corridor



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The objectives were developed based on known problems and concerns related to the State Highway 82 transportation system and corresponding issues raised by the Aspen area community. Consensus on the objectives was developed from the affected agencies, elected officials and staff of area governments, concerned members of the public through a series of individual meetings (community focus groups, open house exhibitions, community leadership workshops), and a technical advisory committee (TAC) consisting of the various local governments and state and federal agency staff. These objectives incorporate the need for improvements to the State Highway 82 transportation corridor, as previously discussed. Ten objectives for the project have been identified:

1. *Community Based Planning. Provide a process which is responsive to local community-based planning efforts, including the Aspen to Snowmass Transportation Project and the Aspen Area Community Plan, with special attention focused on limiting vehicle trips into Aspen to create a less congested downtown core.*

   Local governments have done extensive work in preparing plans for the future of their communities and jurisdictions. It is important and necessary to consider these plans and the input of the community to create a project the community can be proud of, and one that is consistent with community based long-range planning goals.

2. *Transportation Capacity. Provide needed transportation capacity for the forecasted person trips in the year 2015. In doing this, this project will identify a combination of travel modes, alignments, and transportation management actions to seek to achieve the stated community goal of limiting the number of vehicles in 2015 to levels at or below those in 1994*[1].

   Traffic demand forecasts indicate that traffic demand is expected to increase. Because existing traffic movement on State Highway 82 is already very poor, capacity improvements would be necessary to handle the existing and forecasted demand and reduce the congestion if transit improvements and transportation management (TM) programs are not implemented. There is strong sentiment in the City of Aspen to reduce or control the amount of vehicle traffic; therefore, it is important to provide both incentives and disincentives to reduce the use of single occupancy vehicles (SOVs) on State Highway 82. This would require increased use of higher occupancy vehicles such as light rail, buses, carpools, or other transit modes to accommodate the forecasted demand.

3. *Safety. Reduce the high accident rate on State Highway 82 and the existing S-curves at State Highway 82/7th Street/Main Street and provide safety improvements for bicyclists and pedestrians. Provide safe access at all intersections for all movements.*

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[1] This objective sets the goal of limiting year 2015 traffic volumes to levels at or below those in 1994. However, throughout this document the traffic volumes are referred to as levels at or below these in 1993. Levels are set at 1993 because the traffic model for the Entrance to Aspen EIS is based on 1993 traffic volumes. The difference between 1993 and 1994 traffic volumes is minimal.

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One of the primary responsibilities of the Colorado Department of Transportation (CDOT) is to provide a safe transportation system. The existing S-curves on State Highway 82 on the west end of Aspen have consistently been one of the most dangerous sections on the state roadway system based on the high number of accidents. Improving the safety of this known high-accident area, while providing safe and efficient improvements for the entire project, is critical.

4. *Environmentally Sound Alternative. Develop an alternative which minimizes and mitigates adverse impacts. A process will be used which follows the National Environmental Policy Act (NEPA), the 1990 Clean Air Act Amendments (CAAA), the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), and all pertinent legislation.*

Even if development of an alternative that minimizes and mitigates adverse impacts were not required by law, this would be an exceedingly important objective of both the local community and CDOT. The environment of the Aspen area is special and unique. The town's essence and primary economic functions depend upon retaining these qualities. Any transportation improvement must be environmentally sound to be effective at providing service to the Aspen area.

5. *Community Acceptability. Develop an alternative which fits the character of the community and is aesthetically acceptable to the public.*

The Aspen area has a very unique physical and social environment that helps define the nature of projects that can be built. It is centered in an outdoor recreational mecca largely dependent upon the exceptional scenery and numerous recreational facilities. This spectacular setting and rich history have combined to create an area that has attracted a highly educated population (almost 50 percent of Pitkin County residents have a college degree compared to a Colorado average of 27 percent) and a population that is generally more affluent (the per capita income of Pitkin County residents is almost 70 percent greater than Colorado as a whole. The average home price in Aspen is more than $1 million.)

The population of the Aspen area is socially conscious and environmentally aware. The community has a history of being very proactive and knowledgeable concerning local issues. The community must gain consensus on an acceptable Preferred Alternative that meets the project's purpose and need.

6. *Financial Limitations. Develop an alternative that is financially realistic with respect to current and expected funding levels and programs, while being responsive to both the community's character and prudent expenditures of public funds.*

Public officials have a responsibility to ensure that public funds are spent efficiently and prudently. There are always more needs than available funds. Those projects that represent the best value are often the ones that are implemented. While the transportation needs within this study corridor are great, financial resources that can be used to respond to them are limited. This EIS process should be responsive to these needs while being realistic about potential funding.

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7. *Clean Air Act Requirements. Since the Aspen area is a particulate matter 10 microns or smaller in diameter (PM_{10}) air quality non-attainment area, the Preferred Alternative must meet the requirements of the 1990 CAAAs by demonstrating project conformity.*

   This is a special legal requirement for the Aspen area because of the wintertime air pollution caused by PM_{10} and the corresponding non-attainment status designated by the Environmental Protection Agency (EPA). Because a large portion of PM_{10} pollution is caused by the traffic grinding up sand on roadways in the wintertime, increased traffic will increase PM_{10} pollution. The Preferred Alternative combined with TM measures must prevent an increase in PM_{10} emissions.

8. *Emergency Access. Respond to the need for an alternate route for emergency response to incidents inside and outside of Aspen.*

   Currently, all traffic between Aspen and downvalley[2] must cross Castle Creek. Only one major two-lane traffic bridge crosses Castle Creek on State Highway 82. A minor local roadway bridge crosses Castle Creek below the State Highway 82 bridge, but its load restrictions prohibit access for fire equipment. A significant emergency or congestion on the State Highway 82 bridge could cut off access across both bridges into and out of Aspen. This could cause a life threatening situation if emergency vehicles cannot get into or out of Aspen.

9. *Livable Communities. Provide a system which reflects the small town character and scale of the Aspen community and which enhances the quality of life for residents and visitors. The system shall provide more accessible transportation which increases the mobility of the community and therefore provides for a more livable community.*

   The purpose of this objective has been well described by the United States Department of Transportation[3] (USDOT) and is repeated here for explanation. The purpose of providing livable communities is (1) to strengthen linkages between transit and community development planning including land use policies supportive of transit, (2) to stimulate greater involvement in the local planning and design process by neighborhood and community organizations, small and minority businesses, persons with disabilities and other public users who are not currently participants in the process, and (3) to increase access to or generate employment through high quality community-oriented transit services and facilities.

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[2] Downvalley generally refers to the portion of the Roaring Fork Valley that is to the north and west of Brush Creek Road. Upvalley generally refers to the area south and east of Brush Creek Road.

[3] ***Livable Communities Initiative.*** United States Department of Transportation, Federal Transit Administration, June 6, 1994, Page 3.

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10. *Phasing. Provide an alternative which allows for future transit options and upgrades.*

The Aspen community has long expressed a desire for a high quality transit system and has significant interest in a wide range of transit options. It is important to preserve options for future upgrading of the transportation system as new technologies become available.

These objectives are essential because they formed the basis for determining the alternatives that were evaluated in this EIS. **Chapter II: Alternatives** identifies the screening process used to determine a reasonable range of options that accomplished the project's objectives.

C. SYSTEM RELATIONSHIPS

Transportation systems can no longer be considered to include only roadways. With increasing congestion on the nation's highways, air pollution problems caused by automobile and truck traffic, and limited funds to address these issues, transportation systems must now consider all modes of travel and the relationships among them.

Transportation systems of particular interest in the upper Roaring Fork Valley that affect the Entrance to Aspen study corridor include other roadway links, air service, bus service, pedestrian/bicycle options, potential future commuter rail service from downvalley, light rail transit, and long-term transportation planning options.

1. Other Roadway Links

State Highway 82, from Aspen northwest to Glenwood Springs, is by far the most important surface transportation link in Pitkin County and the Roaring Fork Valley. It is the only through highway route along the valley floor, carrying most of the highway and transit traffic, and providing access to most of the major Pitkin County/City of Aspen roads and facilities.

During approximately seven months of the year, access to the Roaring Fork Valley is closed from the east via State Highway 82 over Independence Pass (elevation 3,685 meters [12,095 feet]) because of heavy snow accumulation. State Highway 82 essentially operates as a cul-de-sac during the ski season with Aspen at the terminus. During the summer when the pass is open, Independence Pass does not serve as a major access to the Roaring Fork Valley because of its steep, narrow roadway and curved alignment.

No other roads traverse the entire Roaring Fork Valley in Pitkin County. Various roadways parallel portions of State Highway 82 and are increasingly used by some travelers as a means to bypass State Highway 82 congestion.

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2. Air Travel

The Pitkin County Airport was the third busiest commercial airport in Colorado during 1993, following Denver and Colorado Springs. However, one of the two scheduled commercial airlines, Continental Express, discontinued service in 1994. The remaining airline, United Express, has increased the number of flights but is not expected to match the number of enplanements of recent years. Demand for airline service has been increasing steadily during the past twelve years, therefore, service is expected to rebound in the future. Private aviation constitutes an important component of the operations of the airport. All vehicle traffic to and from the airport must use State Highway 82 to access Aspen.

3. Bus Travel

The Roaring Fork Transit Agency (RFTA) operates up to 60 buses per hour (during peak periods) on eight bus routes within or connecting to the Entrance to Aspen corridor. These routes include downvalley service, Aspen to Snowmass service, Aspen Airport park and ride, Highlands Ski Area service, Maroon/Castle Creek service, Cemetery Lane service (serving residential areas northwest of Aspen on Cemetery Lane), and Buttermilk Ski Area service. The RFTA system has a very high level of annual ridership, which increases during peak tourist seasons. Figure I-2 shows that total RFTA ridership has more than doubled since 1987. In 1994, RFTA carried more than three million passengers. Between 1993 and 1994, RFTA ridership on valley routes grew 34 percent. Also in 1994, ridership on RFTA's skier shuttles increased 19 percent over 1993 to carry 658,000 passengers. Much of this increase is due to the addition of service to the Aspen Highlands Ski Area. The rapid increase in all ridership is expected to grow, however, increasing congestion on State Highway 82 may begin to limit this growth.

CDOT's 1993 and 1994 origin and destination surveys determined that approximately 6 percent of the summer person trips and 17 percent of the winter person trips that crossed the Aspen entrance survey site (just west of Maroon Creek Road) were being carried by RFTA buses. The extremely high winter share of passenger trips includes a large number of skiers who are transported between Aspen, Buttermilk Ski Area, and Snowmass Village. Traffic congestion is partly the cause for the RFTA's high winter percentage of trips. In return, this high percentage helps lessen the existing congestion during peak periods.

4. Pedestrian/Bicycle Routes

The project corridor includes a pedestrian/bicycle trail (Airport Business Center Trail) that parallels State Highway 82 on the north side between Buttermilk Ski Area and Aspen. Another trail, the High School Bike Path, exists on the south side between Maroon Creek Road and Aspen. No dedicated crossing of State Highway 82 exists for these trails, causing dangerous conflicts between pedestrians/bicyclists and vehicles on the existing highway. There are tentative plans for a new pedestrian/bike bridge over Maroon Creek. Cross country ski trails also pass through the project area. These trails are heavily used but do not serve to significantly reduce the transportation demand on State Highway 82. See **Section IV.A.4f: Hiking/Bicycle Trails** for a complete description.

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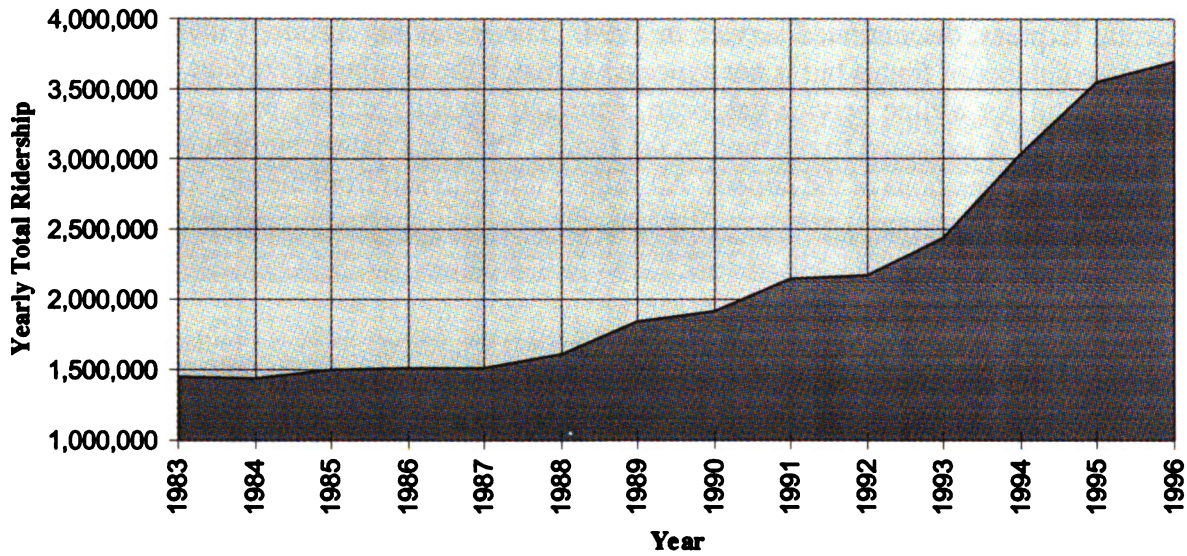
Figure I-2
Roaring Fork Transit Agency Ridership



Source: Roaring Fork Transit Agency

5. Potential Future Rail Travel

There is significant interest in establishing passenger rail service within the Roaring Fork Valley. Although this would help relieve traffic congestion on State Highway 82, a rail feasibility study has shown that without strong incentives to use transit (i.e., transportation management programs) rail ridership will not meet the needs of the State Highway 82 corridor. A feasibility study (***Glenwood-Aspen Rail Corridor Feasibility Project, Final Report***, Mount Sopris Transportation Project, Colorado Department of Transportation, May 1995) was performed for a rail corridor between Glenwood Springs and Aspen. The findings suggest that without transit incentives the rail ridership between Glenwood Springs and the Aspen airport would be approximately 7,000 person trips per day for the high winter average ridership estimate in 2015. With the 2015 winter average daily traffic (WADT) of the No-Action Alternative equal to approximately 71,000 person trips per day, the rail ridership estimate would remove 11% of the person trips from State Highway 82. Even so, the vehicle demand on State Highway 82 (approximately 32,400 vehicles per day [vpd]) would still be beyond the capacity of the two-lane roadway. It is clear that rail alone will not solve the congestion problems in the State Highway 82 corridor.

The communities of the Roaring Fork Valley, in conjunction with CDOT and Greater Outdoor Colorado (GOCO) (state lottery funds) acquired the existing rail corridor from Glenwood Springs to Woody Creek on June 30, 1997. A comprehensive transportation, trails, and open space alternatives analysis, including a Corridor Investment Study and a Draft Environmental Impact Statement (DEIS), is set to get underway during summer, 1997, and will be completed in

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approximately 18 months. This planning process will help to answer questions about alternative transportation solutions and their impacts (including mobility, financial, economic, environmental, social, and community impacts) in order to compare each alternative and obtain valley-wide consensus on an agreed-upon solution.

6. Multimodal Facilities

As part of a multimodal approach to transportation, the inclusion of multimodal centers that provide a direct connection between parking and transit, ski area access, or airport access is essential. Multimodal facilities differ from park and rides in that they provide access to more than a bus stop. Multimodal facilities provide parking, a direct connection to transit (bus, rail, etc.), and direct connections to associated land uses such as the airport or the Buttermilk Ski Area. Because of the limited land and street capacity within Aspen, the use of multimodal facilities only on the periphery of the community and linked to downtown Aspen by rail, is included in this analysis. The multimodal facilities are in addition to the numerous existing and proposed park and ride facilities within the Roaring Fork Valley.

A free parking lot was opened in January 1995 as a complimentary measure to the paid parking program in Aspen. The lot consists of 340 parking spaces located southeast of the airport and is the last free lot heading east into Aspen. The shuttles servicing the lot and the Aspen Airport Business Center average 300 one-way person trips per day and provide 30 minute headways during the summer and winter seasons.

7. Long-Term Transportation Planning Options

Consideration must be given to both short-term (0 to 20 years) and long-term (20+ years) transportation requirements. The alternatives analyzed should provide the community with options for future phasing or implementation of technologies that are currently new or unproven. A separate transit envelope reserved for future transportation options would allow for the creation of an integrated and multimodal approach to transportation within the Roaring Fork Valley. Another option that should remain open is the implementation of new TM strategies. This element of the transportation solution is discussed in **Chapter III: System Management**.

D. TRAFFIC CHARACTERISTICS

Existing traffic congestion is a primary issue associated with the need for improvement of the State Highway 82 transportation corridor. The characteristics and extent of this traffic congestion are discussed below.

1. Existing Traffic

1a. Traffic Operations

Traffic operations are affected by the type of roadway, the number of vehicles on the roadway, the ability of vehicles to pass other slow-moving vehicles, the percentage of trucks

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on the roadway, vehicle speeds, terrain type, and weather. Traffic operations vary by location, season, time of day, and travel direction.

Highway traffic congestion is expressed in terms of Level of Service (LOS) as defined by the ***Highway Capacity Manual***[4] (HCM). LOS is a letter code ranging from A for excellent conditions to F for unsatisfactory failure conditions. Completely free-flow conditions with no restrictions caused by traffic conditions are described as LOS A. LOS F represents forced or breakdown flow of the traffic stream, characterized by the familiar traffic jam. LOS B through LOS D describe progressively worse traffic conditions. The conditions defining the LOS are summarized from the HCM in Table I-1.

Table I-1
Descriptions of Level of Service

Level of Service	Description
A	Represents the best operating conditions and is considered free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	Represents reasonably free-flowing conditions but with some influence by others.
C	Represents a constrained constant flow below speed limits, with additional attention required by the drivers to maintain safe operations. Comfort and convenience levels of the driver decline noticeably. LOS C is the Colorado Department of Transportation's design service level (design capacity) for rural highways.
D	Represents traffic operations approaching unstable flow with high passing demand and passing capacity near zero, characterized by drivers being severely restricted in maneuverability. LOS D is the Colorado Department of Transportation's design service level for urban highways.
E	Represents unstable flow near capacity. LOS E often changes to LOS F very quickly because of disturbances (road conditions, accidents, etc.) in traffic flow.
F	Represents the worst conditions with heavily congested flow and traffic demand exceeding capacity, characterized by stop-and-go waves, poor travel time, low comfort and convenience, and increased accident exposure.

[4] Transportation Research Board. ***Highway Capacity Manual.*** Special Report 209, Third Edition, 1994.

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The entire section of State Highway 82 within the study corridor operates at LOS E or F during peak summer and winter seasons for much of the day. The maximum capacities for several sections of the State Highway 82 study corridor are shown in Table I-2 and are compared with the existing average summer peak-hour volumes. The 1993 traffic counts were the last detailed counts completed for the EIS process.

Based on the existing LOS shown in Table I-2, it is clear that the traffic operations on State Highway 82 dictate the need for transportation improvements within the study corridor.

Table I-2
State Highway 82 Existing Level of Service
1993 Summer Average Peak Hour

Section (Mileposts)	Average PM Peak Hour Volume	Percent No Passing Zones	Truck Percentage	Maximum Capacity [1]	Level of Service
Buttermilk Ski Area to Maroon Creek Bridge (38.5 to 39.2)	1,950	65%	8%	2,420	E
Maroon Creek Bridge to Maroon Creek Road (39.2 to 39.8)	2,030	80%	8%	2,420	E
Maroon Creek Road to Cemetery Lane (39.8 to 40.1)	2,280	100%	8%	2,420	E
Cemetery Lane to 7th Street and Main Street (40.1 to 40.5)	2,430	100%	8%	2,260	F

[1] *Maximum capacity is the hourly flow rate under ideal conditions of LOS E. The definition of capacity assumes that good weather and pavement conditions exist. At capacity, no more vehicles can reasonably be expected to traverse a section of roadway during the given time period under prevailing roadway, traffic, and control conditions. The capacity for the Cemetery Lane to 7th Street and Main Street is less due to lower speeds through the S-curves.*

1b. Variation by Location

Traffic volumes on State Highway 82 near the entrance to Aspen vary considerably by location. Figure I-3 shows the increasing traffic volume between the Buttermilk Ski Area and the Castle Creek Bridge into Aspen. The annual average volumes represented in the figure are taken from CDOT traffic counts for 1993. The largest volume occurs at the Castle Creek Bridge. Traffic in the year 2015 is expected to have a similar pattern with the highest volumes crossing the Castle Creek Bridge.

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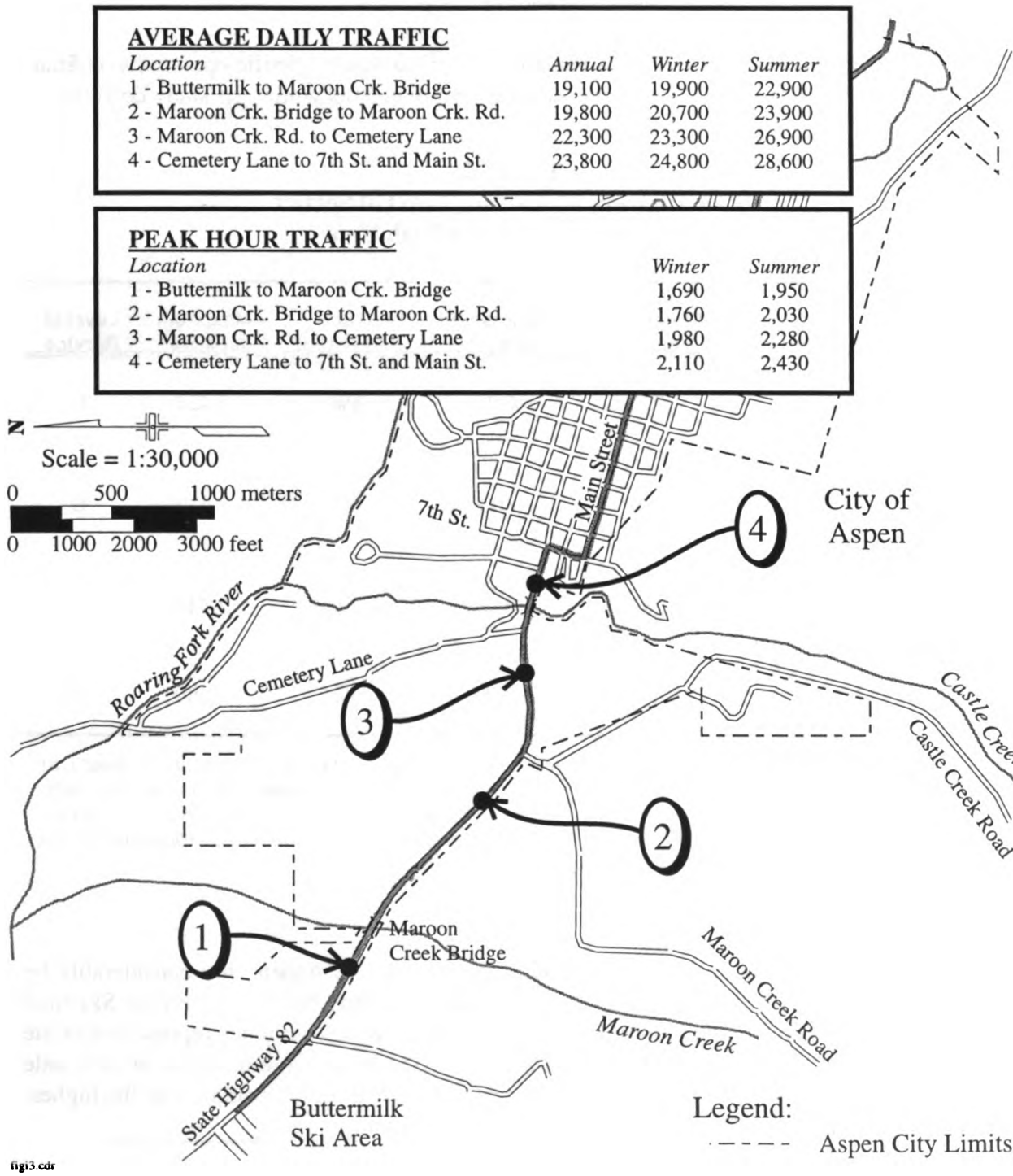
Figure I-3
1993 Daily Traffic and Peak Hour Volumes
State Highway 82 Entrance to Aspen Study Corridor



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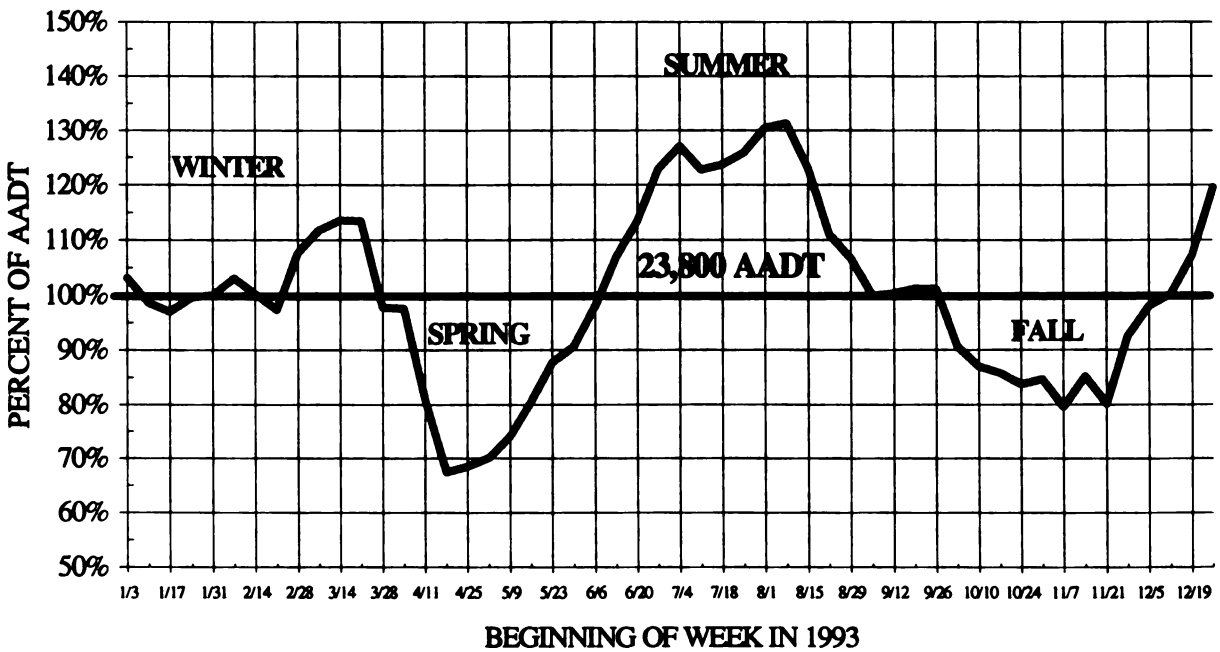
1c. Seasonal Variation

Figure I-3 shows the 1993 average annual, winter, and summer traffic volumes at several locations between Buttermilk Ski Area and the entrance to Aspen. The unique character and recreational opportunities of the Roaring Fork Valley attract many visitors to the area, especially during the summer and winter months. Figure I-4 is a graph of the traffic fluctuation during a 12-month period at the Castle Creek Bridge. The graph shows the percentage of annual average daily traffic (AADT) for each week in 1993. The traffic volumes presented in the figure are from actual CDOT counts taken in 1993. As shown in Figure I-4, during the summer and winter months the traffic volume on State Highway 82 has very distinct peaks. These peaks coincide with the height of summer tourist season between June and August and the winter ski season from late December through late March. The two predominant winter peaks occur during the winter holiday period and the early spring break period. The average winter and summer volumes exceed the AADT volume by approximately 4 percent and 20 percent, respectively. This pattern has been documented in the past and is expected to continue into the future.

Figure I-4
1993 Seasonal Traffic Fluctuation
State Highway 82 East of Cemetery Lane



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The existence of these two distinct and separate high-volume seasons makes the use of the annual averages for evaluating daily traffic volumes inappropriate. The annual average traffic volume is exceeded by daily traffic volumes during approximately six months of the year, obscuring the real peak congestion periods. The best indicator of peak congestion periods would be the summer average daily traffic (SADT) when the tourist season is at its peak. The 1993 summer average daily traffic (ADT) between Cemetery Lane and 7th Street and Main Street was 28,600 vehicles per day.

The concern for air quality in the Aspen PM_{10} non-attainment area is best addressed by the use of the WADT volumes. Because PM_{10} is an air quality problem that is most prevalent during the winter months, the WADT volume is used to determine mitigation measures for air quality. Detailed discussions of air quality appear in **Section IV.C.1: Air Quality.**

1d. Variation by Time and Direction

Figure I-5 and Figure I-6 show hourly traffic fluctuation for average winter and summer days, respectively, east of Cemetery Lane. There is a noticeable difference in the distribution patterns between the winter and summer hourly volumes.

The winter hourly distribution is largely dependent upon the opening and closing of the local ski areas. Figure I-5 shows a sharp rise in winter traffic volume between 6 a.m. and 8 a.m., peaking at 9 a.m. The early peak between 6 a.m. and 8 a.m. is primarily caused by commuter and recreational traffic arriving from downvalley to work/school or ski in Aspen. The additional rise in volume between 8 a.m. and 9 a.m. coincides with the opening of ski areas in the Aspen area and the end of the morning commute. Traffic volumes drop slightly until mid-day but rise after noon until the evening peak between 3 p.m. and 5 p.m. when employees leave Aspen and skiers travel into and out of the Aspen area.

The summer traffic distribution looks similar to the winter distribution from midnight to 8 a.m. (Figure I-6). After 8 a.m., the comparison is very different. The summer morning peak rises much sharper than the winter peak and does not have the additional volume after 8 a.m. Traffic remains at a fairly constant volume with a peak at noon and a peak between 3 p.m. and 5 p.m. The summer volume is spread throughout the day and, consequently, high congestion levels are fairly consistent from morning to evening.

The peak periods are dependent upon the directional variation of traffic movements throughout the day. The directional variation of the 1993 winter volumes is shown in Figure I-7 for State Highway 82 at Cemetery Lane. In the morning peak period, from 8 a.m. to 10 a.m., the predominant direction of travel is eastbound as 62 percent of the traffic is entering Aspen to work or ski. The peak direction (53 percent) becomes outbound west from Aspen during the evening peak period between 3 p.m. and 5 p.m. The directional variations are caused mainly by commuter traffic from downvalley, especially for the morning peak. Figure I-8 contains a graph of the 1993 summer directional variation that follows the same general patterns as the winter distribution for the same location.

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Figure I-5
Daily Traffic Distribution--Winter 1993
State Highway 82 East of Cemetery Lane

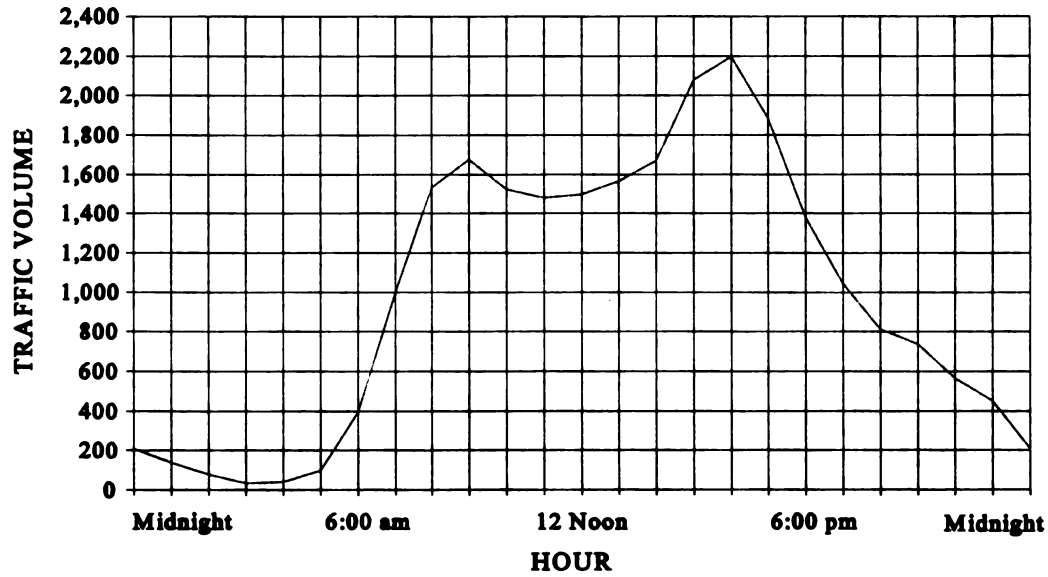

Figure I-6
Daily Traffic Distribution--Summer 1993
State Highway 82 East of Cemetery Lane

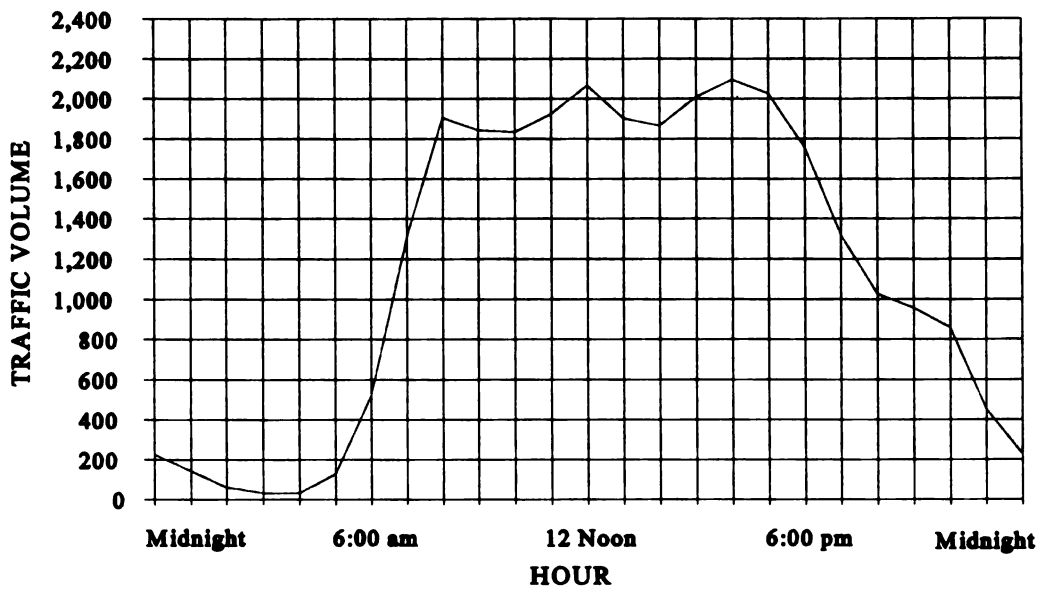

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Figure I-7
Directional Distribution--Winter 1993
State Highway 82 East of Cemetery Lane

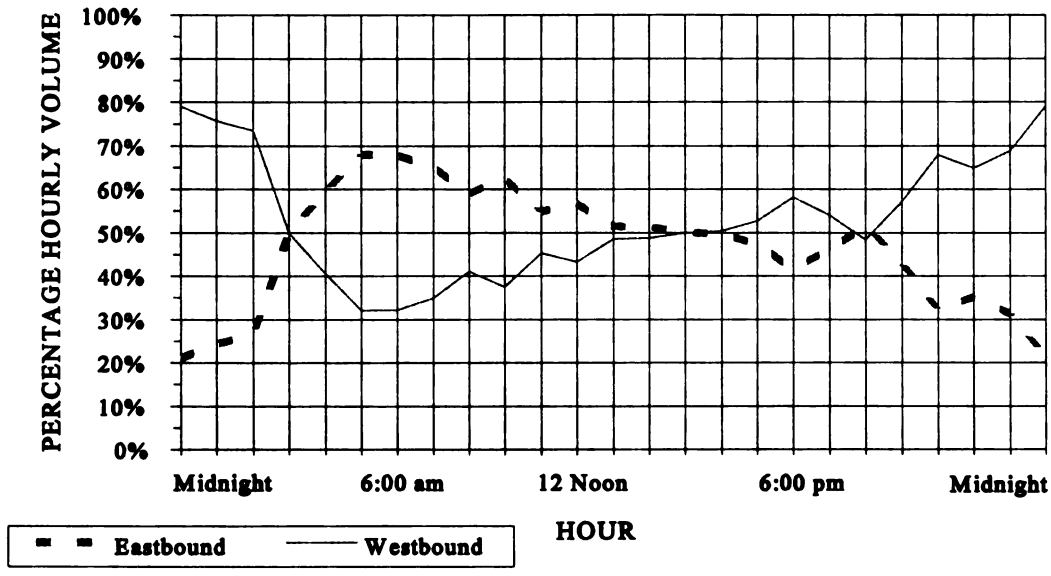
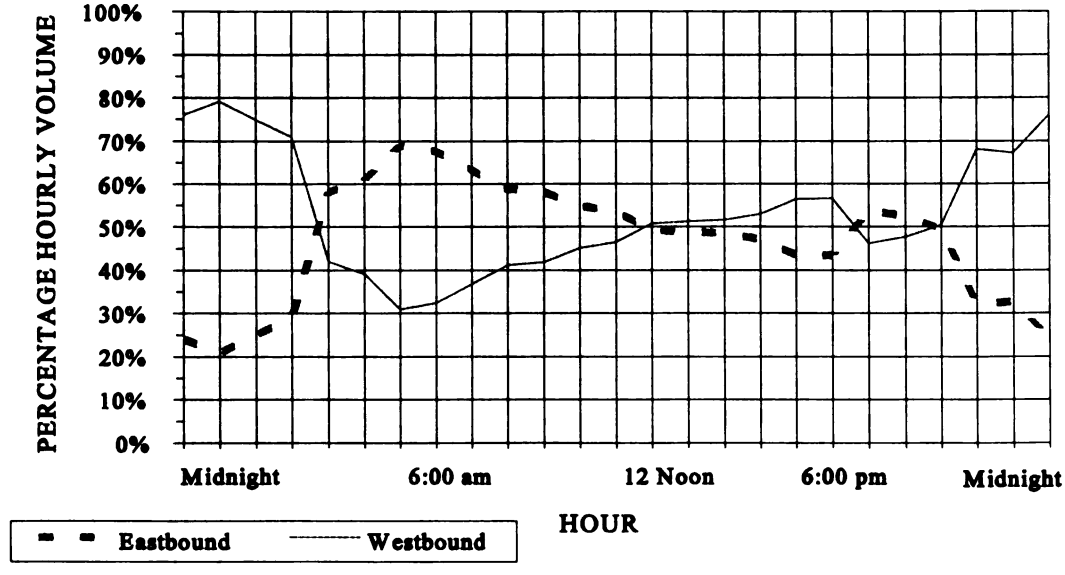


Figure I-8
Directional Distribution--Summer 1993
State Highway 82 East of Cemetery Lane



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2. Future Traffic

Traffic on State Highway 82 has increased consistently in the past as development has increased and more people visit the Aspen area. Historically, traffic has grown at an annual rate of 4.4 percent since 1980. Given the high level of existing congestion on State Highway 82, it is important to consider how land use decisions, both within and beyond the study corridor, will impact future travel demand and future traffic.

2a. Future Traffic Volumes

Part of this EIS process includes the development of a transportation demand model. The model uses data from both summer and winter origin and destination surveys to forecast the number of people making trips (person trips) in the Roaring Fork Valley. Using average vehicle occupancy (AVO) rates from the 1993 origin and destination surveys, the forecasted person trips are converted into forecasted vehicle trips or traffic demand on State Highway 82. The results of this model show that traffic demand on State Highway 82 across Castle Creek is expected to increase approximately 50 percent between 1994 and 2015 unless changes are made in trip-making behavior. This increase in traffic creates the need for transportation capacity improvements on State Highway 82.

2b. Future Traffic Operations

Currently, traffic is congested on State Highway 82 between the airport and Aspen for increasing periods of the peak seasons. As the traffic increases, the traffic operations on State Highway 82 are expected to get even worse. The existing highway reaches capacity at about 2,300 vehicles per hour (vph) at Cemetery Lane. For the No-Action Alternative, future traffic demand for 2015 high growth scenario at Cemetery Lane is forecasted to be 42,000 vehicles per day (vpd) during the summer and 36,400 vpd during the winter. With the afternoon peak hour accounting for 8.5 percent of daily traffic, the summer traffic demand would be 3,600 vph during the p.m. peak hour. The capacity of the existing highway would be extremely insufficient and would not handle the forecasted traffic demand during the p.m. peak hour. Even under the most ideal conditions[5], an improved two-lane, two-way highway reaches capacity at 2,800 vph. The existing highway would need to operate at capacity (LOS F) for 16 hours a day to process the summer demand of 42,000 vehicles. The LOS on State Highway 82 is expected to further deteriorate well below acceptable levels, for longer time periods, along the entire study corridor if steps are not taken to mitigate the increasing traffic congestion.

2c. Future Land Use

ISTEA clearly recognizes the strong correlation between land use and travel demand. While the City of Aspen and Pitkin County, through the adoption of the Aspen Area Community Plan, continue to promote affordable housing in close proximity to jobs and to manage the

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[5] Ideal conditions for a two-lane rural highway: design speed ≥60 mph, lane width ≥12 feet, clear shoulder width ≥6 feet, no "no passing zones," only passenger car vehicles, 50/50 directional split, level terrain, and no impediments to through traffic due to turning vehicles or traffic control.

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rate of development within their jurisdiction, large scale development continues throughout the State Highway 82 corridor. During 1994, in Carbondale alone, the town reviewed three new subdivisions, which at build-out, would result in an addition of 933 more housing units mid-valley. Garfield County has had five major residential subdivisions under consideration or in the preliminary building stages since 1994. Over 5,400 new dwelling units are currently in the approval stages for development in the Aspen to Parachute region. Several ski area expansions are currently underway at Burnt Mountain in Snowmass Village and at Aspen Highlands. These developments create additional travel demand and result in increased traffic. Additional bus service throughout the valley, the development of park and rides throughout the corridor, and other TM measures have helped manage the traffic resulting from the tremendous increase in residential units throughout the valley. However, the transportation model demonstrates that even with very aggressive measures to get vehicles off the road, the existing capacity of State Highway 82 needs to be upgraded to meet current travel demand.

E. SAFETY

1. Traffic Safety Characteristics

State Highway 82 between Buttermilk Ski Area and Aspen has had worse than average accident rates for more than 20 years. An evaluation of accident statistics is presented to demonstrate the extent of the safety problem.

Accident statistics for State Highway 82 from Buttermilk Ski Area to Aspen (intersection of 7th Street and Main Street) were compiled for three years from April 1, 1991 to March 31, 1994. A summary of this accident analysis by highway section is contained in Table I-3, along with average Colorado rural and urban accident rates for similar highways.

There were 113 total accidents between Buttermilk Ski Area and Aspen during the three-year period; 38 of these were injury accidents. Fifty of these accidents occurred between Cemetery Lane and the intersection of 7th Street and Main Street, including 12 injury accidents. Of these 50, 38 (over 1/3 of the 113 total accidents) occurred between the intersection of 8th Street and State Highway 82 and the intersection of 7th Street and Main Street (S-curves). No fatalities occurred during this three-year period. Many of the accidents that occurred at the S-curves were caused by a combination of poor weather conditions and substandard roadway design. The total accident rate for the Cemetery Lane to the intersection of 7th Street and Main Street is 4.48 accidents per million vehicle miles traveled (acc/MVM). This rate is 386 percent of the average rural Colorado rate of 1.16 acc/MVM and 149 percent of the average urban Colorado rate of 3.00 acc/MVM. State Highway 82 has been well above the average state accident rate in the past, and this trend is expected to worsen until appropriate transportation improvements are made.

Of the 113 total accidents between Buttermilk Ski Area and Aspen, five of these involved bicycles and one involved a pedestrian. The majority of the bicycle accidents (four out of five) took place at intersections. Four bicycle accidents occurred on the S-curves between 8th Street and the intersection of 7th Street and Main Street. The pedestrian accident occurred around the Aspen City Golf Course. Of these six accidents, there were five injuries and no fatalities.

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Table I-3
Aspen Entrance Accident Rates for Three Years
April 1, 1991 - March 31, 1994

Section	Section Length km (Miles)	Total Accidents	Accident Rate *	Injury Accidents	Inj Acc Rate *1	Property Damage Only	Prop Dmg Rate *
Buttermilk Ski Area to Maroon Creek Road	2.08 (1.29)	47	1.71	18	0.65	29	1.05
Maroon Creek Road to Cemetery Lane	0.48 (0.30)	16	1.9	8	0.95	8	0.95
Cemetery Lane to 7th/Main (S-Curves)	0.61 (0.38)	50[2]	4.48	12	1.08	38	3.41
STATEWIDE, 1992							
Federal-Aid Primary (Rural)	6,084 (3,781)	4,638	1.16	1,765	0.44	2,874	0.72
Federal-Aid Primary (Urban)	827 (514)	12,966	3.00	4,451	1.03	8,515	1.97

* *Total accidents, injury, and property damage rates are per million vehicle miles of travel. Aspen area rates are expressed as an annual average for three years.*

1 *This rate is for the number of injury accidents per million vehicle miles traveled, not the number of persons injured. Because there may be multiple injuries in accidents, the injury rate per person is higher.*

2 *Thirty-eight (75 percent) of these accidents occurred between 8th Street and the intersection of 7th Street and Main Street.*

2. Emergency Access

When the City of Aspen or Pitkin County experiences a situation that requires the movement of emergency vehicles on State Highway 82, these vehicles are often significantly delayed by traffic congestion. If State Highway 82 were to be closed, particularly at the Castle Creek Bridge, due to a hazardous material spill, a major traffic accident, or another significant event, emergency response could be completely jeopardized with no access into or out of Aspen.

In addition to public emergency response vehicles, numerous private vehicles must also use State Highway 82 for medical emergencies en route to Aspen Valley Hospital (located on Castle Creek Road). Traffic congestion and lack of alternate routes across Castle Creek create additional hardships for those with medical emergencies.

Although the need for improved access on State Highway 82 is clear for emergency access purposes, it is even more important to provide alternate access across Castle Creek. If an accident occurred on State Highway 82 at the Castle Creek Bridge, it would close the only crossing of Castle Creek enough to safely provide emergency access into and out of Aspen. Some traffic would be able to use the existing crossing under State Highway 82 on Power Plant Road, but this bridge across Castle Creek has load restrictions which would prevent some emergency vehicles from using this route.

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3. Roadway Deficiencies

Roadway deficiencies affect both the capacity and safety of State Highway 82. Geometric deficiencies on State Highway 82 include narrow shoulders, sharp curves (S-curves), lack of acceleration and deceleration lanes, and the presence of numerous private access points onto the highway. Access points represent traffic "conflict" locations and introduce the increased potential for accidents. These access points also reduce the capacity of the roadway and impact the traffic operations.

CDOT design standards for rural, noncurbed highways require a minimum of 3.0 meters (10 feet) of shoulder width for emergency parking. The average shoulder width for State Highway 82 between Buttermilk Ski Area and Cemetery Lane is 2.0 meters (6 feet). Sharp curves at 7th Street and Hallam Street and 7th Street and Main Street also pose a hazard to the motorist. CDOT design standards for low-speed urban arterials require a minimum horizontal radius of 46 meters (150 feet) at 40 kilometers per hour (km/h) (25 miles per hour [mph]). The existing S-curves have radii of 25 meters (80 feet), corresponding to safe speeds of less than 25 km/h (15 mph).

F. ECONOMIC CONDITIONS

The economy of the Aspen area is primarily based on tourism and related commerce. A critical element of providing service to visitors and guests is the provision of adequate transportation facilities. These transportation facilities are needed not only to improve access to the Aspen area, but also to sustain economic conditions. Also, the current transportation system is critical for workers who serve the tourist industry. Limited access to the City of Aspen creates traffic delay which results in greater shipping supply costs and worker costs. The quality of life for residents and visitors will be compromised due to delay, noise, and other impacts generated by the congestion of State Highway 82.

The need for adequate transportation facilities is evidenced by the high level of interest in transportation issues and the willingness of both City of Aspen voters and Pitkin County voters to pass sales tax increases to fund transportation services and improvements.

Improvements in transportation systems are instruments of economic sustainability in recreational areas. Examples include the development of Summit and Eagle Counties on the western slope of Colorado after construction of the Eisenhower Tunnel on Interstate 70 and the significant increase in skier visits experienced by Steamboat Springs when commercial air service was added to the Steamboat regional airport.

Annual population growth continues in the Aspen area at an estimated rate exceeding 2.5 percent. Economic vitality at this rate of growth can only be sustained by providing adequate transportation service to the community. Improvements to the transportation system are essential to provide this type of service. The purpose of this project is to identify the best combination of transportation services that meet the project objectives and Aspen's growth plan.

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II. Alternatives

A. INTRODUCTION

This chapter of the ***State Highway 82 Entrance to Aspen Final Environmental Impact Statement (FEIS)*** presents the alternatives evaluated during the Environmental Impact Statement (EIS) process for this project. The alternatives in the FEIS are carried forward from the August 1995 ***State Highway 82 Entrance to Aspen Draft Environmental Impact Statement (DEIS)*** and the July 1996 ***State Highway 82 Entrance to Aspen Draft Supplemental Environmental Impact Statement (DSEIS)***. The DEIS and the DSEIS generated public response that led to the development of several new alternatives including the Preferred Alternative. The Preferred Alternative combines highway improvements, light rail transit (LRT), multimodal facilities, and the Incremental Transportation Management (TM) Program to provide a transportation solution for the Entrance to Aspen.

The Preferred Alternative consists of side-running LRT (tracks located to the side of the highway lanes) from Pitkin County Airport to the intersection of 7th Street and Main Street. The LRT is center-running (tracks located in the center of the highway lanes) on Main Street between 7th Street and Monarch Street. On Monarch Street and Durant Avenue the LRT is side-running along the east and north sides of those streets, respectively. The LRT line also extends to the LRT Maintenance Facility on the west end; however, this segment is used to move vehicles between the Airport Terminal LRT Station and the LRT Maintenance Facility and is not part of the LRT service line.

Major highway improvements include a two-lane highway with the addition of a landscaped median and slight realignments in some areas, a new Maroon Creek Bridge north of the existing bridge, a roundabout at Maroon Creek Road, and a realignment across the Marolt-Thomas Property. The Preferred Alternative is discussed in greater detail in **Section II.C. Preferred Alternative.**

The alternatives in the FEIS were evaluated under a screening analysis consisting of three levels. The screening levels were used to eliminate unrealistic or unreasonable alternatives, alternatives that do not meet the project objectives, and alternatives that are not appropriate when compared to other possible alternatives. Several of the alternatives were eliminated because of a lack of public support. The screening analysis is presented in more detail in **Section II.B.1. Screening Analysis Summary.**

The goal of this EIS is to evaluate reasonable alternatives that are supported by the community, address the purpose and need of the project, and respond to the project objectives stated in **Chapter I. Purpose and Need.** Ultimately, the solution to the Entrance to Aspen transportation problem must also be compatible with the long-term needs in the Roaring Fork Valley. This solution must incorporate a combination of transit and highway improvements, control of traffic growth (transportation management), and increased transit use.

The Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA) have chosen the Preferred Alternative because it best meets the local communities needs and desires, fulfills the project objectives, and provides flexibility in future design decisions. A short description of how the Preferred Alternative meets the project objectives, need, and intent follows.

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Community Based Planning. The Preferred Alternative has been developed through an extensive and continuous public involvement process with both local citizens and elected officials. The adoption of the Incremental TM Program as an integral part of the Preferred Alternative provides for the goal of limiting future vehicle trips to existing levels while providing flexibility in the adoption of stronger incentives and disincentives.

Transportation Capacity. With the incorporation of the Incremental TM Program the Preferred Alternative will provide for future transportation capacity. Though the highway system will operate under congestion, this congestion is considered part of the disincentive for single occupancy vehicle (SOV) travel and will increase transit usage. This objective sets the goal of limiting year 2015 traffic volumes to levels at or below those in 1994. However, throughout this document the traffic volumes are referred to as levels at or below these in 1993. Levels are set at 1993 because the traffic model for the Entrance to Aspen EIS is based on 1993 traffic volumes. The difference between 1993 and 1994 traffic volumes is minimal.

Safety. The removal of non-local traffic from the substandard S-curves and the addition of a landscape median separating inbound and outbound traffic will reduce the high accident rate on State Highway 82.

Environmentally Sound Alternative. The Preferred Alternative avoids, minimizes, and mitigates adverse environmental impacts. The Preferred Alternative exceeds the requirements of the Clean Air Act Amendments (CAAA) and is one of the least harmful alternatives evaluated in the EIS. The Preferred Alternative mitigates the Section 4(f) resources impacts with the cut and cover tunnel, relocates all trails that are impacted, avoids impacts to the Holden Smelting and Milling Complex, and compensates for impacts by returning some existing highway right-of-way to the City of Aspen.

Community Acceptability. The Preferred Alternative reflects the agreements reached to date between the communities while accommodating future decisions based on local discussions and elections.

Financial Limitations. The Preferred Alternative is financially realistic, sensible, and responsible with respect to the current and expected funding levels and programs as determined by the City of Aspen, CDOT, and Pitkin County.

Clean Air Act Requirements. The Preferred Alternative exceeds the requirements of the CAAA.

Emergency Access. The Preferred Alternative improves emergency access by providing an additional bridge across Castle Creek. The existing State Highway 82 right-of-way could be used as an emergency access route to and from the existing bridge if the new bridge becomes inaccessible.

Liveable Communities. The Preferred Alternative is consistent with the goals of maintaining a small town character and enhances the quality of life for the residences and visitors by

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limiting vehicle traffic to existing levels. The provision of an improved, efficient LRT system further enhances the livability and mobility of the community.

Phasing. The Aspen community has long expressed a desire for the high quality transit system that is included in the Preferred Alternative. The ultimate goal of the Roaring Fork Valley is to develop a fixed guideway system that connects Glenwood Springs to Aspen. The Entrance to Aspen LRT system may be the first step towards a realization of this goal.

The Preferred Alternative fulfills the agreed-upon project need and intent statements in the following manner:

- In concert with the Incremental TM Program, the Preferred Alternative provides the needed person trip capacity for all foreseeable growth in the number of trips to and from Aspen. This is accomplished through highway improvements combined with a safe, high-quality, fast, and frequent transit system that will enhance the visitor's experience, expedite commuting, and preserve the residents' quality of life.
- It is a balanced transportation system that integrates highway, transit, and transportation management solutions to reduce congestion and pollution.
- It reflects the character and scale of the Aspen community by minimizing the number and width of the needed highway lanes while meeting person trip capacity needs with an LRT system.
- It is responsive to community-based planning in fully considering community, elected official, and staff comments and concerns. The Preferred Alternative was initially conceived during the public comment period following the release of the DEIS. The Preferred Alternative has the least impact on open space, historic structures, and residences. Impacts can be mitigated through a commitment to design excellence and high-quality construction materials and methods.
- It is a flexible system designed to meet both the short- and long-term goals of community compatibility, safety, environmental preservation, clean air, quality of life, and transportation capacity.
- It is entirely consistent with the Aspen, Snowmass Village, and Pitkin County goal of limiting traffic in year 2015 to levels at or below existing levels. The Preferred Alternative's proactive approach of integrating an attractive, high quality transit system with a goal-responsive package of adjustable transportation demand management measures offers an opportunity for the Aspen community to reduce the attractiveness of the personal auto while fully accommodating the mobility needs of residents, guests, and commuters.

The ultimate long-term solution, in addition to the Glenwood to Aspen fixed guideway system, is an improved Aspen to Snowmass connection, multimodal centers in the upper valley, and transportation management programs. A gondola connection between Snowmass and Buttermilk Ski Area has been identified as a potential element in the overall solution. Although a gondola is not part of the Preferred Alternative, it should be considered as part of the overall transportation solution to the Roaring Fork Valley. A well-designed multimodal facility at Buttermilk Ski Area that

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incorporates a gondola connection will provide a critical linkage to Snowmass and aid in removing some of the congestion on State Highway 82.

Several of the alternatives evaluated during the EIS process including the Preferred Alternative, were based on the use of TM measures to maintain existing (1993) traffic volumes in the year 2015. These TM measures (see **Chapter III: System Management**) would be implemented by the local communities in cooperation with CDOT. The TM measures, combined with transit improvements and other incentives to use transit, are a key element in maintaining future traffic volumes at existing levels.

This chapter reviews the alternatives developed for this project and the process by which each alternative was evaluated for further consideration or eliminated from consideration. Ultimately, this chapter presents the Preferred Alternative as developed by CDOT and the cooperating agencies. Throughout the EIS process, the Elected Officials Transportation Committee (EOTC), FHWA, and CDOT have been working together to develop the Preferred Alternative for the State Highway 82 Entrance to Aspen Project. Each of these agencies has a significant role in planning, designing, and implementing the Preferred Alternative. The agencies have reached agreement on the majority of the issues surrounding the Preferred Alternative, while recognizing that design decisions and issues cannot be resolved until the preliminary and final design stages of the project (the EIS is the project development stage).

It is CDOT's and FHWA's obligation to propose an approach for public discussion that resolves the transportation problem, reflects local values, and is reasonable, sensible, and responsible. This approach recognizes the need to create a balance between specific conflicting issues. The Preferred Alternative incorporates this balance by accepting the potential for induced growth in certain areas to create better linkages to the transportation system and creating new parking in undisturbed areas to support the policy of maintaining existing (1993) traffic levels.

The following sections of this chapter outline the process followed to identify the Preferred Alternative. The Preferred Alternative is described in detail including the alignment, multimodal facilities, LRT stations, cross sections, other roadway connections, capital costs, and operation and maintenance costs.

B. ALTERNATIVES EVALUATED

1. Screening Analysis Summary

To narrow the multitude of transportation options, a screening process was used to determine which alternatives were to be evaluated in the Entrance to Aspen EIS. The screening process applies progressively more demanding criteria to the range of potential options through a series of three screening levels. At each screening level, options that do not meet the respective criteria for that screening level are eliminated from further evaluation. Transportation options that are screened are categorized into four general types: potential alignments, potential laneage, potential profiles, and potential travel modes. Following the first two screenings, the options that remain are combined to create the transportation alternatives. A full documentation of the screening process is available in

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the technical report entitled ***State Highway 82 Entrance to Aspen Alternatives Screening Analysis (DEIS)***, and the technical memorandum to the DSEIS entitled ***Entrance to Aspen DSEIS Alternatives Screening Report.***

The first screening level is the reality check screening which eliminates options that are clearly unrealistic, inappropriate, or unreasonable by applying common knowledge. This screening is qualitative. The potential option types that are eliminated at this level have no realistic chance of being implemented because of physical constraints, funding, technology limitations, or impacts on private property.

The second screening level is the fatal flaw screening that eliminates options that clearly do not meet one or more of the ten project objectives (see **Chapter I. Purpose and Need**). Although the options eliminated at this level may seem conceivable, they do not solve the transportation problems and concerns identified for the Entrance to Aspen transportation corridor.

The third screening level is the comparative screening that eliminates options that, although they may meet the objectives of the project, are not logical when compared to the other available options. At this level, the four general option categories are combined to form potential alternatives that allow for a comparative analysis. That is, a specific alignment is combined with a specific profile and laneage to develop cost estimates and amount of right-of-way acquisition for comparative purposes. Transportation options evaluated at the comparative screening level undergo analysis of key environmental parameters and issues (cost, safety, open space/Section 4(f) issues, and community acceptability).

2. Options Eliminated from Consideration

Figures II-1 to II-3a chart the elimination of options at each screening level (reality check, fatal flaw, comparative) for potential alignment, laneage, profile, and travel mode options. The following paragraphs document the level where options were screened out and briefly describe the reasons for elimination.

2a. Reality Check Screening

The following are screened out as unrealistic and unacceptable options for the Entrance to Aspen project corridor (Figure II-1):

- The Denver & Rio Grande Western (D&RGW) Right-of-Way alignment.
- Alignments west of Maroon Creek Road other than the existing alignment.
- An elevated roadway structure profile.
- Tunnel profiles greater than 215 meters (700 feet) long.
- Unproven transportation technologies.
- Personal Rapid Transit (PRT) systems technology.

2b. Fatal Flaw Screening

Options surviving the reality check screening are evaluated against the project objectives and checked for fatal flaws. An option screened out at this level indicates that it does not meet one or more of the project objectives. The following options are eliminated at the fatal flaw screening level (Figure II-2):

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Figure II-1
Reality Check Screening

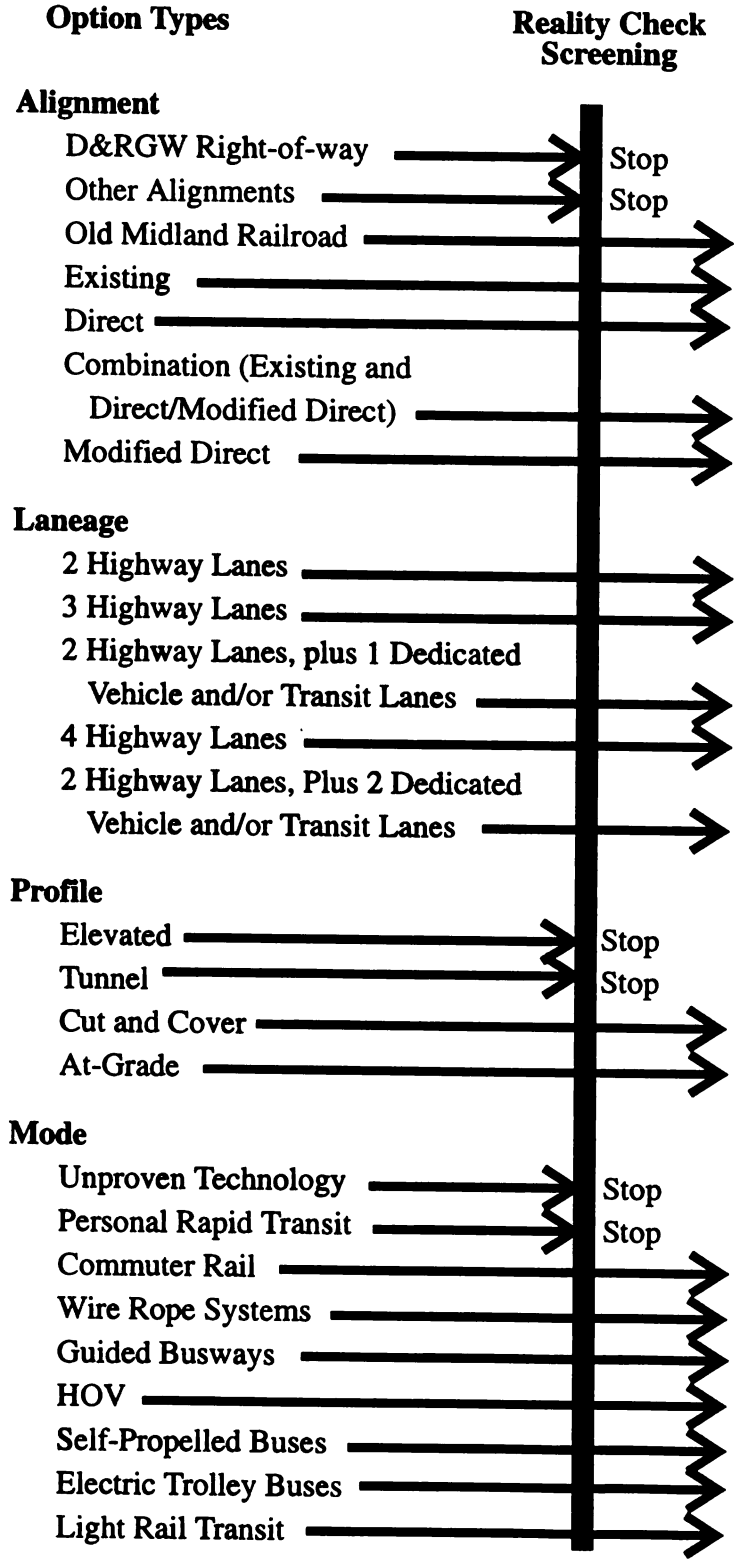

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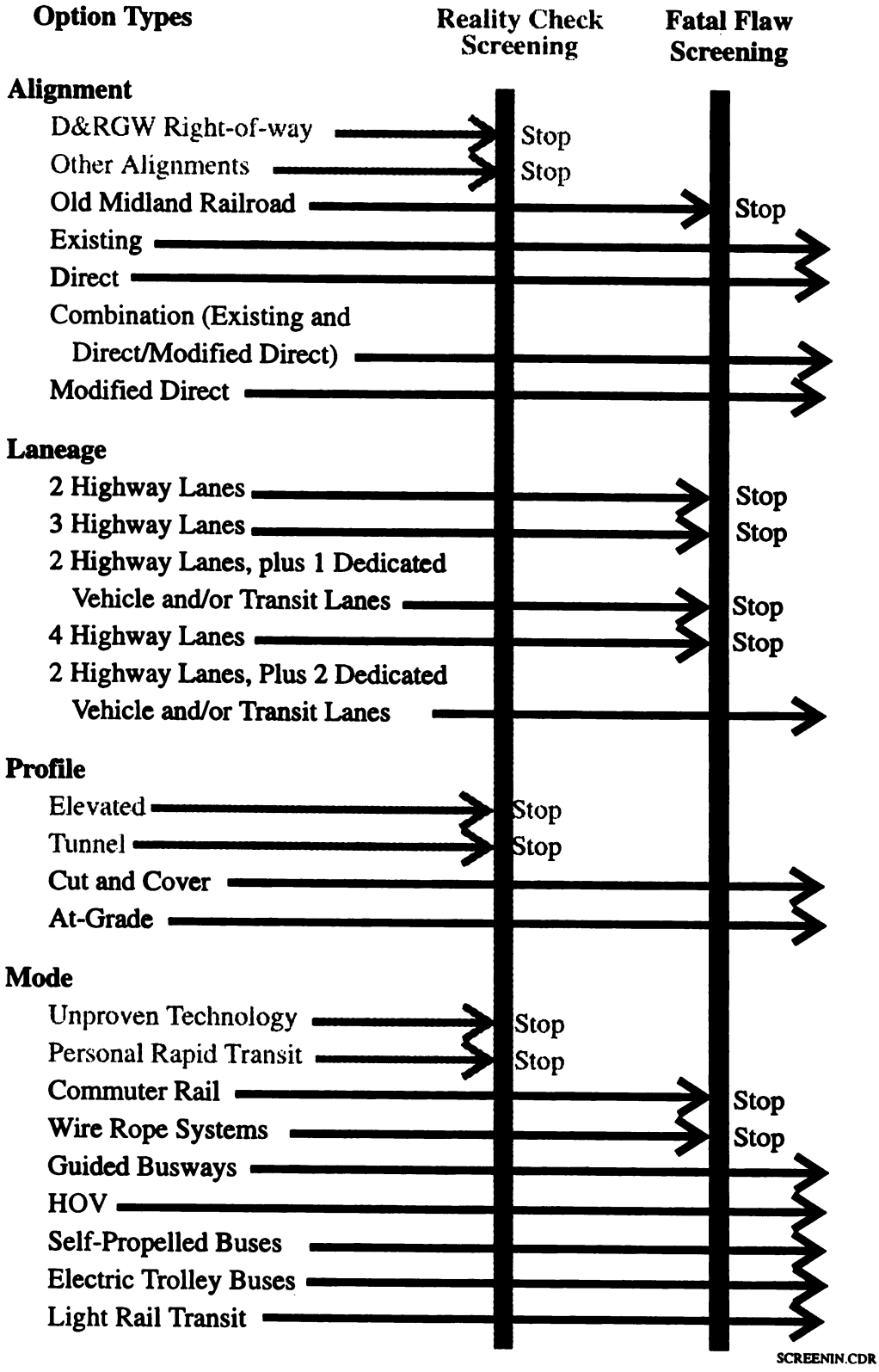
Figure II-2
Fatal Flaw Screening



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Old Colorado Midland Railroad Alignment Along Shadow Mountain

This alignment is not within an existing transportation corridor and would require extensive disruption to existing residential areas along Shadow Mountain and within the Aspen downtown area. The Midland alignment is eliminated because of financial constraints (excessive mitigation and property acquisition costs) and the negative impacts on the surrounding community. Additionally, as a transit alignment, the Midland corridor is not adjacent to major destinations in Aspen and would not attract the ridership necessary for proper function of the transit system since it would not provide the necessary station opportunities between 7th Street and Rubey Park. It would also pass through two city-owned parcels of open space, necessitating both a vote and a federal determination that no prudent and feasible alternative exists. Finally, the Midland alignment would not reduce the number of buses on Main Street to the extent that a Main Street LRT alignment would, nor would it help to revitalize Main Street as a business corridor.

Two Highway Lanes

This laneage option is screened out because, by itself, it does not meet the capacity requirements for future traffic demand. Only if TM Programs and significant transit improvements are implemented does this option meet the capacity screening criteria. The two-lane option on the existing alignment also does not meet the emergency access objective. By itself, the two-lane highway option also does not provide for future transit options and upgrades that are part of Aspen's Community Plan.

Three Highway Lanes

Because the peak-hour distribution of the highway is approximately 50/50, a reversible lane would not provide the needed future traffic capacity for both directions of State Highway 82. This laneage option does not meet the phasing objective and would likely be unacceptable to the community because of the large number of signs required to safely implement and regulate the reversible lane.

Two Highway Lanes and One Dedicated Vehicle and/or Transit Lane

This laneage option is eliminated for the same reasons the three-lane highway option was eliminated.

Four Highway Lanes

This laneage option does not provide the incentive for transit or carpool use that is essential if the traffic growth on State Highway 82 is to be controlled. Four lanes of unrestricted traffic is not consistent with community-based planning goals. Discontinuing the bus/HOV lane (established by the ***State Highway 82 East of Basalt to Buttermilk Ski Area Final Environmental Impact Statement*** [BBFEIS]) at the Buttermilk Ski Area would be disruptive to the efficient movement of traffic into Aspen. The benefits of the bus/HOV lane and the integrity of the transportation system would be lost at this location.

Commuter Rail

Commuter rail is a mode that requires a fixed-guideway system and a separate right-of-way. A typical commuter rail system consists of one locomotive train car and several passenger

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train cars. Because of the inability of commuter rail to operate efficiently in mixed-flow traffic conditions, this mode option does not meet the capacity objective or the limited resources objective. Also, diesel locomotives entering the City of Aspen are not consistent with local planning objectives and community character. However, commuter rail may be a valleywide solution and should not be precluded from future consideration.

Wire Rope Systems

Wire rope systems are similar to gondolas and chair-lift systems, requiring overhead cables and pole supports. The capacity and trips that can be served by this technology are limited. This mode is screened out because it is not acceptable to the EOTC as an in-town transit system visually, operationally, or financially.

2c. Comparative Screening

At this screening level, options that passed the fatal flaw analysis are compared against each other to determine the most reasonable alternatives for full evaluation. The options passing the fatal flaw screening are combined to develop alternatives for comparison. The comparison is made using five factors that affect the options: operations, cost, safety, environmental considerations, and community acceptability.

The remaining alignment options for comparison are listed below. Each option generally follows the existing alignment between Buttermilk Ski Area and Maroon Creek Road. The differences occur between Maroon Creek Road and 7th Street and Main Street.

- Existing — This alignment follows the existing State Highway 82 alignment.
- Direct — This alignment provides a direct connection between Maroon Creek Road and State Highway 82 across the Marolt-Thomas Property. The alignment first follows the Old Midland right-of-way, then curves across the Marolt-Thomas Property and connects with 7th Street and Main Street.
- Modified Direct — This alignment is a variation on the Direct alignment. Instead of following the Old Midland grade, this alignment continues on existing State Highway 82 to a point approximately halfway between Maroon Creek Road and Cemetery Lane. It then turns southeast to cross the Marolt-Thomas Property, and finally east to connect with 7th Street and Main Street.
- Combination — This couplet alignment is a combination of the existing and Direct/Modified Direct options. Westbound traffic uses the existing alignment, while eastbound traffic uses the Direct/Modified Direct alignment.

These remaining alignment options for comparison are combined with the remaining laneage option and evaluated as either at-grade across the Marolt-Thomas Property or as a depressed

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cut and cover tunnel. The only remaining laneage option consists of two general highway lanes and two dedicated vehicle and/or transit lanes. The two general highway lanes are unrestricted and available for use by any visitor or commuter with any vehicle occupancy. The two dedicated vehicle and/or transit lanes are reserved strictly for use by the mode and technology options surviving the screening process. This laneage option is assumed for all alternatives in the comparative screening.

The remaining profile options are the at-grade and the cut and cover tunnel. With the at-grade option, the roadway follows the vertical profile of the existing landscape to the extent possible. The cut and cover tunnel option drops the roadway below the surface of the existing landscape and into a short tunnel approximately 122 meters (400 feet) long. The cut and cover tunnel option is combined with only the direct and modified direct alignments in the comparative evaluation.

The comparative screening analysis of the alignment, profile, and laneage combinations eliminated the following options (Figure II-3a):

Existing

The existing alignment between Maroon Creek Road and the intersection of 7th Street and Main Street is screened out on the basis of safety and community acceptability issues as compared to other alignment options. The safety of State Highway 82 is not significantly improved because of the existence of the S-curves. Compared to the alignments across the Marolt-Thomas Property, the S-curves are expected to have a higher accident rate even with improvements to the roadway. The existing alignment also does not address the need for an alternative emergency access route in and out of Aspen. In a public survey of alignment preferences (September 1994 Public Open House), the existing alignment was chosen as the least favorable in comparison to other alignments.

Direct Connection

The cost and safety issues of the direct alignment are similar to those of the modified direct alignment. Both alignments have impact on the Marolt open space property and the Thomas property acquired by the City of Aspen for transportation purposes. The direct alignment bisects the Marolt-Thomas Property and impacts several key open space areas, including the community garden and the landing field for hang-gliders. These areas are not affected by the modified direct alignment. Additionally, the direct alignment does not have the community acceptability of the modified direct alignment. A survey conducted in fall 1994 indicated that the most desired alignment between the two was the modified direct alignment.

Because of the more significant impacts to open space (as compared to the modified direct alignment) and the lack of community support, the direct alignment is not carried forward for additional evaluation in the DEIS.

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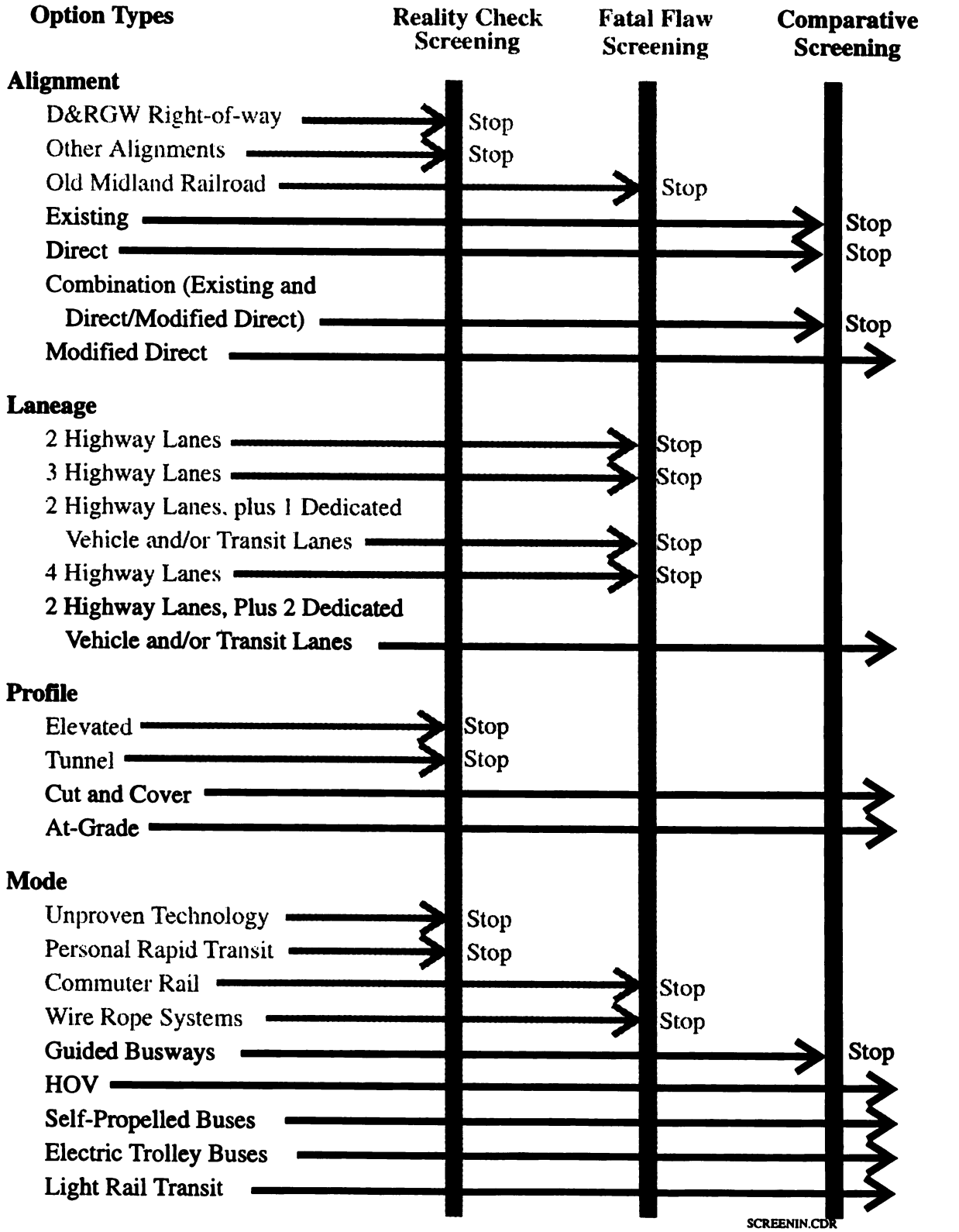
Figure II-3a
Comparative Screening



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Combination (Existing plus Direct/Modified Direct)

The couplet (one-way pair) and the split alignment (two-way pair) are both defined as a combination of the existing alignment and either the direct or modified direct alignments. Traffic flow on the couplet is one way to the west on the existing alignment and in the opposite direction on the Marolt-Thomas alignment. The couplet creates significant operational problems for Cemetery Lane traffic wanting to head east on State Highway 82. This traffic must first head west on State Highway 82 and U-turn where the two one-way roads merge together into a two-way road. This creates a dangerous turning movement on a highway facility. The split alignment, or two-way pair, is similar to the geometry of the couplet, but the traffic on both the existing and Marolt-Thomas alignments flows two ways. This creates significant operational problems where the direct/modified direct alignment and the existing alignment separate and at the intersection of 7th Street and Main Street where the two alignments come back together. With the split alignment, general traffic is restricted to the existing alignment between Maroon Creek Road and Main Street. The dedicated vehicle and/or transit traffic is routed across the Marolt-Thomas Property. Operational problems occur when traffic must be separated and directed into appropriate lanes at the intersection of 7th Street and Main Street.

Guided Buses (O-Bahn)

The guided bus system operates in a U-shaped concrete track that guides the bus without help from the driver. The driver controls the speed and deceleration of the bus. This option was evaluated in more detail during the Aspen to Snowmass Transportation Project. The guided busway has a relatively high cost when compared to the self-propelled bus and electric trolley bus technologies. Increased maintenance requirements, including the problem of snow accumulation in the track and the maintenance of the track itself, are other concerns about this mode. As a long-term planning option, the use of the concrete tracks for a guided busway eliminates the possibility of using the lane for dedicated vehicles and/or transit use. This option is screened out based on the project objectives and key issues (cost, maintenance, and community acceptability) in comparison to other options.

2d. Alternatives Eliminated After Full Evaluation

Additional analysis was conducted to determine the most appropriate and supportable transportation solution for the Aspen area. Alternatives passing the comparative screening analysis were brought into the EIS process for full evaluation. At the request of the EOTC, several alternatives that were screened out were also carried into the full evaluation. The alternatives listed in this section were eliminated from further consideration after the full evaluation in the DEIS and the DSEIS.

Alternatives in the DEIS

Table II-1 summarizes the alternatives evaluated in the DEIS. Initially, the alternatives in the DEIS were separated into two corridor sections. Alternative 1 (the No-Action Alternative) and Alternatives 2 and 3 were the Buttermilk Ski Area to Maroon Creek Road corridor section. These alternatives generally follow the existing alignment to a point just west of the Maroon Creek Bridge. At this location, the highway is realigned north of the old bridge to a new bridge crossing Maroon Creek. The alignment ties back into the existing

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alignment near the golf course and follows the existing alignment to Maroon Creek Road. The difference between Alternative 2 and 3 is the separate transit envelope provided in Alternative 3.

Table II-1
Alternatives in the DEIS

Corridor Section	*Number/Letter*		*Alternative*
Buttermilk Ski Area to Maroon Creek Road		1	No-Action
	*	2	Existing Alignment
	*	3	Existing Alignment with Separate Transit Envelope
Maroon Creek Road to 7th Street and Main Street		A	No-Action
	*	B	Existing Alignment
	*	C	Modified Direct Alignment, At-Grade
	*	D	Modified Direct Alignment, At-Grade, with Separate Transit Envelope
	*	E	Modified Direct, Cut and Cover Tunnel
	*	F	Modified Direct, Cut and Cover Tunnel, with Separate Transit Envelope
	**	G	Two Improved Lanes on the Existing Alignment and Transitway on the Modified Direct Alignment, At-Grade

* *These alternatives consist of two general highway lanes and two dedicated vehicle and/or transit lanes.*

** *The transitway for Alternative G is for transit vehicles only and does not include carpools.*

Alternative A (the No-Action Alternative) and Alternatives B, C, D, E, F, and G are in the Maroon Creek Road to 7th Street and Main Street corridor section. Alternatives C, D, E, and F follow the modified direct alignment across the Marolt-Thomas Property. Additionally, Alternatives E and F consist of a cut and cover tunnel section and Alternatives D and F include a separate transit envelope. Alternative B follows the existing alignment and Alternative G follows the couplet alignment.

All alternatives in the DEIS include two general highway lanes and two dedicated vehicle and/or transit lanes. The exception is Alternative G, which does not include the use of carpools in the dedicated vehicle and/or transit lanes. The mode options for the DEIS

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alternatives include self-propelled buses, electric trolley buses, high occupancy vehicles, and light rail transit.

Community support is a major factor in the EIS process. The alternatives in the DEIS are eliminated from further consideration because of a lack of support from the community and the EOTC. The laneage option for the DEIS alternatives provides two dedicated vehicle and/or transit lanes for any of the mode options, including light rail. Although the DEIS alternatives consider the future operations of light rail, they do not provide a detailed analysis a light rail system. The consensus of the community and the EOTC was that further analysis into a light rail system was necessary. The absence of a detailed light rail analysis contributed to the elimination of the DEIS alternatives.

Alternatives in the DSEIS

After the release of the DEIS, the Aspen City Council presented a new alternative (interim Alternative H) for evaluation. The concept of this alternative developed four separate alternatives for full evaluation in a Draft Supplemental EIS (DSEIS). The four alternatives include light rail as the ultimate transit system in the project corridor. Because of the extent of the light rail system, the EIS project corridor extends west to include the airport area and extends east to Main Street and Rubey Park in Aspen. Table II-2 summarizes the alternatives in the DSEIS.

Table II-2
Alternatives in the DSEIS

Alternative	*Description*
Alternative H	No Phasing, Couplet Alignment, At-Grade
Modified Direct	No Phasing, Modified Direct Alignment, Cut and Cover Tunnel
Phased Alternative H	First Phase Bus, Couplet Alignment, At-Grade
Phased Modified Direct	First Phase Bus, Modified Direct Alignment, Cut and Cover Tunnel

The Modified Direct and the Phased Modified Direct alternatives consist of the modified direct alignment with a cut and cover tunnel. Alternative H and Phased Alternative H consist of a couplet alignment. The two-phased DSEIS alternatives include the option to initially develop the system as phased exclusive bus lanes if local support and/or funding is not available for the LRT system.

The phased approach to light rail evaluated in the DSEIS is eliminated from further consideration because of a lack of support from the community and the Aspen City Council. The phased approach adds costs and unnecessary disruption to the Section 4(f) resources when compared to the non-phased approach. Additionally, the couplet alignment (Alternative H) in the DSEIS was originally screened out of consideration in the comparative

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screening analysis. It is eliminated from further consideration on the basis of the original screening process.

The modified direct alignment, light rail alternative with a cut and cover tunnel and no phasing is the basis for the Preferred Alternative. The Preferred Alternative, a modification of the remaining DSEIS alternative (the Modified Direct), is discussed in **Section II.C. Preferred Alternative.**

Options Evaluated in the FEIS

Several options are evaluated in the process of creating the Preferred Alternative. The options include single-track or double-track LRT, the location of the LRT right-of-way (center-running or side-running), Maroon Creek Bridge options, Maroon Creek Road intersection options, 7th Street and Main Street intersection options, LRT on Garmisch Street or Monarch Street, and lowering the vertical profile near 8th Street.

Single-track or double-track LRT

Two options are considered for the LRT alignment. The options are single-track or double-track. The Preferred Alternative is the double-track scenario due to greater flexibility of the system (schedule changes, etc.). The single-track scenario allows less flexibility in scheduling headway than the double track scenario. Under the single-track scenario, if schedules fall behind, trains may have to wait at a double-track section for an oncoming train to pass. However, the opportunity exists for the LRT line to open under the single-track scenario and expand to double-track if necessary. The capital construction cost for the double-track scenario is about $35.3 million. The capital construction cost for the single-track scenario is about $32.7 million.

Under the double-track scenario, the LRT line is double-track except in the following locations, which are single-track:

- LRT Maintenance Facility to the airport
- Maroon Creek Bridge
- A point just west of the cut and cover tunnel to the intersection of 7th Street and Main Street
- 7th Street LRT Station
- 3rd Street LRT Station
- Intersection of Monarch Street and Main Street to Rubey Park

Under the single-track scenario, the LRT line is single-track with double-track sections only where essential to maintain proper headways between trains. These double-track locations are identified as places where LRT trains moving in opposite directions meet. The passing sections need to be about 120 meters (400 feet) long. The essential double-track areas for 15 minute and 30 minute headways are:

- Airport Terminal LRT Station
- Just west of Maroon Creek Bridge
- Just west of the cut and cover tunnel
- Main Street west of the 3rd Street LRT Station
- Rubey Park LRT Station

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Center-running or Side-running LRT -- Two options are considered for the location of the LRT alignment in the State Highway 82 cross section. The options include the LRT in the center of the State Highway 82 median (center-running) or on the south side of State Highway 82 in a separate right-of-way (side-running). An alignment with the LRT on the north side of the highway was eliminated early in the process. The north-side alignment does not serve the transit-oriented destinations on the south side of the highway.

The LRT envelope for the center-running option is in the center of State Highway 82. This alignment allows unimpeded right-in, right-out access along the highway and requires fewer LRT crossing gates than a side-running alignment. Left-turning vehicles on the highway would be required to cross the LRT tracks at signalized intersections.

The side-running LRT alignment is in a separate right-of-way adjacent to the south side of the highway. This alignment provides better access to the LRT system for the transit destinations on the south side of State Highway 82. All accesses on the south side of the highway are either controlled with crossing gates or closed.

The Preferred Alternative consists of a south side-running alignment from the airport to the intersection of 7th Street and Main Street, because it serves the transit-oriented locations on the south side of State Highway 82. The center-running alignment is the Preferred Alternative on Main Street, because it has less of an impact on Main Street than the side-running alignment. However, a south side alignment is feasible with additional mitigation measures. Ultimately, the location of the LRT on Main Street is a decision to be made by the local community. Figure II-3b shows a potential south side LRT cross section on Main Street.

Table II-3 shows a more detailed comparison of the center-running alignment versus the side-running alignment on Main Street. The side-running alignment requires the closure of several streets and driveways on the south side of Main Street. These closures will hinder the practice of "perching" by tourists visiting Aspen in the summertime. "Perching" refers to the practice of summer tourists pulling off Main Street to check rates and availability of lodging. With the center-running alignment, the driveway accesses off Main Street do not need to be closed, although the accesses are right-in, right-out only. However, the side-running alignment provides better access to the north side of Main Street, allowing left turns at all intersections for inbound traffic.

Table II-3 also lists other issues related to the decision. The center-running option is generally safer than the side-running option. One of the main reasons is the "contra-flow" situation.

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Figure II-3b
Standard Section
Main Street - Potential South-side LRT Alignment

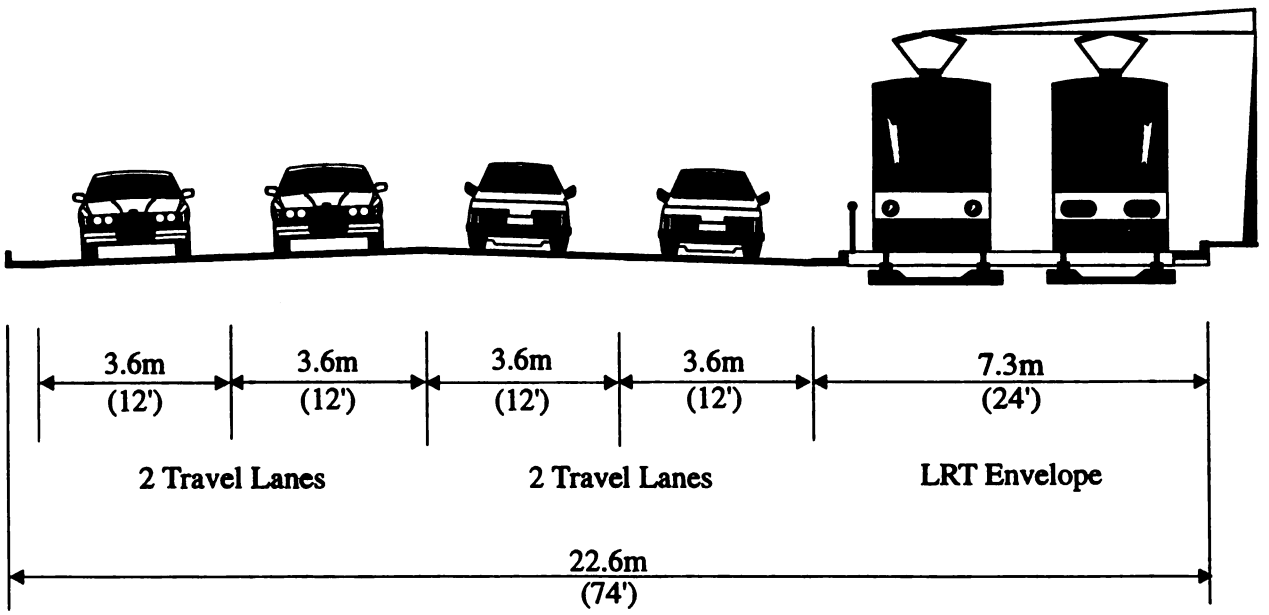

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Table II-3
Comparison of Center-Running LRT and Side-Running (South) LRT on Main Street

Issue	*Center-running LRT*			*Side-running (south) LRT*		
	Advantages	*Disadvantages*	*Possible Mitigation*	*Advantages*	*Disadvantages*	*Possible Mitigation*
Traffic Safety	• No "contra-flow operation" • Median in center separates opposing traffic	• More "pinch points" - areas where two tracks merge into one or one track becomes two • Left-turning vehicles must cross LRT tracks	• Limit left turns to signalized intersections	• Some right and left turns do not cross LRT tracks	• "Contra-flow" situation - see text • Opposing vehicle traffic not separated • Inbound traffic faces head lights on both sides	• Slightly raised median • Planted median
Pedestrian Safety	• LRT stations in center of Main Street, creates an island for pedestrians	• LRT station in center of Main Street; pedestrians from both sides of Main Street have to cross to center	• Limit crossings to signalized intersections	• LRT stations at curb: plenty of room for pedestrians to wait	• LRT stations at curb: have to cross four lanes of traffic if coming from the north side	• Limit crossings to signalized intersections
Turning Movements	• Allows right-in, right-out access at all intersections	• Left turns at signals only	-------	• Left turns allowed for inbound traffic	• May require gates on south side	-------
Street Closures	• Most side streets left open	• Cul-de-sac on south side of 7th • No left turns on 6th, 4th, 2nd, 1st	-------	• Left turn allowed for inbound traffic	• Cul-de-sac 7th, 6th, 4th, 2nd, 1st on south side	-------

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Table II-3
Comparison of Center-Running LRT and Side-Running (South) LRT on Main Street (cont.)

Issue	*Center-running LRT*			*Side-running (south) LRT*		
	Advantages	*Disadvantages*	*Possible Mitigation*	*Advantages*	*Disadvantages*	*Possible Mitigation*
Property Access	• Access maintained • "Off-peak" loading could be allowed • Allows "perching"	• Left turns at signals only	-------	-------	• 7 driveways impacted • "Perching" eliminated • More dwellings south than north, so more property impacts	• Possibly allow gated access
Tree Impacts	• Only if/where street widened	-------	• Vary sidewalk width to preserve some trees	-------	• South side trees need to be replaced	• Vary sidewalk width to preserve some trees
Snow Removal	-------	• Requires new procedure - only 2 lanes to work in	-------	• Can use current practice - 4 lanes to work with	-------	-------
Monarch Street Impacts	• Allows either west or east side alignment on Monarch	-------	-------	• Requires east side alignment on Monarch, one-way couplet on Monarch and Aspen	-------	-------

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The south side alignment creates a "contra-flow" situation on Main Street. Contra-flow means that LRT trains outbound on Main Street flow in an opposite direction to the inbound vehicle traffic. The expectancy of the driver is to have opposite-flowing traffic on the left side. The contra-flow situation violates this expectancy by placing the oncoming LRT on the right side of inbound traffic. This becomes even more of a problem at night when Main Street inbound vehicle traffic encounters headlights from both sides of the road.

The south side alignment places stations at the curb, which allows users to access LRT from the south side without having to cross Main Street, and allows cross-platform transfers to buses at 7th Street. In the center-running option, users from either side of Main Street must cross into the center to reach the stations.

The south side alignment causes the removal of trees that are greater than 25 centimeters (10 inches) in diameter and within 3 meters (10 feet) of Main Street. The depth of construction for the LRT impacts the root systems of the trees on the south side of Main Street. The proposed center-running LRT alignment does not interrupt the tree root systems on the south side of Main Street, because construction occurs in the center of Main Street.

The side-running alignment requires furnishings to prevent pedestrian/LRT conflicts. The furnishings may include a buffer zone with a post and chain between the LRT tracks and the sidewalk on the south side of Main Street. This type of furnishing helps to eliminate pedestrian crossings at unmarked locations.

Maroon Creek Bridge -- Four options are evaluated for the Maroon Creek crossing. The preferred option is side-running LRT with new highway bridge north of the existing bridge, LRT on existing bridge. The new bridge is on the north side of the historic existing bridge, and therefore does not impact the private properties on the south side. In addition, a retaining wall is constructed on the north side of the new bridge to preserve the existing Plum Tree Playing Field. For more information on this option, see the discussion of the Preferred Alternative in **Section II.C.1b. Buttermilk Ski Area to Golf Course.**

The other three options evaluated for the Maroon Creek crossing are:

1. *Center-running LRT with new bridge south of the existing bridge* -- In this option, the cross section includes a center-running LRT envelope. Both the highway and LRT cross Maroon Creek on a new bridge south of the existing bridge. This option is eliminated because of adverse impacts to private property, a lack of public support, and because the center-running LRT option was previously eliminated.

2. *Center-running LRT with a split bridge alignment* -- In this option, the center-running LRT tracks cross Maroon Creek on the existing bridge, westbound State Highway 82 crosses on a new bridge north of the existing bridge, and eastbound State Highway 82 crosses on a new bridge south of the existing bridge. This option is eliminated because it requires construction of two new bridges, impacts property on both the north and south sides of the existing bridge, and because the center-running LRT option was previously eliminated. In addition, the State Historic Preservation

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Officer (SHPO) has determined that constructing a new bridge on each side of the existing bridge is an adverse impact on the historic Maroon Creek Bridge.

3. *Side-running LRT with new bridge south of the existing bridge* -- In this option, the cross section includes a side-running LRT envelope adjacent to the south side of State Highway 82. Both the highway and LRT cross Maroon Creek on a new bridge south of the existing bridge. This option is eliminated because of unacceptable adverse impacts to private property and a lack of public support.

Maroon Creek Road - Four options are evaluated for the Maroon Creek Road intersection. The preferred option is a roundabout with side-running LRT. This roundabout operates well and experiences less delay than the signalized options. It also reduces the vehicle-LRT train conflict by moving the LRT tracks outside the roundabout. In addition, it provides a more direct link between Castle Creek Road and State Highway 82. For more information on this option, see **Section II.C.1c. Golf Course to 7th Street.**

The other three options evaluated for Maroon Creek Road are:

1. *Signalized with center-running LRT* -- This option maintains the existing signalized intersection with the addition of light rail and a second left turn lane in the westbound direction. Although this intersection has acceptable operation, delays are longer than for the roundabout options (see Table II-4). In addition, this option does not provide a direct link between Castle Creek Road and State Highway 82. Currently, the link between State Highway 82 and Castle Creek Road is via Maroon Creek Road. This indirect link creates traffic flow problems at the intersection of Maroon Creek Road and Castle Creek Road. These problems also affect the signal at Maroon Creek Road and State Highway 82. Part of the goal for this EIS is to develop solutions that will improve the operations of the State Highway 82 transportation system. This option does not fully address the problem of the Castle Creek Road, Maroon Creek Road, and State Highway 82 intersection.

2. *Signalized with side-running LRT* -- This option maintains the existing signalized intersection, with the addition of light rail and a second left turn lane in the westbound direction. Although this intersection has acceptable operation, delays are longer than for the roundabout options. In addition, this option does not provide a direct link between Castle Creek Road and State Highway 82.

3. *Roundabout with center-running LRT* -- In this option, an oval-shaped roundabout serves as the intersection of Maroon Creek Road, Castle Creek Road, and State Highway 82. Two different radii are necessary to achieve the oval shape. The smaller radii (21 meters [70 feet] inside, 30 meters [100 feet] outside) are for the tighter curves, while the larger radii (82 meters [270 feet] inside, 91 meters [300 feet] outside) are for the flatter curves. Two-lane entrances are provided from all directions, two-lane exits are provided onto eastbound and westbound State Highway 82, and one-lane exits are provided onto Maroon Creek Road and Castle Creek Road. Traffic in the roundabout circulates at 25 km/h (15 mph). The LRT tracks cross at-grade through the center of the roundabout.

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Table II-4
Maroon Creek Road Intersection Options
Approach Delay (Sec)

	Roundabout		*Signalized*	
Entrance Leg	*Center-running*	*Side-running*	*Center-running*	*Side-running*
Eastbound State Highway 82	0.7	1.5	12.8	18.8
Westbound State Highway 82	2.0	1.7	24.6	24.7
Maroon Creek Road	3.6	3.1	24.8	24.7
Castle Creek Road	3.5	2.8	N/A	N/A

Although this roundabout operates well and experiences shorter delays than the signalized options, it is eliminated in comparison to the roundabout with side-running LRT option. The side-running LRT option is preferred because it reduces the vehicle-LRT train conflict by moving the LRT tracks outside of the roundabout, and also because side-running LRT is determined to be the most desirable option between Buttermilk Ski Area and 7th Street.

Intersection of 7th Street and Main Street -- Two options are evaluated for the intersection of 7th Street and Main Street. The two options include a signal and a roundabout. The roundabout is eliminated because placing a well-designed roundabout at this intersection encroaches significantly on nearby properties

The preferred option is the signalized option. This option is the most feasible and does not significantly affect the surrounding property. **See Section II.C.1d. Main Street** for more information on this preferred option.

LRT on Garmisch Street -- Two options are evaluated for the LRT alignment between Main Street and Rubey Park. The options are placing the LRT alignment on Garmisch Street or placing the LRT alignment on Monarch Street. The preferred option is placing the LRT alignment on Monarch Street. Monarch Street is centrally located in downtown Aspen, which provides LRT access to more transit destinations than Garmisch Street. The Monarch Street alignment also impacts less property than Garmisch Street. In addition, Garmisch Street has a steeper grade than Monarch Street, which may cause operation and maintenance problems for the LRT during the winter season.

Lowering Profile near 8th Street -- In addition to the profile that is used for the Preferred Alternative, another profile is evaluated between the cut and cover tunnel and the intersection of 7th Street and Main Street. This option involves lowering the profile to reduce noise and

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visual impacts on surrounding structures. In this option, the profile is kept as low as possible across Castle Creek until it is required to come up to match existing ground at the intersection of 7th Street and Main Street. This option is not feasible because of the mitigation required. Under this option, retaining wall is required on both sides of State Highway 82 between Castle Creek Bridge and 7th Street. The retaining wall on the south side of State Highway 82 closes off the only access to the Berger Cabin from the highway and adversely impacts the Berger Cabin Property, which is not a feasible option.

C. PREFERRED ALTERNATIVE

The Preferred Alternative consists of many elements that work together to create the Entrance to Aspen solution. These elements include highway and transit improvements, TM, multimodal facilities, and intersection improvements. Each of these elements are discussed in more detail in the following sections. The cost of the Preferred Alternative is discussed in **Section II.C.5. Cost.** The costs include capital costs and operations and maintenance costs.

The highway component of the Preferred Alternative does not add additional laneage, therefore, the capacity of the highway will not change. However, the highway component of the Preferred Alternative includes the elimination of the existing S-curves, elimination of the State Highway 82 and Cemetery Lane intersection, and the introduction of a modern roundabout at the State Highway 82 and Maroon Creek Road intersection. These features, when combined with use of the transit system, will enhance the traffic flow and result in decreased travel times for vehicles entering and leaving Aspen.

The transportation improvements proposed as part of the Preferred Alternative address the important issues related to the Entrance to Aspen project and are generally in agreement with the Citizen's Light Rail Design Task Force. Exceptions are the location of LRT on Main Street and the length of the cut and cover tunnel on the Marolt-Thomas Property. The Preferred Alternative provides for the LRT in the center of Main Street and the Task Force recommended the south side. However, ultimately the location of the LRT on Main Street will be a decision made by the local community.

A strong Aspen to Snowmass connection is not part of the Preferred Alternative. However, this connection is an important part of the long-term transportation solution in the Roaring Fork Valley. One potential connection for this area is a gondola. This would provide a critical linkage and aid in easing some of the congestion on State Highway 82. Other possible connection methods are an improved bus or shuttle system, or a rail cog system.

1. Alignment

The Preferred Alternative consists of side-running LRT from the airport to 7th Street, on Monarch Street, and on Durant Street. It consists of center-running LRT on Main Street between 7th Street and Monarch Street . The LRT line also extends to the LRT Maintenance Facility on the west end; however, this segment is used to move vehicles between the Airport Terminal LRT Station and the LRT Maintenance Facility and is not part of the LRT service line. Major highway improvements

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include the addition of a median and slight realignments in some areas, a new Maroon Creek Bridge north of the existing bridge, and a roundabout at Maroon Creek Road.

The LRT system runs from the LRT Maintenance Facility near Service Center Road (existing milepost [MP] 37.2) to Rubey Park in downtown Aspen. The LRT line consists of double track except for the areas listed below, which consist of single track.

- LRT Maintenance Facility to the airport
- Maroon Creek Bridge
- A point just west of the cut and cover tunnel to the intersection of 7th Street and Main Street
- 7th Street LRT Station
- 3rd Street LRT Station
- Intersection of Monarch Street and Main Street to Rubey Park

This document is intended to provide environmental clearance for the maximum double track scenario. However, the ultimate decision on single and double track areas can be determined locally based on additional operational analysis, design, and engineering.

1a. LRT Maintenance Facility to Buttermilk Ski Area

The LRT system begins at a new LRT Maintenance Facility west of the Pitkin County Maintenance Facility and north of State Highway 82. The maintenance facility serves as the terminus for the line where LRT vehicles are stored and maintained. The facility is estimated to be about 2,320 square meters (25,000 square feet). Figure II-4 shows the approximate location of the maintenance facility and the alignment of the LRT between Service Center Road and a point west of the Buttermilk Ski Area.

A single track exits the LRT Maintenance Facility to the southeast. The right-of-way provided for single track is the same as for double track (15 meters [50 feet]) to allow for future expansion of the single track segments to double track, if necessary. The LRT continues southeast and crosses State Highway 82 at-grade. The LRT tracks at this point are used to move vehicles to and from the LRT Maintenance Facility in the early morning hours, so this crossing should not present a safety problem. However, the crossing will be gated. The crossing is southwest of the proposed Colorado Mountain College (CMC) and North Forty development. The opportunity exists for future construction of LRT stations that would serve these areas.

The LRT line becomes double-track just west of Baltic Avenue. It crosses Baltic Avenue just south of the signalized intersection with State Highway 82. The LRT alignment curves eastward into the Airport Terminal LRT Station and multimodal facility, staying on the north side of Airport Road to provide service to the Aspen Airport Business Center (AABC) area, the airport, and the airport park-and-ride facility. The Airport LRT Station and multimodal facility is discussed further in **Section II.C.2. System Components.**

From the Airport Terminal LRT Station the double track continues east toward the airport intercept lot, staying on the north side of the intercept lot. From the intercept lot, the LRT returns to an alignment on the south side and parallel to State Highway 82.

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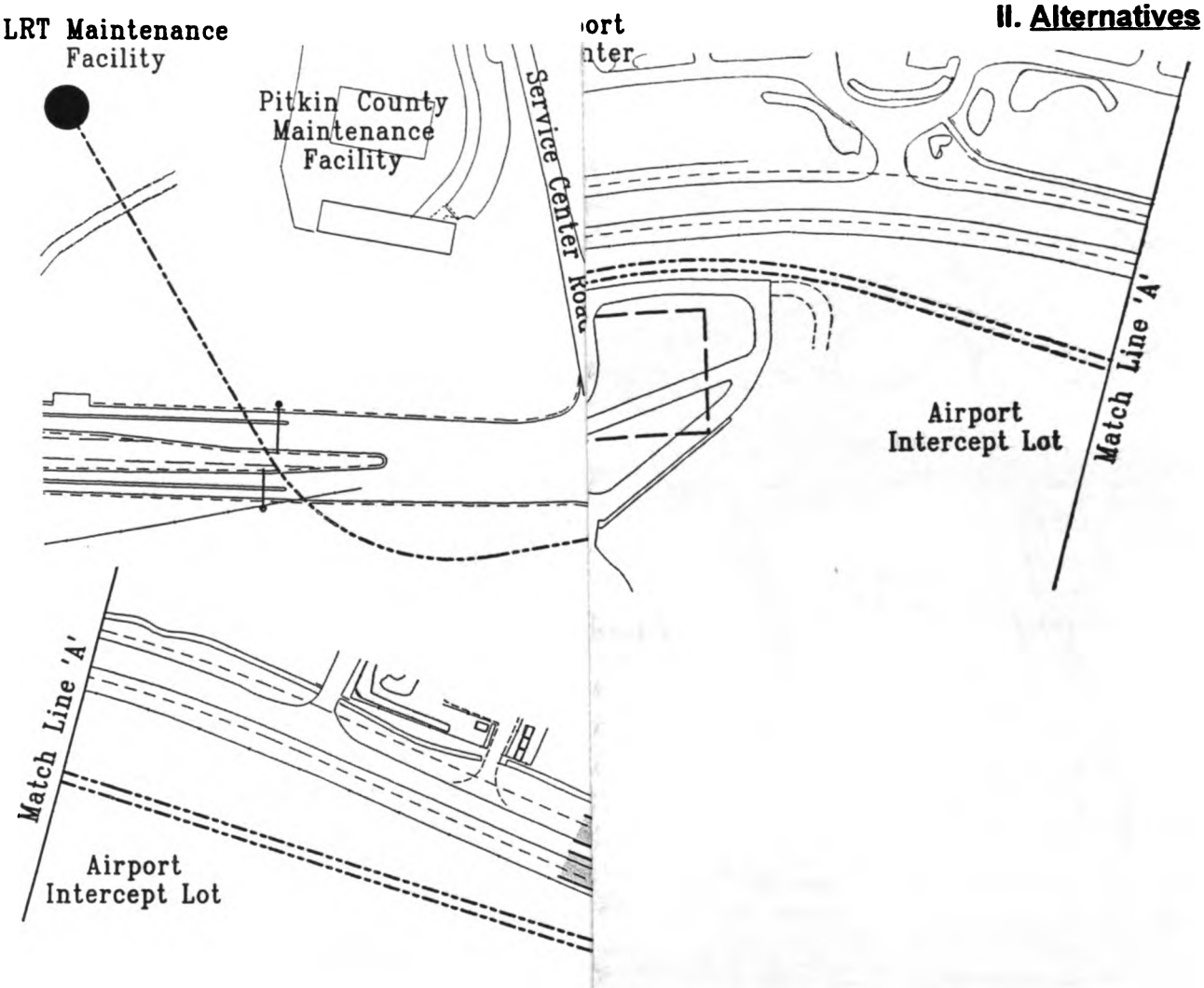

Legend:

- Preferred Alternative
- LRT -- Single Track
- LRT -- Double Track
- LRT Station
- LRT Crossing Gate
- Traffic Signal

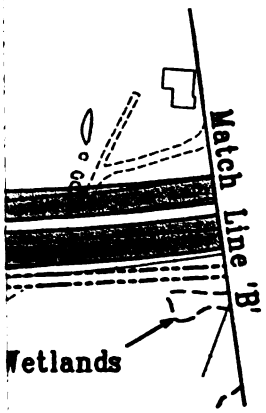

Figure II-4
LRT Maintenance Facility
to Buttermilk Ski Area

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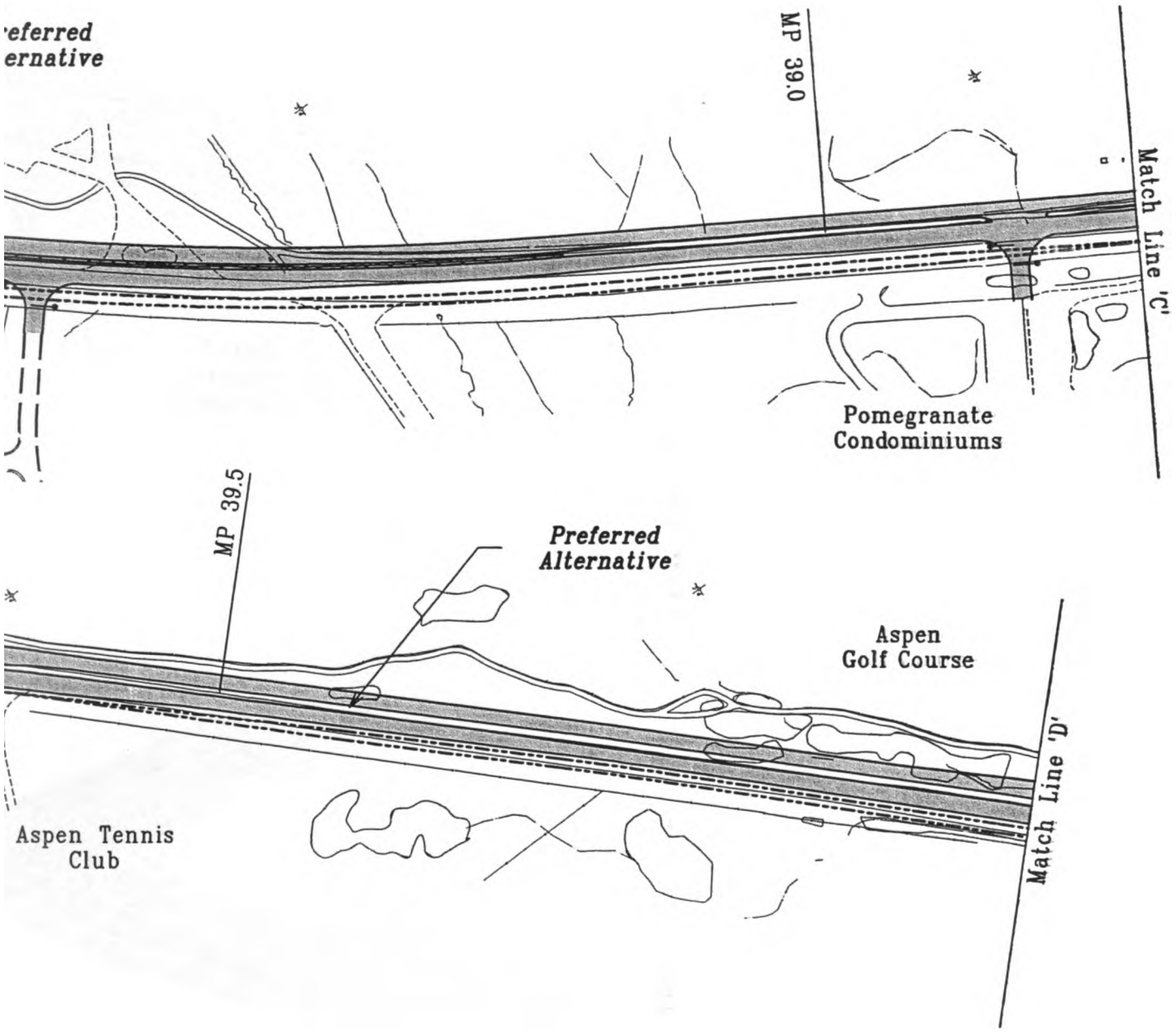

)00

100 meters

300 feet

Figure II-5
Buttermilk Ski Area
to Golf Course

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Improvements to State Highway 82 begin in the vicinity of existing Owl Creek Road (MP 38.3). The improvements to the highway (exclusive of the LRT) in this section are a continuation of the Basalt to Buttermilk FEIS cross section. This cross section provides two general highway lanes on the inside and two dedicated vehicle and/or transit lanes on the outside. These lanes are restricted to buses only between the airport and Buttermilk to encourage parking at the airport lot and to facilitate bus movement to the Buttermilk multimodal center, where bus-to-rail cross-platform transfers are permitted.

1b. Buttermilk Ski Area to Golf Course

Figure II-5 shows the alignment of the Preferred Alternative between the Buttermilk Ski Area and the Aspen Golf Course. The LRT crosses relocated Owl Creek Road at MP 38.4 and enters the Buttermilk LRT Station and multimodal facility. The multimodal facilities and LRT stations are discussed in more detail in **Section II.C.2. System Components.** This intersection is signalized, but the crossing is slightly south of the intersection and will be gated. Design speed of the LRT in this area is 90 km/h (55 mph).

From the Buttermilk Ski Area, the alignment of the Preferred Alternative generally follows the existing highway alignment to MP 38.9 where it leaves the existing roadway alignment to the north. At Maroon Creek the highway alignment crosses on a new bridge north of the existing bridge, while the LRT alignment crosses on the existing bridge (modified for the LRT). The centerline of the new highway bridge is approximately 210 meters (680 feet) long and ranges between 13 meters (43 feet) and 15 meters (49.5 feet) north of the existing Maroon Creek Bridge centerline. At its closest point, the edge of the new bridge is 4.6 meters (15 feet) from the edge of the existing bridge, which is modified for the LRT tracks. From Buttermilk Ski Area to Maroon Creek Bridge, the maximum vertical grade is 2.3 percent, the minimum vertical grade is 0.5 percent, and the design speed is 80 km/h (50 mph).

After Maroon Creek Bridge, the design speed becomes 60 km/h (35 to 40 mph), and the proposed alignment curves southeast and returns to the existing State Highway 82 alignment. The highway continues on the existing alignment until it reaches Maroon Creek Road.

1c. Golf Course to 7th Street and Main Street

Figure II-6 shows the alignment of the Preferred Alternative between the Golf Course and the intersection of 7th Street and Main Street. At Maroon Creek Road, the existing traffic signal will be replaced with a roundabout. The roundabout has an inside radius of 21 meters (70 feet) and an outside radius of 30 meters (100 feet). The LRT tracks do not cross through the center of the roundabout. Instead, the tracks turn toward the south as they approach the roundabout and cross Maroon Creek Road and Castle Creek Road approximately 75 meters (250 feet) south of the roundabout center. At-grade crossing gates and lights are required on both sides of the LRT tracks at these crossing locations. Inside the roundabout, there are two traffic lanes designed for 25 km/hr (15 mph) circulation. Traffic entering the roundabout is required to yield to traffic circulating within the roundabout. Two-lane entrances into the roundabout are provided from all directions. Two-lane exits from the roundabout are provided onto eastbound State Highway 82 and westbound State Highway 82. One-lane exits are provided onto Maroon Creek Road and Castle Creek Road. More information on the Maroon Creek Road roundabout is in **Section II.C.4b. Other Roadway Connections and Access.**

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From Maroon Creek Road, the Preferred Alternative follows the existing alignment east for approximately 180 meters (600 feet). At MP 39.9, the alignment follows a gradual S-curve southeast. Within the S-curve the vertical profile of the roadway begins to drop below existing grade to enter a cut and cover tunnel. The cut and cover tunnel begins at approximately MP 40.1 (along the new alignment) and continues for 122 meters (400 feet). The cut and cover tunnel could be shifted approximately 50 feet to the east if necessary during preliminary and final design. The vertical clearance beneath the cut and cover tunnel is 6 meters (20 feet). East of the cut and cover tunnel, the alignment crosses Castle Creek on a new bridge and joins with Main Street at 7th Street. The new Castle Creek Bridge is approximately 160 meters (530 feet) long.

The Preferred Alternative does not provide a direct connection to Cemetery Lane. Instead, the existing State Highway 82 west of Cemetery Lane is removed and converted to open space. Access to Cemetery Lane would be via 7th Street and Hallam Street. The connection to Cemetery Lane is discussed in more detail in **Section II.C.4b. Other Roadway Connections and Access.**

The signalized intersection of 7th Street and Main Street is designed to remain within existing curblines. The south leg of the intersection will be closed off and converted into a cul-de-sac for a bus transfer station. The 7th Street and Main Street intersection is discussed further in **Section II.C.4b. Other Roadway Connections and Access.** The light rail alignment crosses into the center of Main Street at this intersection.

1d. Main Street

Figure II-7 shows the alignment on Main Street. The Main Street cross section for the Preferred Alternative is located entirely within the existing curbline. The cross section consists of two travel lanes in each direction between 7th Street and Monarch Street. The left lane is a shared through/left turn lane at signalized intersections. The LRT is double track in the center of Main Street except at stations, where it is single track to allow room for the station platform and four lanes of traffic. Parking is removed from both sides of Main Street between 7th Street and Monarch Street. Cross sections of the Preferred Alternative under the double-track scenario are shown in **Section II.C.3. Cross Sections.**

1e. Monarch Street to Rubey Park

The cross section on Monarch Street consists of single track LRT on the east side of the street, one lane of one-way southbound traffic, and 60-degree angled parking on the west side of the street (Figure II-7). An LRT station will be located on the existing curb between Hopkins Avenue and Hyman Avenue.

The cross section on Durant Avenue consists of single track LRT on the north side in front of Wagner Park, and double track LRT at the station at Rubey Park. This allows room for one traffic lane in each direction. Parking is removed from the south side of the street between Monarch Street and Rubey Park.

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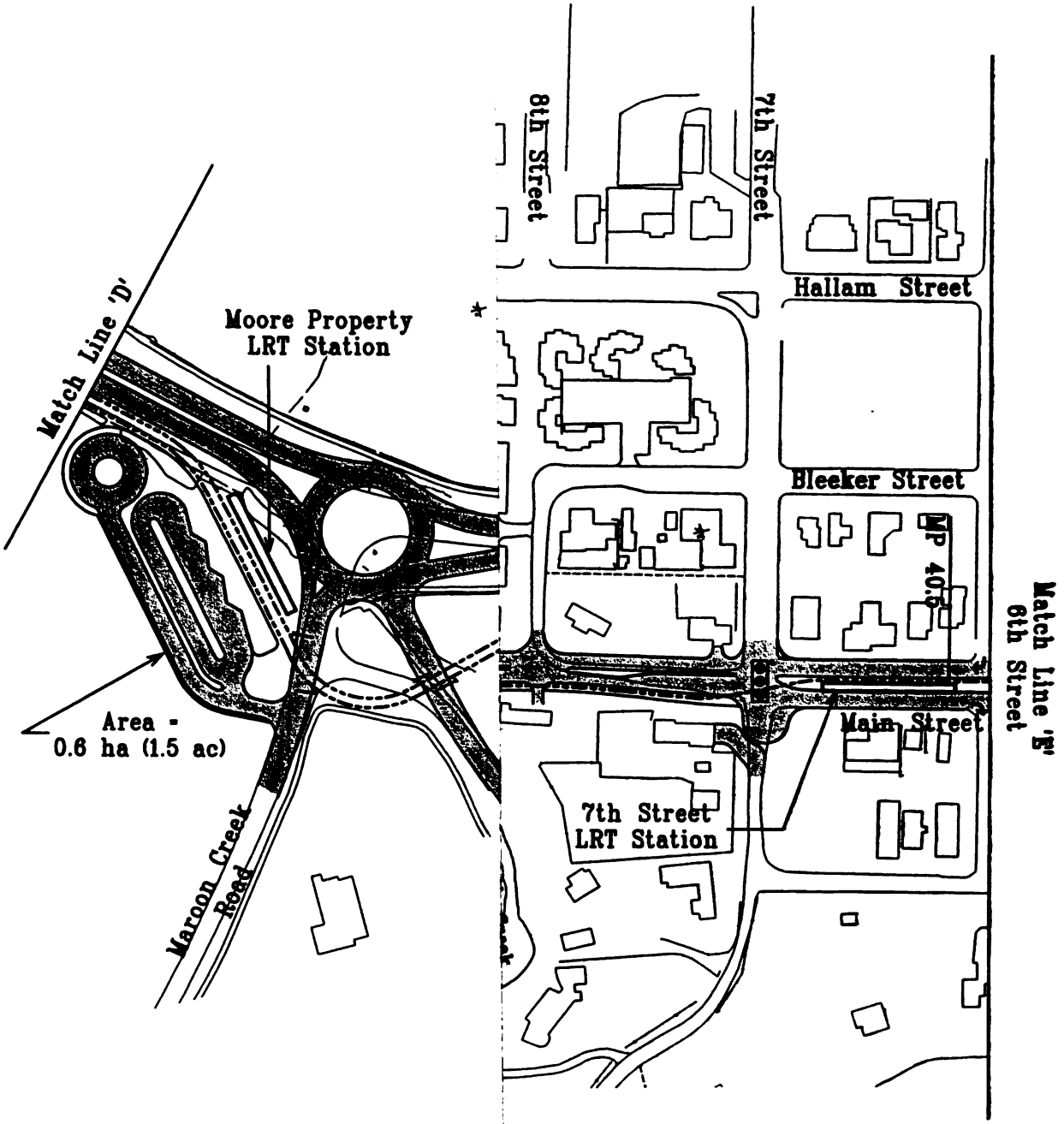

Figure II-6
Golf Course to 7th Street
and Main Street

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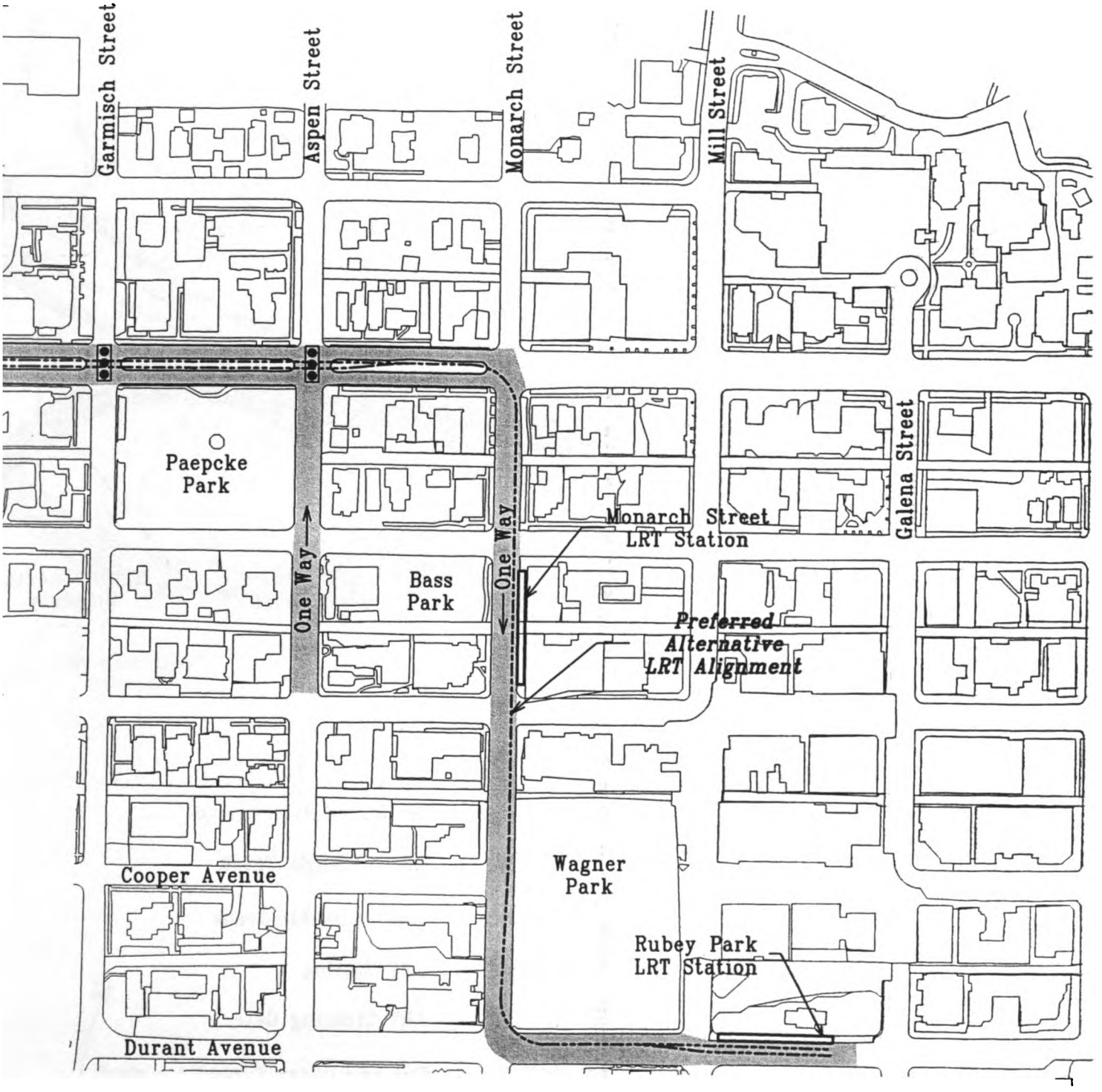

Figure II-7
7th Street and Main Street to Rubey Park

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2. System Components

The State Highway 82 Entrance to Aspen Preferred Alternative is a combination of several system components. These components, including a potential link to downvalley commuter rail, multimodal facilities, and LRT stations are essential to the function of the Preferred Alternative.

2a. Potential Future Link to Downvalley Commuter Rail

The opportunity exists for future downvalley commuter rail to connect with the Preferred Alternative. This link is included in the BBFEIS as a transit envelope that extends between Basalt and Buttermilk. The light rail extension between the airport and the Brush Creek Road intersection with State Highway 82 is considered to be an important link in the long-term, valley-wide rail solution. Although this link is not necessary for the Preferred Alternative to operate, it is mentioned as part of the overall transportation solution in the Roaring Fork Valley.

2b. Multimodal Facilities

Multimodal facilities provide more access to the transit system and associated land use than a park and ride. As part of the Preferred Alternative, multimodal facilities provide a direct connection between parking, transit, ski area access, and airport access. These facilities are an important part of the Entrance to Aspen solution and the long-term transportation solution. The City of Aspen's resolution to hold traffic at existing levels makes the need for the multimodal facilities even greater. The TM programs required to accomplish this goal (discussed in **Chapter III. System Management**) create the need for parking spaces and easy access to transit opportunities. Because of this need, multimodal facilities play a critical role in the function of the Preferred Alternative. Due to complexities and uncertainties associated with the multimodal facilities, a combination of private and public funds will likely be used for these facilities.

The TM programs required to meet the goal of maintaining future traffic volumes at existing levels create the need for approximately 4,350 parking spaces in the Aspen area (east of Brush Creek Road) by the year 2015, assuming no downvalley extension of light rail. This total includes 750 spaces at the Buttermilk location and 3,600 at the airport location. The parking requirement is based on the high growth scenario for the summer parking demand. Initially, the construction of these multimodal facilities would not need to provide the required capacity. Instead, the number of parking spaces at the multimodal facilities could be developed as the need arises. This is especially true at the airport where the planned facility could eventually have 3,600 parking spaces under the assumptions outlined above.

Two multimodal locations have been identified that best serve the purpose of transferring people between automobiles and transit. These locations are the Pitkin County Airport and the Buttermilk Ski Area. The following paragraphs describe the multimodal facilities at these locations.

Airport Multimodal Facility

The airport multimodal site has been identified as the intercept point for commuter travel into the Aspen area. The multimodal facility would be located on approximately 2.0 hectares (5.0

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acres) between the airport terminal and State Highway 82. Downvalley commuter buses and other commuter traffic would use this facility to transfer users to the LRT system or to the airport system. This location serves both the airport terminal on the west side of State Highway 82 and the AABC/North Forty Development on the east side of the highway. The airport facility could have the capacity to house approximately 3,600 parking spaces in a six-level parking garage. Four of the parking levels are proposed to be below grade. The parking garage would house the necessary parking for the airport terminal and parking demand from the TM program. This includes short- and long-term parking, rental car parking, and commuter parking.

There are opportunities to eliminate much of the airport parking demand by placing more spaces further downvalley (perhaps at Brush Creek Road) and by capturing more trips on the valleywide rail system. With this in consideration, the airport parking garage will likely be built in stages, beginning with the underground levels first. Also, as an initial phase, the airport facility would be split between two existing facilities: the airport intercept lot and the rental car parking area in front of the terminal building (see Figure II-9a). The future development of the larger multimodal facility would then combine the two locations into one parking garage.

The cost of the 3,600-space airport multimodal facility and parking garage would be approximately $60 million. This does not include the LRT station itself, right-of-way, or operations and maintenance costs of the parking garage and LRT station.

Buttermilk Multimodal Facility

The Buttermilk location has been identified by the Aspen Skiing Company and the project team as a 750-space facility. A surface lot of this size would require approximately 3.0 hectares (7.5 acres) of land. The Preferred Alternative recommends a parking structure to reduce the footprint of the parking requirements. A two-level structure would require about 1.6 hectares (4 acres).

The Buttermilk facility would be the transfer point for skier trips and commuter bus trips into the Aspen area. Aspen skiers traveling to Snowmass would ride the LRT to Buttermilk and make a transfer to a bus or gondola (possible future connection). Other skier trips in private cars from downvalley to Aspen Mountain, Aspen Highlands, and Buttermilk could park at the Buttermilk multimodal facility.

The cost of the Buttermilk multimodal facility and parking garage would be approximately $8.5 million, not including the LRT station, right-of-way, and operations and maintenance costs of the parking garage and LRT station.

2c. LRT Stations

Aspen Airport Business Center/Airport Terminal Station

Figure II-8 shows the location of the LRT stations within the project corridor. The Aspen Airport Business Center (AABC)/Airport station would be designed to accommodate both the airport traveler and the Aspen area commuter. The AABC/Airport station serves as the

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auto transfer site for commuters and other auto trips transferring to the transit system. Skier trips connect to the transit system at the Buttermilk station. A pedestrian walkway beneath State Highway 82 serves as the connection between the LRT station and the AABC. This station is at the end of the service line for the LRT and adjacent to State Highway 82. This LRT station is part of the larger airport multimodal facility discussed in the previous section. The station is located at the ground level of the airport parking structure. Figure II-9b shows this station.

Buttermilk Ski Area

The Buttermilk station (Figure II-10) serves as the transfer site between transit modes (bus to LRT, bus to bus). The buses from downvalley access the station directly from State Highway 82. Sawtooth bus bays are provided adjacent to the LRT station platform to allow easy transfers between the buses (including school buses) and the LRT. The station serves primarily as the transit connection for skier trips. This station is part of the larger Buttermilk multimodal facility discussed in the previous section. This station is designed to be as close to the Buttermilk Ski Area as possible. The location of the station provides a direct pedestrian connection between the station and the ski lift area.

Moore Property

Located on the Moore Property, the station at Maroon Creek Road operates as a passenger drop-off and pick-up for the transit system (Figure II-11). This location serves the major transit demand in the area, which includes three schools, Aspen Valley Hospital, and the Aspen Highlands Ski Area. The station design and location on the Moore Property allows buses from Maroon Creek Road and Castle Creek Road to access the LRT station from Maroon Creek Road without having to cross the LRT tracks. Sawtooth bus bays are provided adjacent to the LRT station platform to allow easy transfers between the buses and the LRT. Other vehicles are also allowed to access the LRT station at a pick-up/drop-off area. There is no long-term or short-term parking provided at the station. The station may be set back into the hillside and placed partially beneath a cover. The cover would be graded and landscaped to match the existing land form. The covered station may provide some visual relief as viewed from the open space of the Moore Property.

The use of the Moore Open Space requires a vote of the electorate of Pitkin County. Should the County decide not to release this open space property for the proposed use, this portion of the project would no longer be feasible. The possibility of locating the station on the Marolt-Thomas Property would need to be investigated.

However, placement on the Marolt-Thomas Property requires more mitigation and creates more impacts than the Moore Property. Buses and shuttles would be required to enter the roundabout and cross the LRT tracks to reach the station access. Also, the Marolt-Thomas Property is generally flat, which does not accommodate a berm as well as the Moore Property, and would create adverse visual impacts.

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Figure II-8
LRT Station Locations

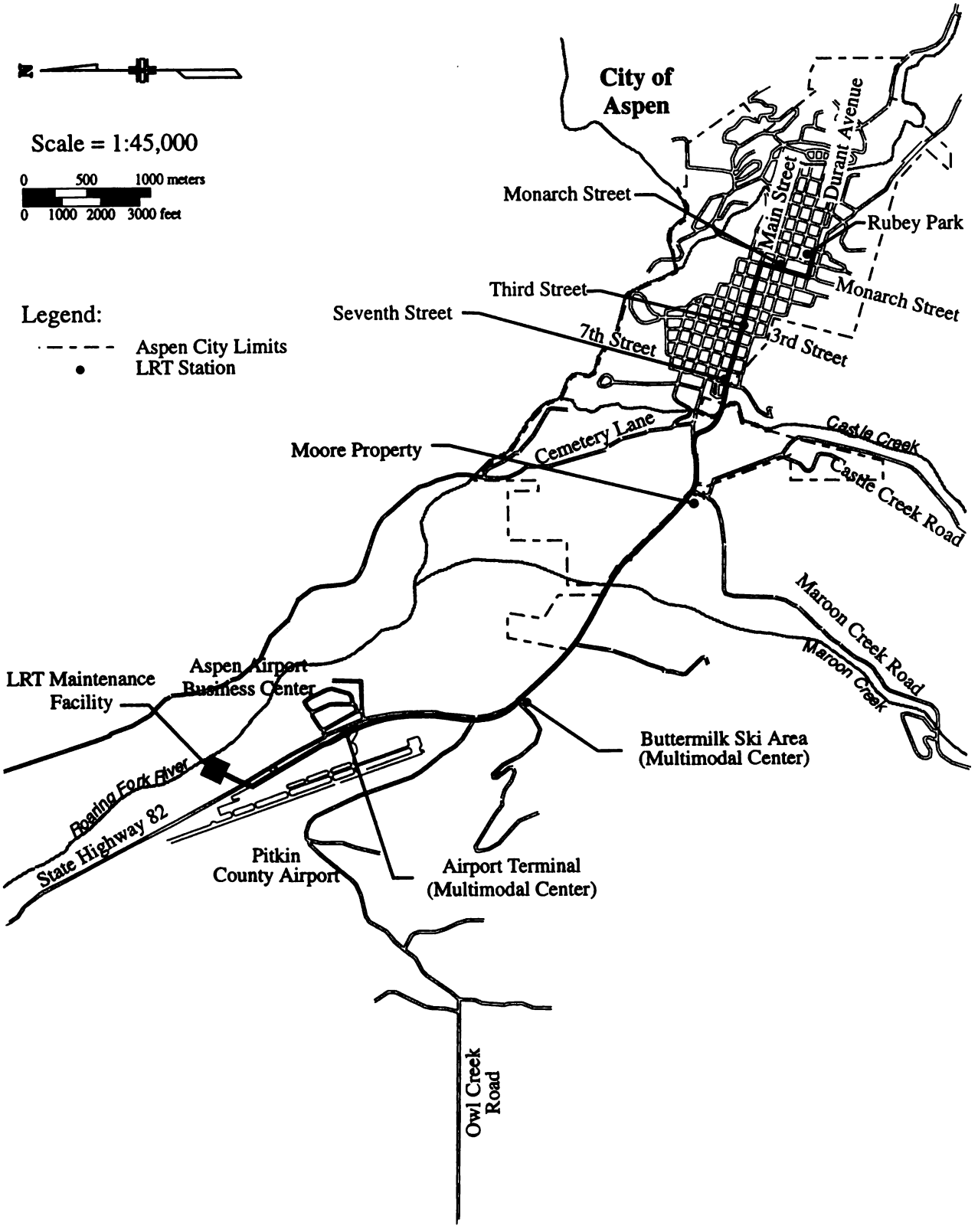

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Figure II-9a
Potential First Phase Airport Terminal LRT Stations

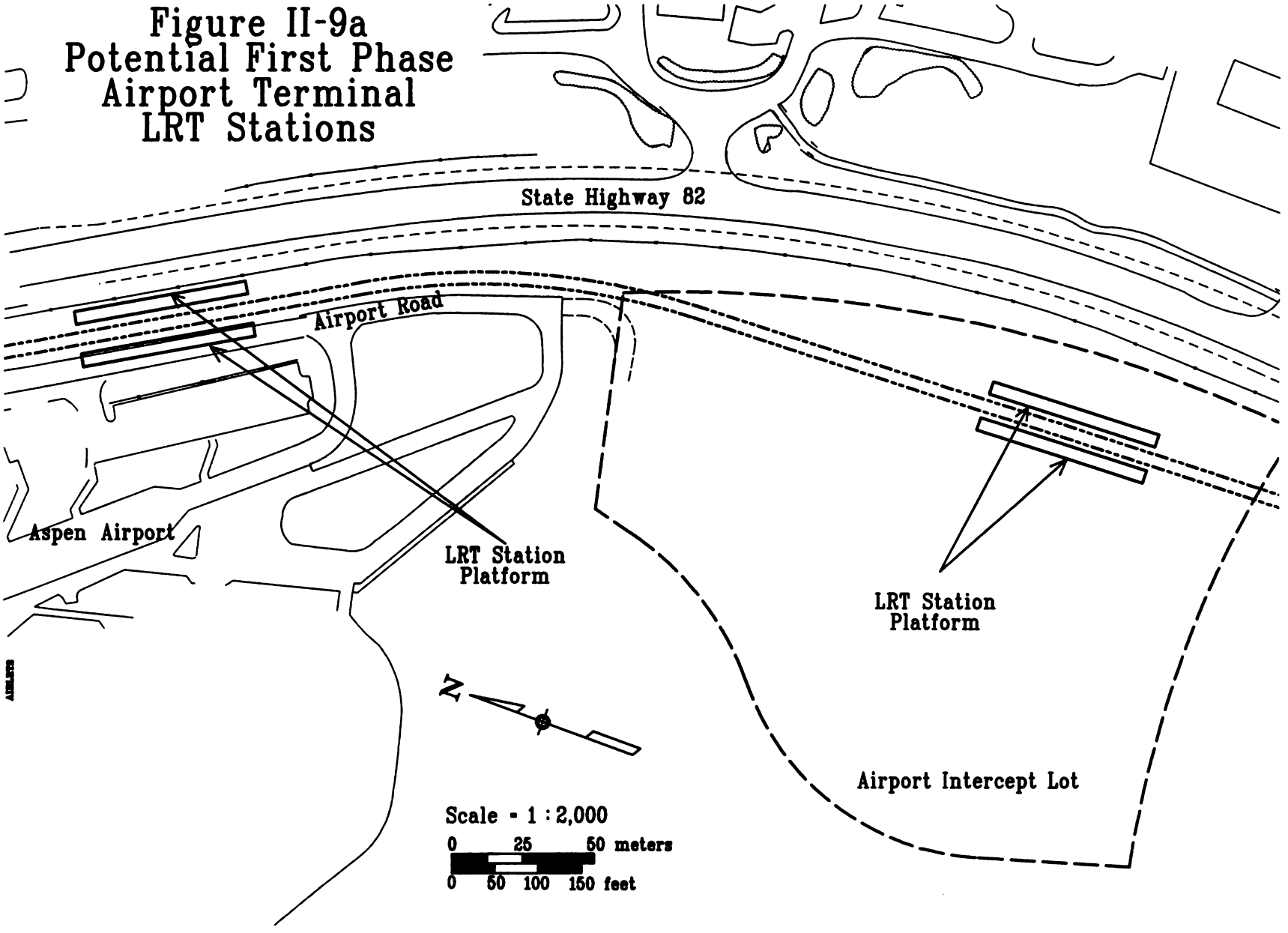

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Figure II-9b
Airport Terminal LRT Station and Multimodal Facility

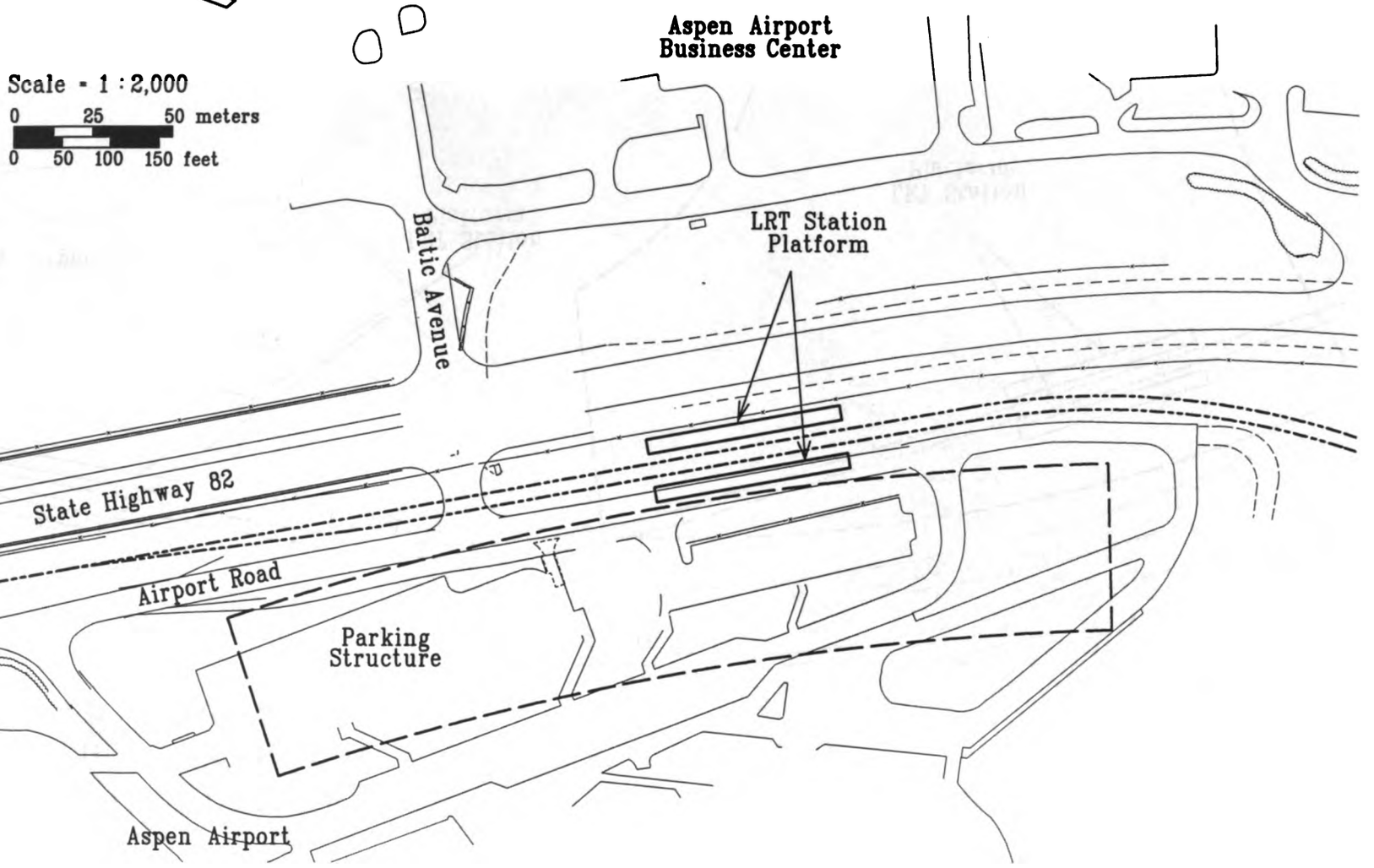

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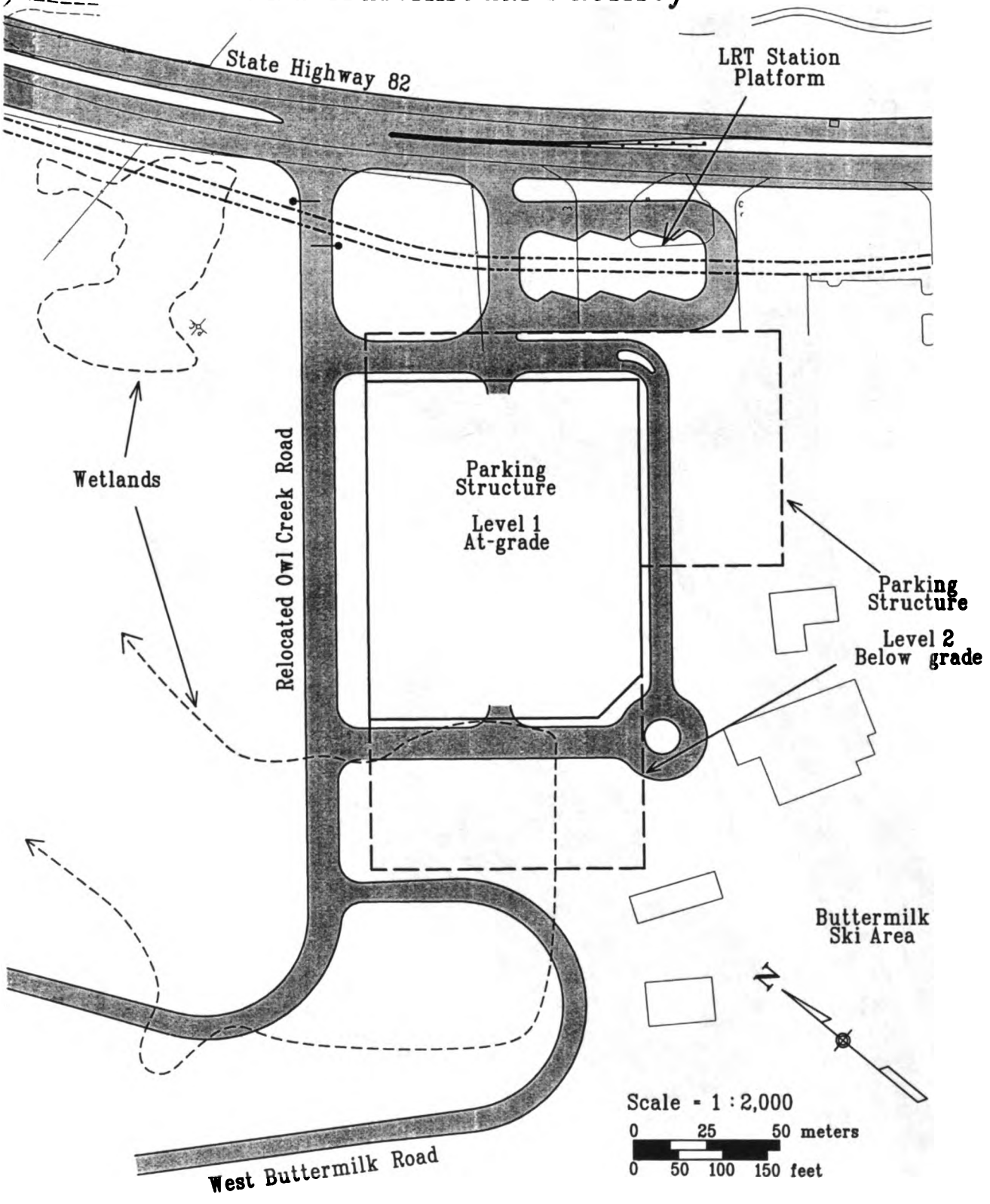
Figure II-10
Buttermilk Ski Area LRT Station and Multimodal Facility



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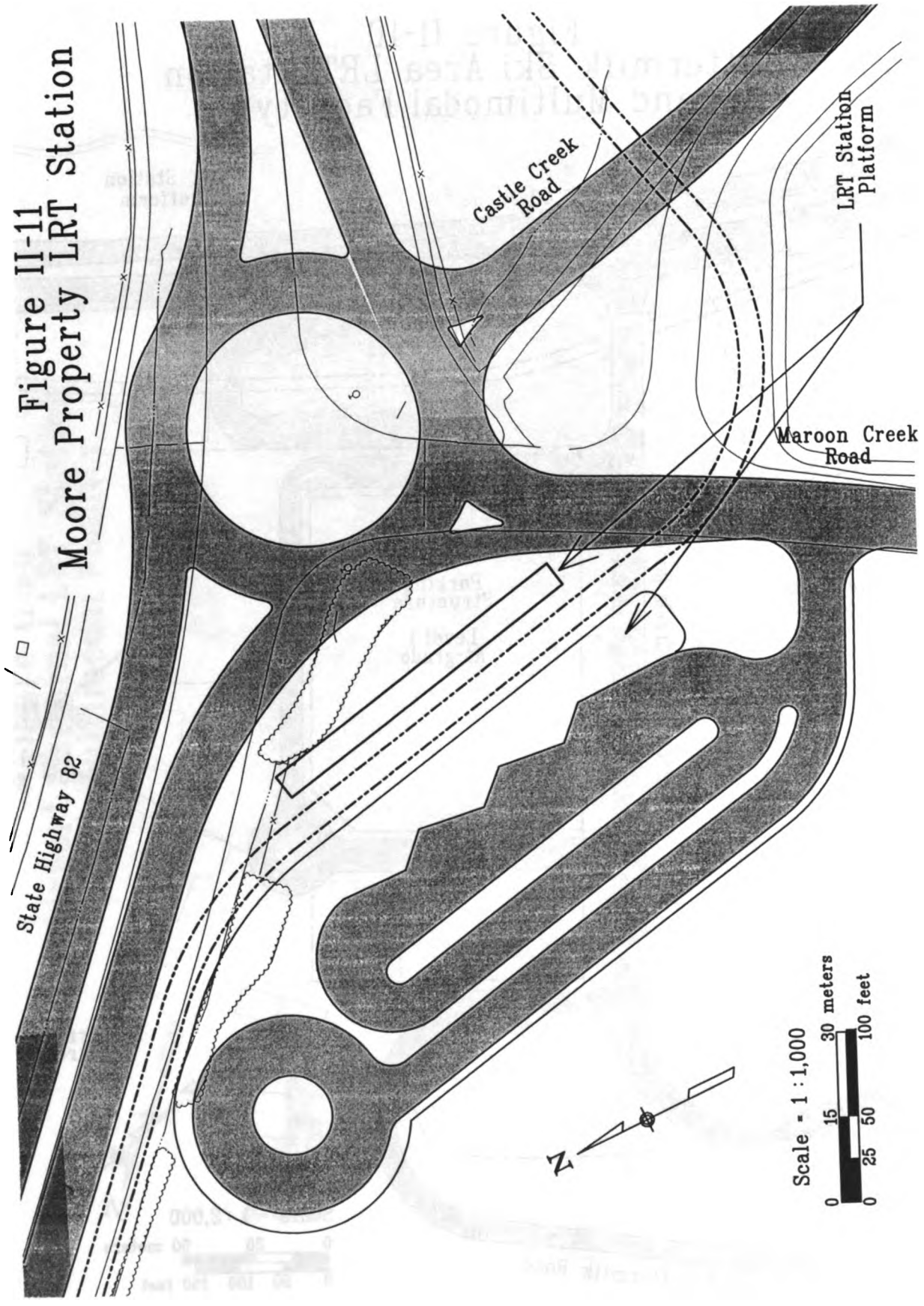

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Seventh Street
This station is needed to provide LRT access to the residents and businesses on the west end of downtown Aspen (see Figure II-6). The location is on the east side of 7th Street. The south leg of the 7th Street and Main Street intersection is turned into a cul-de-sac for a bus stop. The bus stop serves a bus feeder service throughout the west end and Cemetery Lane.

The station is served by a single LRT track, however, the station serves both inbound and outbound trains. The 7th Street station is a side-loading platform in the center of the roadway. Pedestrians cross two lanes of traffic to board the LRT. Pedestrian safety measures are taken to ensure that pedestrians only access the platform from the crosswalks at 7th Street or 6th Street.

Third Street
The station at Third Street is on Main Street between Second Street and Third Street (see Figure II-7). The station is a side-loading platform in the center of the roadway. It is served by a single LRT track, however, the station serves both inbound and outbound trains. Pedestrians cross two lanes of traffic to board the LRT. Pedestrian safety measures are taken to ensure that pedestrians only access the platform from the crosswalks at 3rd Street or 2nd Street.

Monarch Street
The Monarch Street station is served by one LRT track and is a side-loading platform (see Figure II-7). The platform is located on the east side of Monarch Street between Hopkins Avenue and Hyman Avenue. This station serves the Aspen downtown area and several of the lodging developments in the southwest part of the city.

Rubey Park
The Rubey Park station is at the eastern end of the service line and track line platform (see Figure II-7). The LRT interfaces with the in-town RFTA bus operations for a modal transfer facility in downtown Aspen. The buses load and unload in the existing sawtooth bus bays on the north side of Rubey Park. The LRT occupies the lanes immediately to the south of Rubey Park. It is expected that the Rubey Park station may need some improvements to handle the increased demand for either the LRT or bus system. Rubey Park is included in the cost estimate for the LRT stations.

3. Cross Sections

The cross sections created for the Preferred Alternative provide information such as the number and width of traffic lanes and right-of-way requirements. Right-of-way is based on conservative estimates of construction limits plus 1.5 meters (5 feet) on each side. This information is used to determine costs, Section 4(f) impacts, and other environmental impacts needed for evaluation of the Preferred Alternative. As in **Section II.C.1. Alignment,** the cross sections have been separated into several roadway segments. Figures accompanying the discussion are viewed looking east (toward Aspen) along the alignments.

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The roadway sections in this analysis have different cross sections based on their design speed. Between Buttermilk Ski Area and Maroon Creek Bridge, the cross sections are shoulder sections because the design speed is greater than 70 km/h (45 mph). For safety reasons, a curb and gutter section is not permitted for design speeds higher than 70 km/h (45 mph). A lower design speed for State Highway 82 west of Maroon Creek Bridge may be used to accommodate a curb and gutter section that is narrower, if necessary.

3a. LRT Maintenance Facility to Buttermilk Ski Area

The highway improvements in this section are from existing Owl Creek Road to the Buttermilk Ski Area. The length of this segment is 335 meters (1,100 feet). For the Preferred Alternative, the cross section (see Figure II-12) in each direction consists of a general traffic lane 3.6 meters (12 feet) wide and a dedicated vehicle and/or transit lane 3.6 meters (12 feet) wide, with an inside paved shoulder 1.2 meters (4 feet) wide and an outside paved shoulder 3.0 meters (10 feet) wide. The traffic lanes are divided by a grass median 4.9 meters (16 feet) wide. At the new Owl Creek Road intersection, a right turn lane is added in the eastbound direction, and a left turn lane is added in the westbound direction. This cross section is a continuation of the cross section from the Preferred Alternative in the ***Basalt to Buttermilk Final Environmental Impact Statement.***

The LRT envelope is 8.5 meters (28 feet) wide for double track and is on the south side of the highway. The required clear zone between the edge of the LRT envelope and the edge of the nearest driving lane is 6.7 meters (22 feet) wide for a 80 km/h (50 mph) design speed. This clear zone is maintained throughout this segment except at intersections that require deceleration and acceleration lanes in the eastbound direction. However, speeds in these speed-change lanes are less than 80 km/h (50 mph), and therefore require a smaller clear zone. The total width of this typical cross section, including the LRT envelope, is 41.4 meters (136 feet) wide.

3b. Buttermilk Ski Area to Golf Course

The total length of this segment is 2,120 meters (6,950 feet), including Maroon Creek Bridge. In this section there are three typical cross sections.

Buttermilk Ski Area to Maroon Creek Bridge

The length of this segment is 1,090 meters (3,570 feet). The typical cross section (see Figure II-13) in each direction consists of a traffic lane 3.6 meters (12 feet) wide with an inside paved shoulder 1.2 meters (4 feet) wide and an outside paved shoulder 3.0 meters (10 feet) wide. The traffic lanes are divided by a grass median 4.9 meters (16 feet) wide. A new access for the Inn at Aspen is provided approximately 35 meters (115 feet) east of the existing access. The existing access is closed off. A median opening, deceleration lane, acceleration lane, and westbound left turn lane are provided at this intersection. The Tiehack Road underpass accesses also have deceleration and acceleration lanes and are right-in, right-out only.

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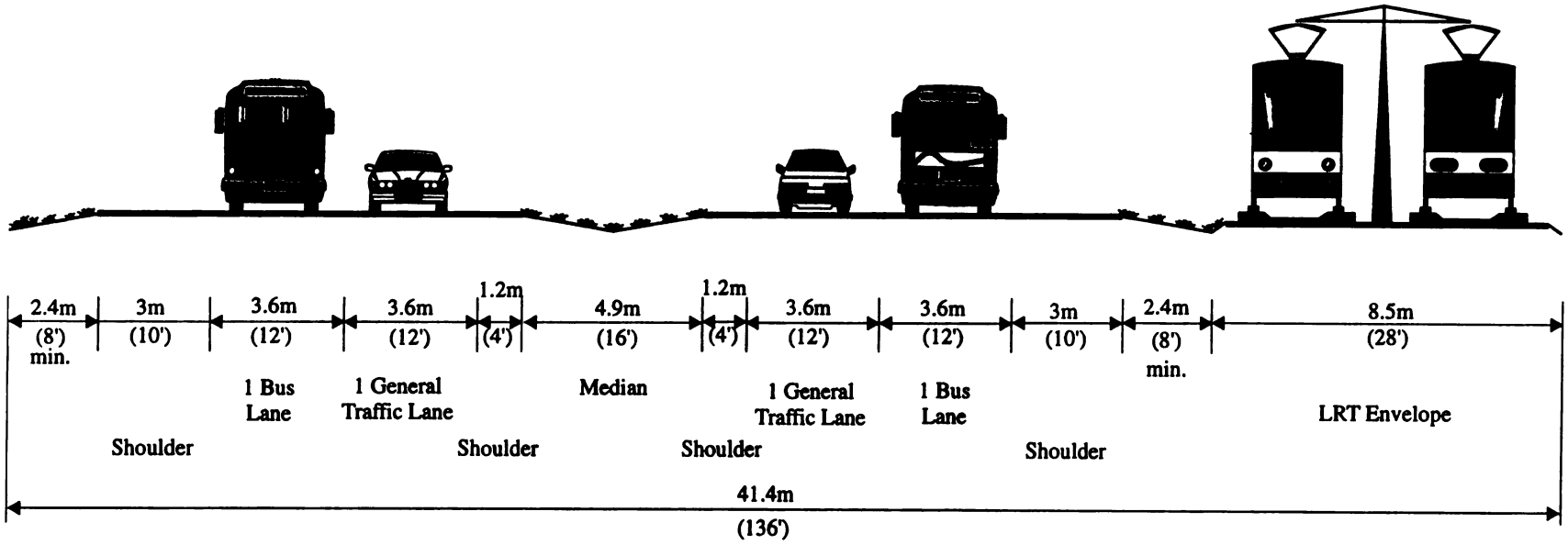
Figure II-12
Standard Section
West of Buttermilk Ski Area



Note: A lower design speed may be used in this section to accommodate a narrower cross section that uses curb and gutter.

Guardrail is required when median is less than 4.3 meters (14 feet) wide.

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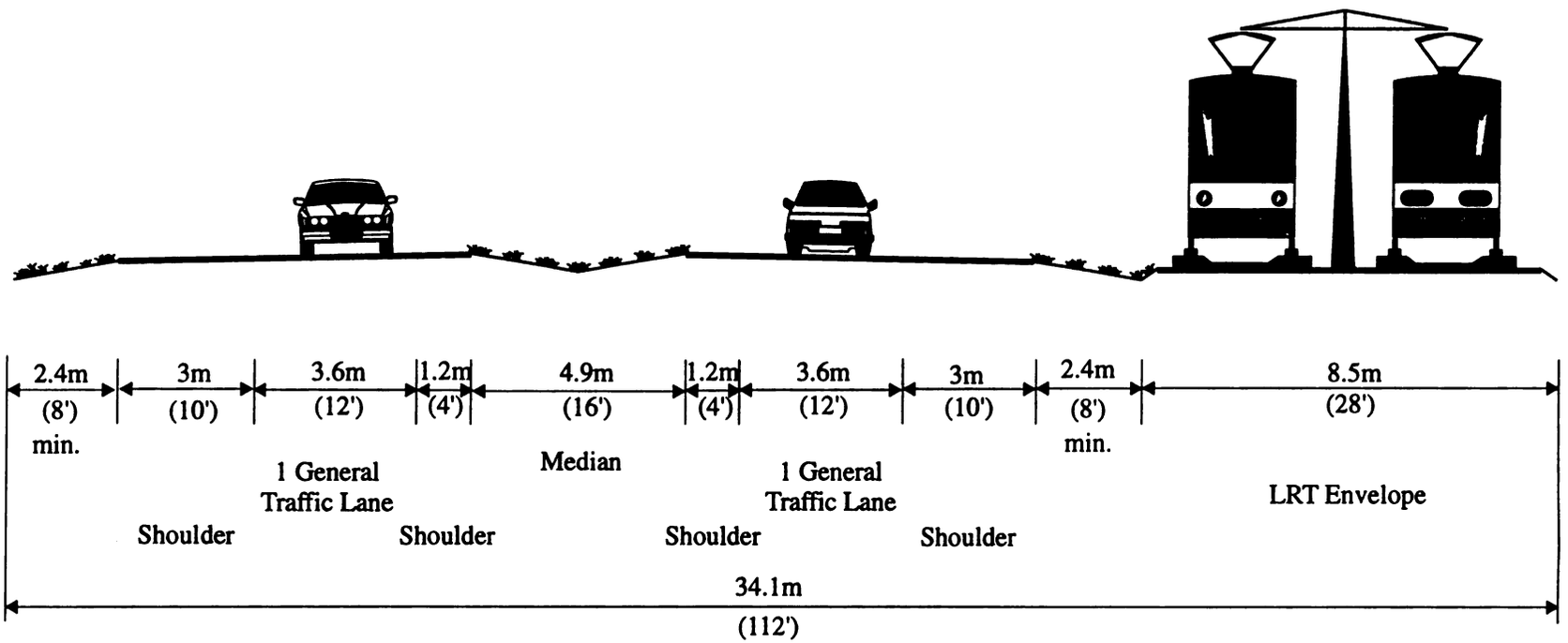
Figure II-13
Standard Section
Buttermilk Ski Area to Maroon Creek Bridge



Note: A lower design speed may be used in this section to accommodate a narrower cross section that uses curb and gutter.

Guardrail is required when median is less than 4.3 meters (14 feet) wide.

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The existing access for the Pomegranate Condominiums is also improved. This access is located approximately 130 meters (425 feet) west of Maroon Creek Bridge. A median opening, deceleration lane, acceleration lane, and westbound left turn lane are provided at this intersection. In addition, two other existing accesses in the area are closed off. The accesses are approximately 205 meters (675 feet) and 38 meters (125 feet) west of Maroon Creek Bridge. Access to these properties is provided by improving the frontage road connecting to the new access.

The LRT envelope is 8.5 meters (28 feet) wide and continues on the south side of the highway. The required clear zone between the edge of the LRT envelope and the edge of the nearest driving lane is 6.7 meters (22 feet) wide for a 80 km/h (50 mph) design speed. This clear zone is maintained in this segment except at intersections that require deceleration and acceleration lanes in the eastbound direction. However, speeds in these speed-change lanes are less than 80 km/h (50 mph), and therefore require a smaller clear zone. The total width of this typical cross section, including the LRT envelope, is 34.1 meters (112 feet).

Maroon Creek Bridge

The length of the new Maroon Creek Bridge is 207 meters (680 feet). The highway cross section (see Figure II-14) is located on a new bridge structure, and consists of a travel lane 3.6 meters (12 feet) wide and an emergency shoulder 1.8 meters (6 feet) wide in each direction. The travel lanes are separated by a 2.1 meter (7 feet) raised median. A pedestrian/bicycle trail 3 meters (10 feet) wide is located directly underneath the north side of the bridge. State Highway 82 changes from a shoulder section to a curb and gutter section approximately 335 meters (1,100 feet) west of Maroon Creek Bridge. The total width of this typical Maroon Creek bridge cross section is 16.2 meters (53 feet).

The LRT merges from two tracks to one track just west of Maroon Creek Bridge. The single track remains south of the highway alignment and crosses Maroon Creek on the existing Maroon Creek Bridge. The highway deck on the existing Maroon Creek Bridge is removed and the bridge structure returned to the original railroad platform. This cross section consists of a 4.3 meter (14 feet) LRT envelope.

Maroon Creek Bridge to Golf Course

The length of this segment is 825 meters (2,700 feet). The cross section (see Figure II-15) is curb and gutter and consists of one 3.6 meter (12 feet) travel lane and a 1.8 meter (6 feet) emergency shoulder in each direction. The travel lanes are separated by a raised grass median 3.6 meters (12 feet) wide. The LRT platform is adjacent to the south side of the highway and is 8.5 meters (28 feet) wide. Deceleration lanes, acceleration lanes, and left turn lanes 3.6 meters (12 feet) wide are added in both directions on State Highway 82 at the Truscott Place intersection. The total width of the typical cross section is 25.6 meters (84 feet).

3c. Golf Course to 7th Street and Main Street

The total length of this segment is 930 meters (3,050 feet), including Castle Creek Bridge. In this segment there are two typical cross sections.

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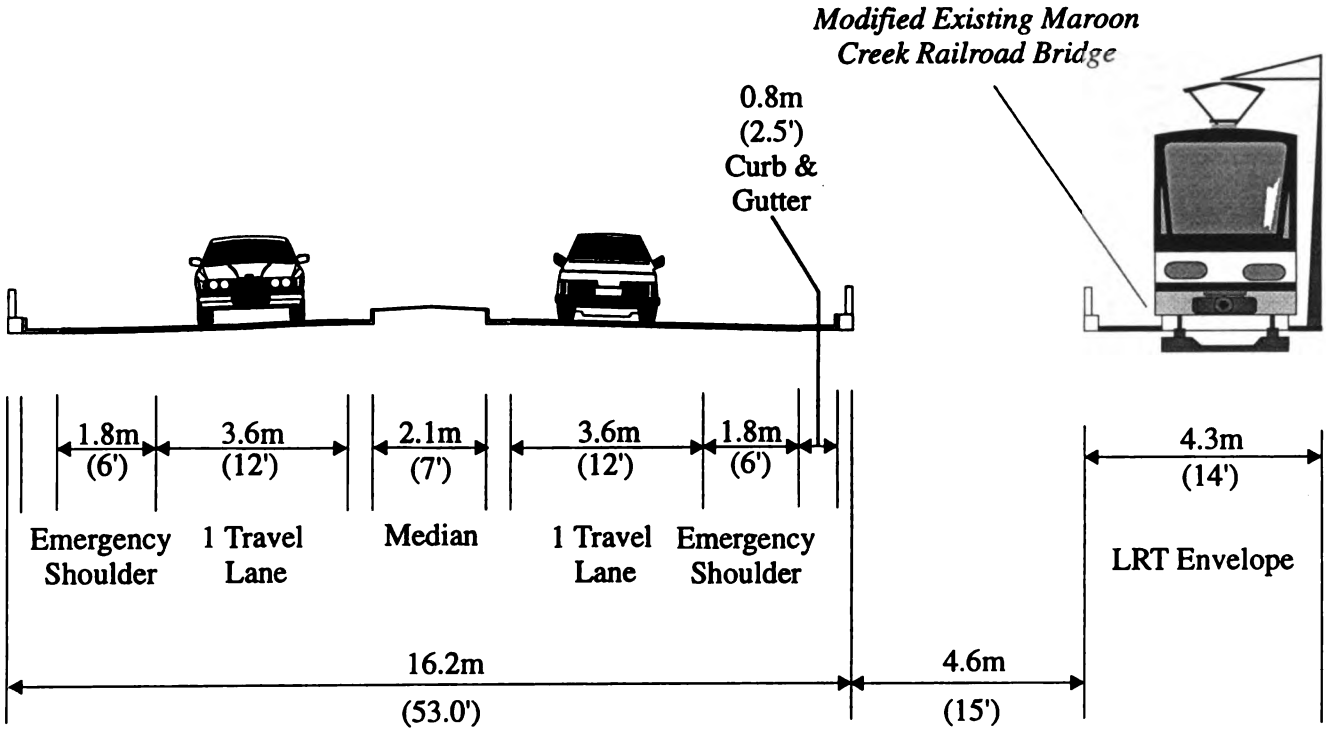
Figure II-14
Standard Section
Maroon Creek Bridge



Note: A pedestrian walkway 3 meters (10 feet) wide will be located underneath the north side of the bridge.

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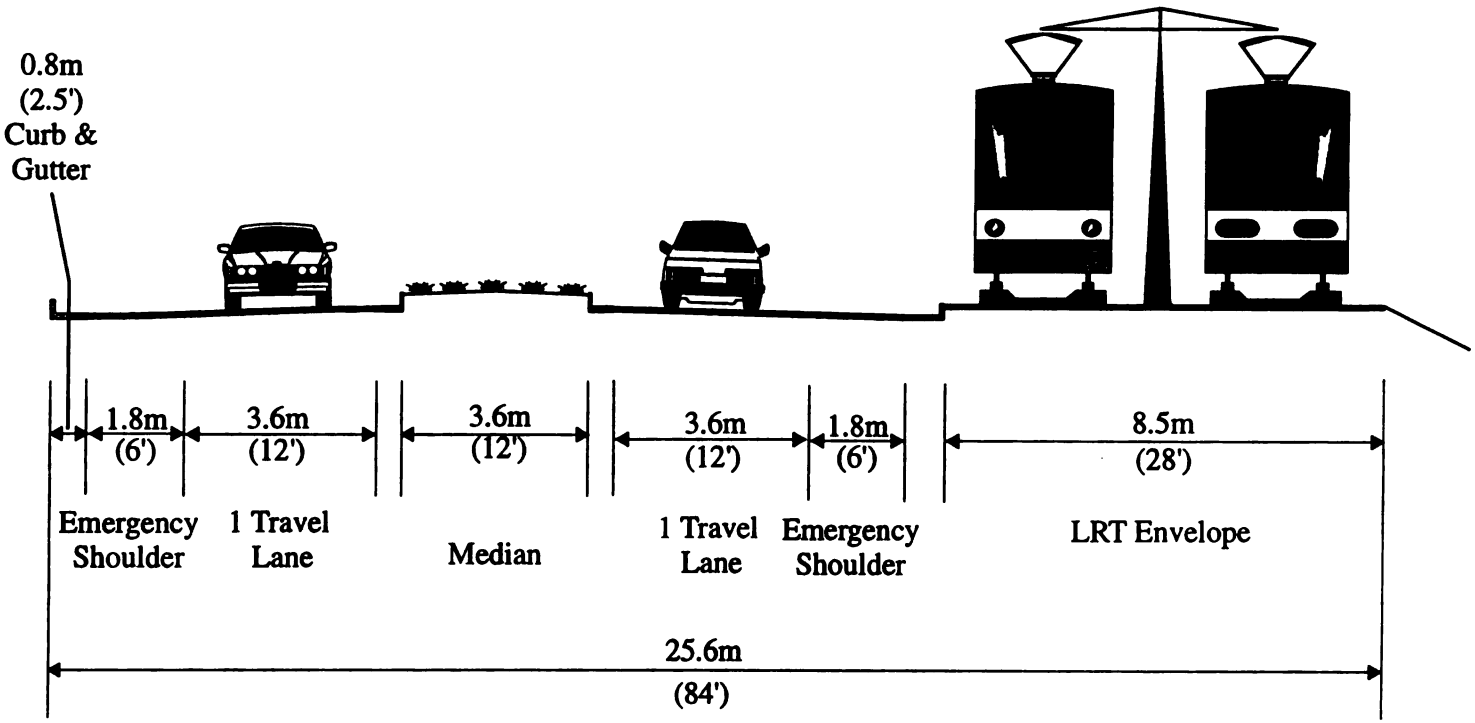
Figure II-15
Standard Section
Maroon Creek Bridge to 7th Street and Main Street



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Golf Course to 7th Street and Main Street (excluding Castle Creek Bridge)
The length of this segment is 768 meters (2,520 feet), excluding Castle Creek Bridge. The cross section (see Figure II-15) is curb and gutter and consists of a travel lane 3.6 meters (12 feet) wide and an emergency shoulder 1.8 meters (6 feet) wide in each direction. The travel lanes are separated by a raised grass median 3.6 meters (12 feet) wide. The LRT platform is adjacent to the south side of the highway and is 8.5 meters (28 feet) wide. A left turn lane 3.6 meters (12 feet) wide is added in the eastbound direction at 7th Street. Accesses are provided for the Berger Cabin on the south side, 8th Street on the north side, and a private residence on the north side. The total width of this typical cross section is 25.6 meters (84 feet).

Between Castle Creek bridge and 7th Street, the roadway cross-section varies as the roadway tapers out slightly to match existing at 7th Street. The location of the alignment in this area minimizes disturbances to surrounding properties to the extent feasible.

Castle Creek Bridge
The length of the new Castle Creek Bridge is 162 meters (530 feet). The cross section (see Figure II-16) is curb and gutter and consists of a travel lane 3.6 meters (12 feet) wide and an emergency shoulder 1.8 meters (6 feet) wide in each direction. The travel lanes are separated by a raised median 2.1 meters (7 feet) wide. The LRT platform is attached to the south side of the highway and is 3.8 meters (12.5 feet) wide. The LRT merges from two tracks to one track just before the cut and cover tunnel and continues as single track to the 7th Street LRT Station. The total width of this Castle Creek Bridge cross section is 20 meters (65.5 feet).

There is no need for a sidewalk on this bridge because pedestrians and bicycles are not allowed in the cut and cover tunnel, and other trail facilities are included to the north and south, with a connection across the top of the tunnel.

3d. Main Street
The total length of this segment is 945 meters (3,100 feet). In this segment there are two different typical cross sections.

7th Street to 4th Street
The length of this segment is 320 meters (1,050 feet). The cross section is required to remain within existing Main Street curbline. The cross section (see Figure II-17) consists of two 3.4 meter (11.25 feet) travel lanes in each direction with LRT running in the center median. The LRT envelope is 7.3 meters (24 feet) wide. The total width of this cross section is 22.6 meters (74 feet).

4th Street to Monarch Street
The length of this segment is 625 meters (2,050 feet). The cross section is required to remain within existing Main Street curbline. The cross section (see Figure II-18) consists of two travel lanes 3.3 meters (11 feet) wide in each direction with LRT running in the center median. The LRT envelope is 7.3 meters (24 feet) wide to allow room for four lanes of traffic. The total width of this cross section is 21.0 meters (69 feet).

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Figure II-16
Standard Section
Castle Creek Bridge

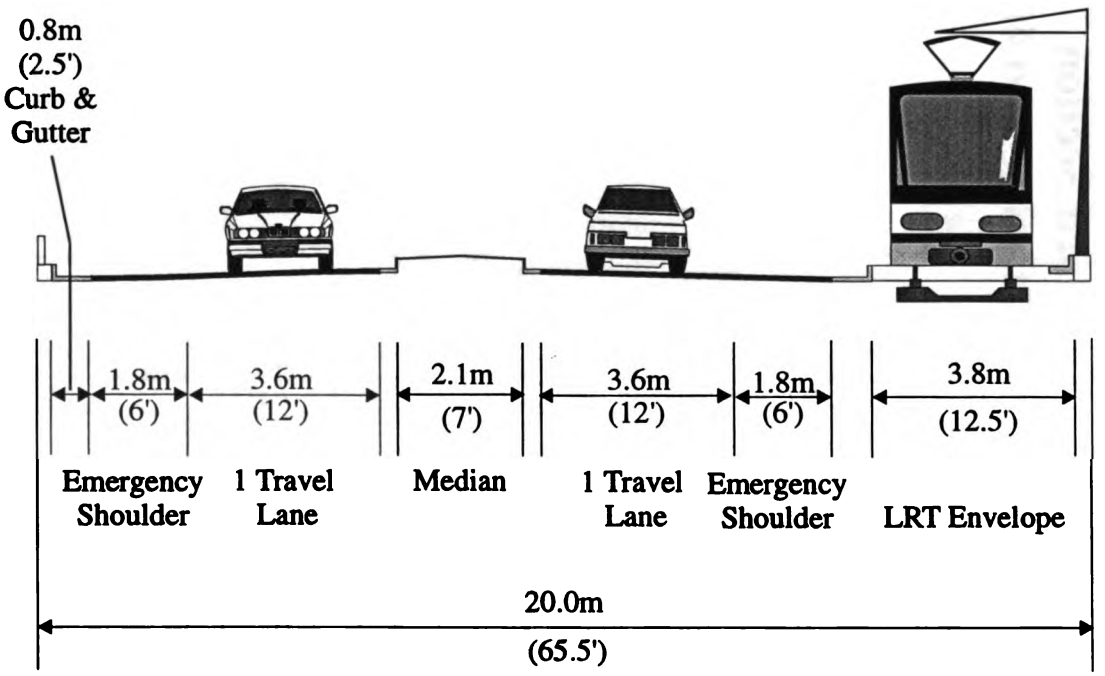

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Figure II-17
Standard Section
Main Street - 7th Street to 4th Street

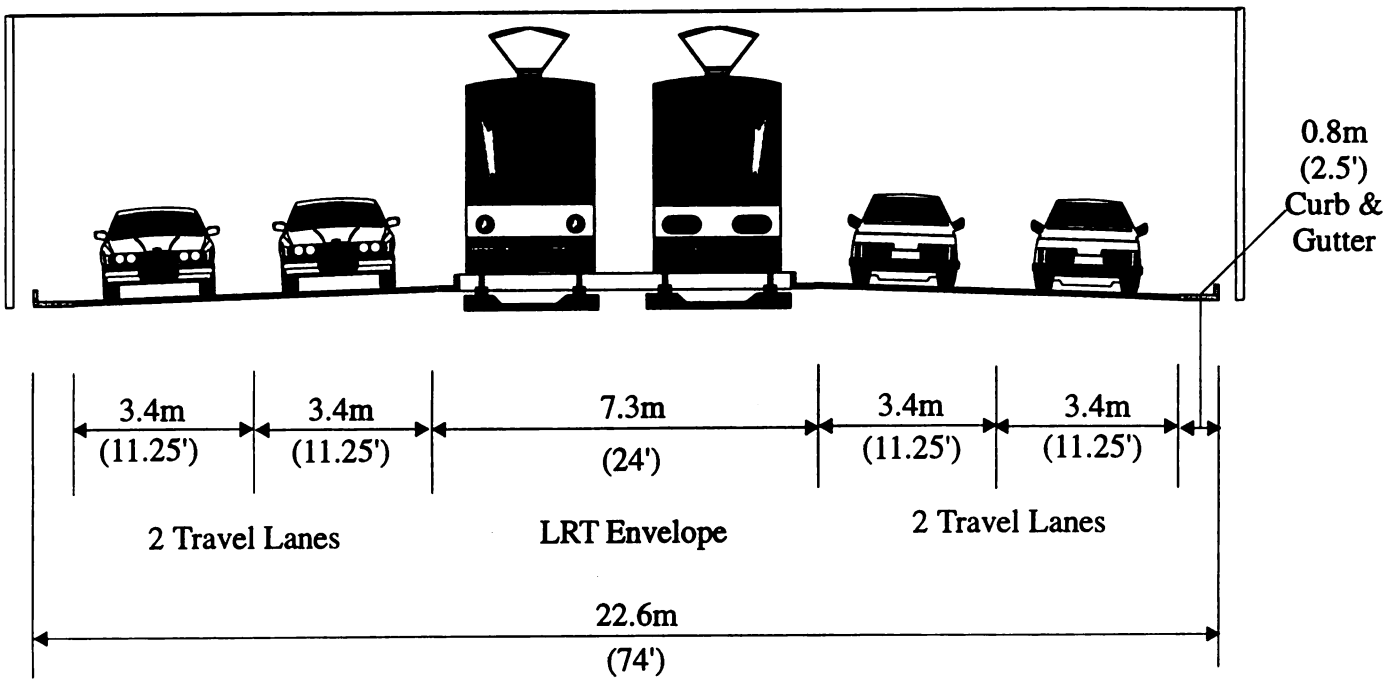

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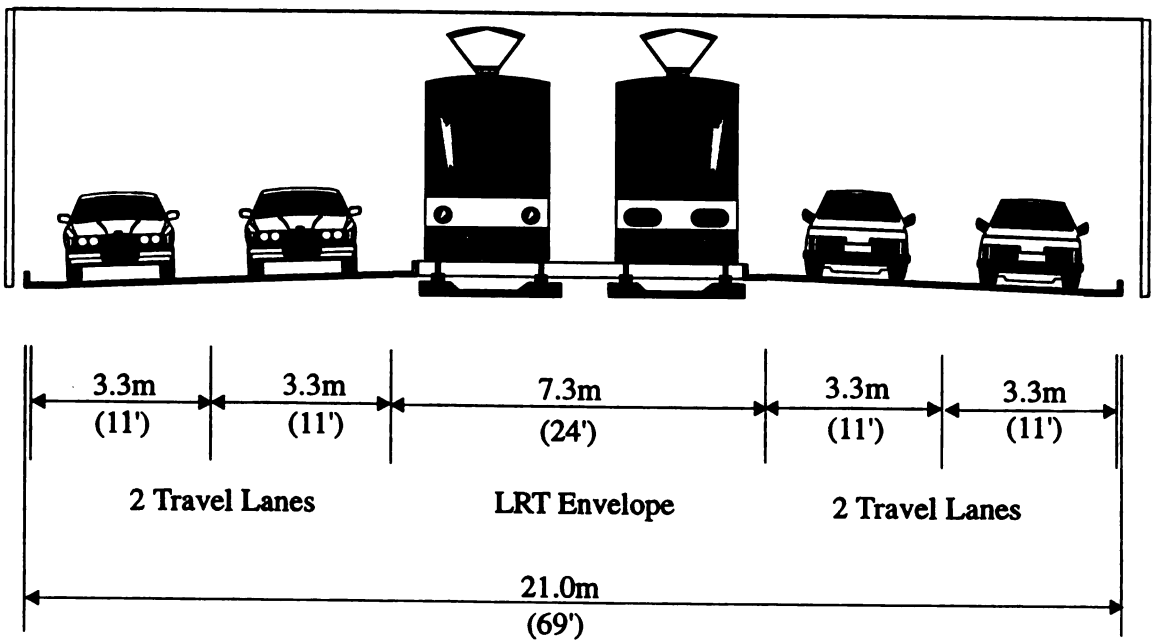
Figure II-18
Standard Section
Main Street - 4th Street to Monarch Street



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3e. Monarch Street to Rubey Park

The length of this segment is 565 meters (1,850 feet). In this segment there are two cross sections.

Monarch Street

The length of this segment is 365 meters (1,200 feet). The typical cross section in this segment is required to stay within existing Monarch Street curb line. The cross section (see Figure II-19) consists of a one-way southbound travel lane 4 meters (13 feet) wide in the center of the street, with 60-degree angled parking on the west side 5.8 meters (19 feet) long. The LRT envelope is 4.3 meters (14 feet) wide and is located on the east side of the street. The total width of this cross section is 15.5 meters (51 feet).

Durant Avenue (to Rubey Park)

The length of this segment is 200 meters (650 feet). The typical cross section in this segment is required to stay within existing Durant Avenue curb line. The cross section (see Figure II-20) consists of a travel lane in each direction 3.6 meters (12 feet) wide. The LRT envelope is 8.5 meters (28 feet) wide and is located north of the travel lanes. The total width of this cross section is 17.1 meters (56 feet).

4. Design Considerations

As part of the EIS planning process, certain design assumptions must be made for the environmental analysis. Issues discussed in this section include the cut and cover tunnel, connections/access on State Highway 82, and recreational trail improvements.

4a. Cut and Cover Tunnel

As part of the mitigation for Section 4(f) impacts, the Preferred Alternative includes a cut and cover tunnel. The cut and cover tunnel is 122 meters (400 feet) long on the Marolt-Thomas Property. The tunnel is short enough that it does not require a mechanical ventilation system. The area above the tunnel will be revegetated to provide continuity of the open space and will be used for recreational activities. One option is a grade-separated pedestrian/bicycle trail that crosses State Highway 82 on the cut and cover tunnel.

4b. Other Roadway Connections and Access

Owl Creek Road and West Buttermilk Road

As part of the Preferred Alternative, existing Owl Creek Road is relocated along with West Buttermilk Road. The Owl Creek Road intersection with State Highway 82 is moved about 300 meters (1,000 feet) to the east of the existing intersection.

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Figure II-19
Standard Section
Monarch Street - Main Street to Durant Avenue

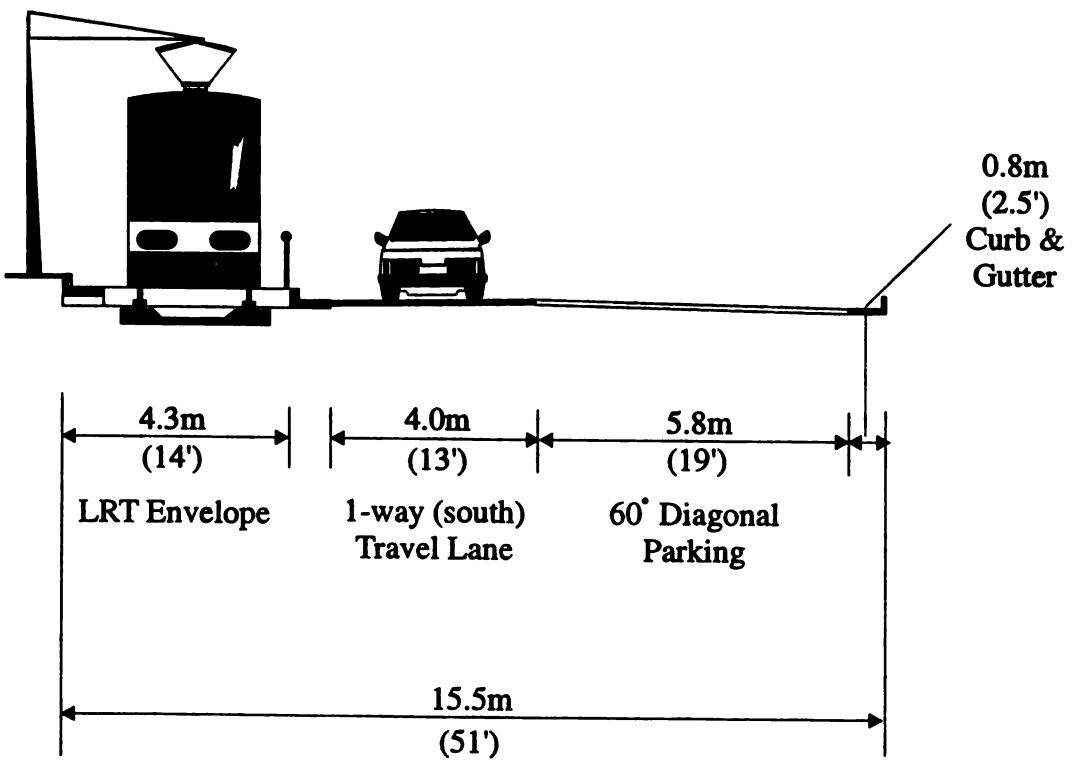

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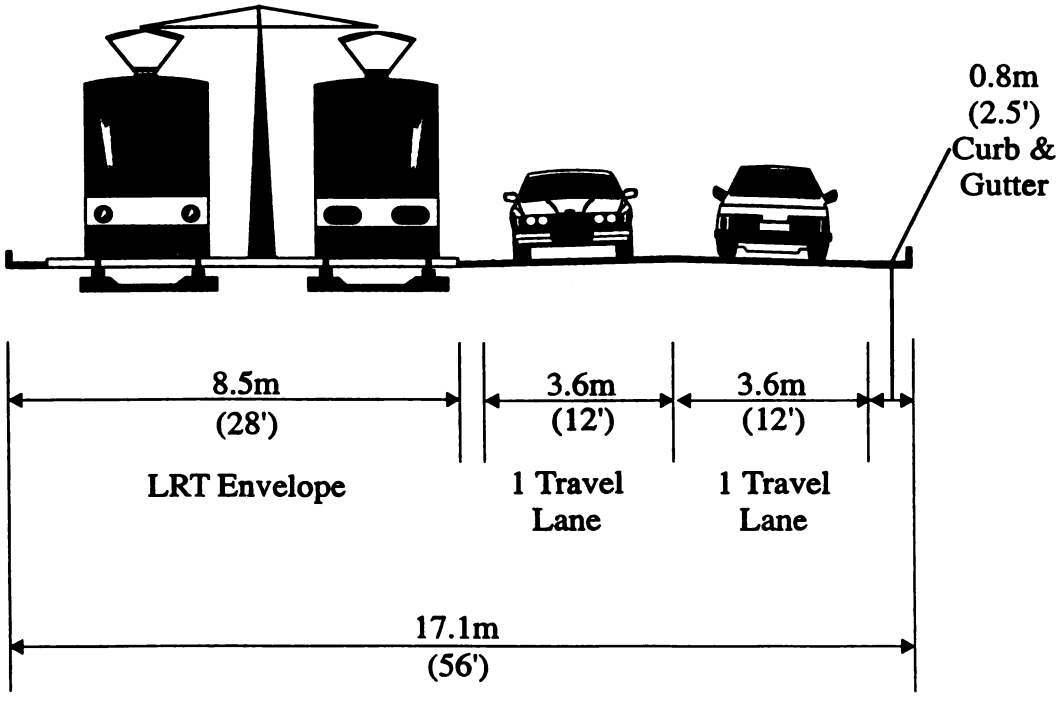
Figure II-20
Standard Section
Durant Avenue - Monarch Street to Rubey Park



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Existing Owl Creek Road is closed off approximately 30 meters (100 feet) southwest of State Highway 82. The new alignment begins approximately 1,035 meters (3,400 feet) southwest of the existing Owl Creek Road and State Highway 82 intersection. From this point the new alignment travels east along the base of the bluffs on the southern edge of the Stapleton property. As the alignment approaches Buttermilk Ski Area, it curves north and connects to State Highway 82 approximately 91 meters (300 feet) west of the existing West Buttermilk Road and State Highway 82 intersection. The new West Buttermilk Road connects to the new Owl Creek Road south of the Buttermilk Ski Area parking lot. Figure II-21 shows the new Owl Creek Road alignment.

The new Owl Creek Road cross section consists of one 3.3 meter (11 feet) travel lane with a 1.2 meter (4 feet) gravel shoulder in each direction. The new Owl Creek Road and State Highway 82 intersection consists of one left turn lane and one right turn lane in the northbound direction, one traffic, one bus, and one right turn lane in the eastbound direction, and one through lane and one left turn lane in the westbound direction.

An operation analysis was conducted for this intersection. The analysis assumed a seventy-five second signal cycle, side-running LRT that crosses south of the intersection, a parking structure at Buttermilk Ski Area, and indirect access to West Buttermilk Road from Owl Creek Road. The traffic counts used in the analysis are based on the current winter average daily traffic (WADT) and a 750-space parking structure at Buttermilk.

The analysis assumes three signal phases for the intersection of State Highway 82 and Owl Creek Road. The first phase is for westbound through movements, including buses, and protected left-turn movements for traffic turning from westbound State Highway 82 to southbound Owl Creek Road. Based on the capacity analysis there is no need for a protected left turn at this location. However, the presence of the LRT makes the protected left turn necessary for safety reasons. The second phase is for State Highway 82 eastbound and westbound through movements. The third phase of the signal cycle is for northbound Owl Creek Road movements.

The analysis of the signalized intersection at State Highway 82 and Owl Creek Road considered the operations of the LRT and the Buttermilk multimodal facility near the intersection. When the LRT arrives, it preempts all traffic movements including buses in the intersection except State Highway 82 eastbound and westbound through movements. This interruption of the signal phasing temporarily reduces the level of service at the intersection. However operation quickly returns to normal with automatic adjustments to the signal timing. The interruption to the intersection is minor and only temporarily affects the operations of the intersection.

Cemetery Lane

The Preferred Alternative does not provide a direct State Highway 82 connection to Cemetery Lane. Instead, the existing State Highway 82 between Cemetery Lane and Maroon Creek Road is removed and converted to open space. The existing portion of State Highway 82 between Cemetery Lane and 7th Street is converted to a local street. This change returns the character of the Cemetery Lane neighborhood to a residential area. State Highway 82 access to Cemetery Lane will be via 7th Street and Hallam Street.

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Maroon Creek Road/Castle Creek Road

The existing intersection at State Highway 82 and Maroon Creek Road is signalized, and does not directly include Castle Creek Road. Traffic on Castle Creek Road must turn onto Maroon Creek Road to have access to State Highway 82. The Preferred Alternative includes a roundabout at State Highway 82 and Maroon Creek Road. This alternative improves the connection between State Highway 82 and Castle Creek Road via the roundabout. Both Maroon Creek Road and Castle Creek Road are slightly realigned to allow proper placement of the roundabout.

The roundabout is designed with two lanes at all entrance points. The exits from the roundabout are two lanes for State Highway 82 and one lane each for Maroon Creek Road and Castle Creek Road. The roundabout has two circulating lanes of traffic, each 4.6 meters (15 feet) wide. The inner radius of the roundabout is 21 meters (70 feet) and the outer radius is 30 meters (100 feet). The geometry of the roundabout holds traffic to a speed of 25 km/h (15 mph). The maximum entering capacity of the roundabout is approximately 4,400 vehicles per hour (vph). Considering the goal of maintaining existing traffic volumes, the estimated entering flow into the roundabout in year 2015 will be 2,600 vph. These volumes are based on a summer afternoon peak hour.

The analysis of the roundabout at Maroon Creek Road includes the operations of the LRT. There are at-grade crossing gates and lights on both sides of the LRT tracks at Maroon Creek Road and Castle Creek Road. The traffic volumes used in the analysis are based on the current WADT and assume values for the number of vehicles entering and exiting the intermodal facility. Traffic begins to queue as the LRT passes by the gates. The LRT gates were placed south of the roundabout to prevent traffic from backing up into the roundabout. This interruption temporarily reduces the level of service to the intersection. However, the level of service quickly returns to normal after the LRT passes. The interruption to the intersection is minor and only temporarily affects the operation of the intersection.

The analysis of the roundabout is based on delay and not necessarily LOS, which applies to signalized intersections. The summer afternoon peak hour traffic on State Highway 82 (eastbound and westbound) experiences about 1.5 seconds of delay on average with a roundabout, and about 21 seconds of delay on average with a signalized intersection. Maroon Creek Road and Castle Creek Road experience only minor delays when entering the roundabout during peak periods.

Main Street

The addition of center-running LRT in the Preferred Alternative affects several access points on Main Street. The intersections of 7th Street, 5th Street, 3rd Street, and Garmisch Street require signals. These new signals are required because with the LRT tracks in the center of Main Street, left turns to or from side streets are not permitted for safety reasons unless the intersection is signalized. The signals allow access to and from each leg of the intersection. Aspen Street and Monarch Street are currently signalized and remain signalized for the Preferred Alternative. Access points and intersections that are impacted because of the Preferred Alternative are listed below.

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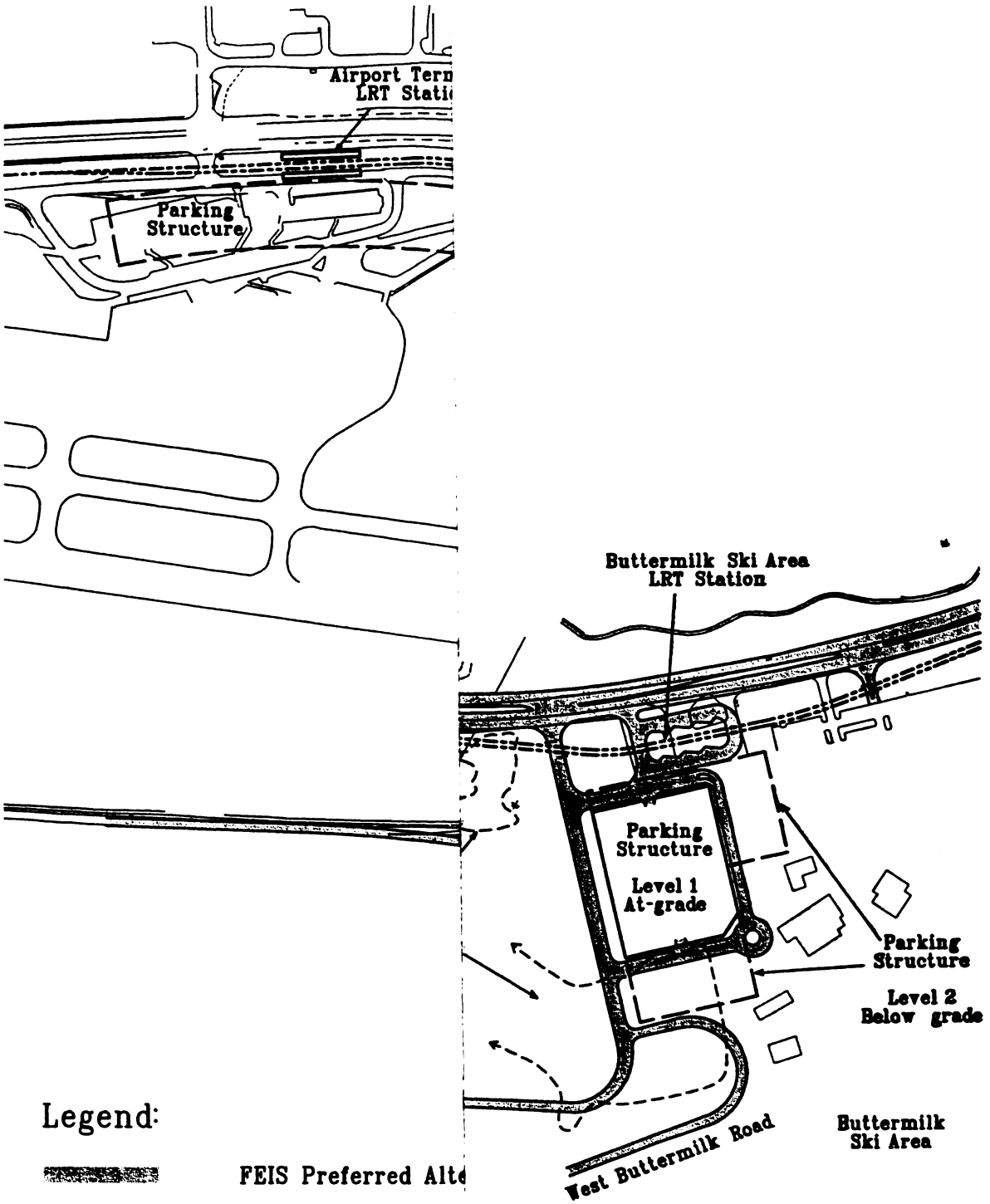

Figure II-21
New Owl Creek Road &
West Buttermilk Road with
Buttermilk LRT Station

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II. Alternatives

1. *8th Street* -- The existing intersection mainly provides access to local residences and businesses. For the Preferred Alternative, State Highway 82 is realigned directly over the 8th Street and Main Street intersection. This impacts access to local residences and businesses. Accesses are provided to the north side of State Highway 82 at 8th Street and just west of 7th Street (residential driveway). An access is provided on the south side of State Highway 82 for the Berger Cabin. This driveway is an ungated crossing of the side-running LRT tracks. A median opening is provided for the 8th Street/Berger Cabin intersection.

2. *7th Street* -- The intersection of 7th Street and Main Street consists of a left turn lane and a through lane for eastbound State Highway 82. Westbound Main Street has a right turn lane and a through lane. Southbound 7th Street has one through/right lane and one left turn lane. The intersection also has an LRT crossing from side-running to center-running as it passes through the intersection going eastbound. In addition, the south leg of the intersection is closed to through traffic and converted into a bus cul-de-sac. This cul-de-sac accesses the LRT station on Main Street east of the intersection.

   The analysis of this intersection indicates that during the summer afternoon peak hour the intersection operates at a LOS C. The analysis includes the presence of the LRT in the intersection. The westbound right traffic lane becomes a right turn only at the intersection, so west bound through traffic must use the left lane. This west bound leg of the intersection also operates at a LOS C. With proper advance signing, warning drivers that the right lane must turn right, the merging traffic should not create a problem. The signal has three phases for traffic movement. As the LRT crosses the intersection, all movements are prohibited except left turn movements from eastbound State Highway 82 to northbound 7th Street (the first signal phase). In addition to a permitted left turn from eastbound Main Street, the second signal phase includes east/west through movements on Main Street. Finally, the third signal phase is for southbound traffic on 7th Street.

3. *6th Street* -- No median opening is provided at this intersection. Side street access is right in, right out only.

4. *4th Street* -- No median opening is provided at this intersection. Side street access is right in, right out only.

5. *2nd Street* -- No median opening is provided at this intersection. Side street access is right in, right out only.

6. *1st Street* -- No median opening is provided at this intersection. Side street access is right in, right out only.

7. *Monarch Street* -- As part of the Preferred Alternative, Monarch Street and Aspen Street are converted into a one-way couplet between Main Street and Durant Avenue.

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Aspen Street will be one-way northbound, and Monarch Street will be one-way southbound.

4c. Recreational Trails/Bicycle and Pedestrian Access

The trail system in the Aspen area includes pathways and trails for walking, hiking, biking, cross-country skiing, and other recreational activities. These trails are an integral part of the Aspen community. The Preferred Alternative includes some modifications to the existing trail systems. The modifications create an opportunity to improve the Aspen trail system. Trails disturbed will be replaced or relocated to enhance the usability of the trail system.

One trail that requires modification is the AABC trail. This trail runs along the north side of State Highway 82 from the AABC to Cemetery Lane. In some areas, realignment and/or improvement of the highway requires relocating the AABC trail. These areas include between the Tiehack Bridge and Truscott Place, and between Maroon Creek Road and the cut and cover tunnel. At Maroon Creek Bridge, the AABC trail is beneath the north side of the bridge.

Another trail that requires relocation is the High School Bike Path. This trail runs along the south side of State Highway 82 between Maroon Creek Road and Castle Creek. This trail is relocated to parallel the Modified direct alignment across the Marolt-Thomas Property.

The Preferred Alternative includes a cut and cover tunnel across the Marolt-Thomas Property. The right-of-way above this tunnel is returned to open space. The usability of the bicycle/pedestrian trails in this area are improved by these modifications. The tunnel reduces conflicts between vehicle traffic and bicycle/pedestrian traffic by separating these two movements. The trails impacted by the alignment across the Marolt-Thomas Property are relocated on top of the cut and cover tunnel. The Preferred Alternative may also include grade-separated trails in certain locations. Potential locations for grade separation include the Airport Multimodal Facility, Buttermilk Multimodal Facility, and the east side of Maroon Creek Bridge.

5. Cost

5a. Capital Costs

The capital cost estimate developed for the Entrance to Aspen EIS is a conceptual level estimate. The FEIS costs have been refined and updated with more recent cost data as it has become available. As the development of the Preferred Alternative progressed from the DSEIS to the FEIS, refinements of the expected items necessary for the proposed LRT system were included in the cost estimate. The capital costs are for the Preferred Alternative and include mostly double track for the LRT system. The cost of the Preferred Alternative can be reduced by about $2.6 million if less double track is used (see **Section II.B.2d** for more information on the potential single track design). However, the single track system loses some of its flexibility under the lower cost, minimum double track scenario.

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The total cost estimate for the Preferred Alternative is based on the most recent (1996) cost data available for the State of Colorado. The costs for the Preferred Alternative in the FEIS have been refined several times as the result of changes to the alignment, cross section, operating characteristics, and an increased level of detail. Refer to the technical memorandum, ***Cost Comparison Evaluation***, for more information. The total capital cost of the Preferred Alternative is estimated to be approximately $159.6 million (including the realignment of Owl Creek Road). This cost estimate includes expense of the following six items:

1. Design and Construction Costs of State Highway 82 and the LRT System
2. LRT Stations
3. Right-of-way
4. Multimodal Facilities
5. LRT Vehicles
6. Design and Construction costs for the realignment of Owl Creek Road and West Buttermilk Road

Each of these items is discussed in greater detail in the following sections. Table II-5 is a capital cost summary of the Preferred Alternative. For a more detailed discussion of costs, see the technical memorandum ***Capital Cost Estimate Assumptions - State Highway 82 Entrance to Aspen FEIS.***

The various items in the Preferred Alternative will likely require different funding sources. Both CDOT and FHWA are legally restricted to implementing only transportation improvements. Neither agency has a legal basis for controlling land use decisions or implementing demand management policies such as increasing parking fees or changing the transit routing and scheduling. CDOT can only use state gas tax funds for highway related projects. To support the transit component of this project, local officials have committed to the use of existing local transit taxes to fund the design and construction costs of the LRT system, including the maintenance facility, LRT vehicles, LRT stations, and the rail bed. Due to complexities and uncertainties associated with the multimodal facilities, a combination of private and public funds will likely be used for these facilities.

1. Design and Construction Costs of State Highway 82 and the LRT System

The design and construction of the State Highway 82 portion of the Preferred Alternative can be separated into highway costs and LRT costs. Design and construction costs include design engineering, construction management, construction mobilization, traffic control (for construction), labor and materials, and contingencies. The total highway and LRT design and construction capital costs are estimated to be approximately $66.1 million.

The design and construction cost for the highway-only portion is approximately $30.8 million. This includes the cost of a new Castle Creek Bridge ($4.5 million), a new Maroon Creek Bridge ($5.5 million), and rehabilitating and restoring the existing Maroon Creek bridge for light rail ($1.5 million). This rehabilitation includes replacing or improving existing bridge footings to ensure that they remain below the lowest point in the channel. The design and construction cost for the LRT is $35.3 million. This cost includes a maintenance facility ($3.7 million) and electrification of the system ($5.8 million). The electrification includes catenary poles, wiring, and substations.

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Table II-5
Summary of Capital Cost Estimate for the Preferred Alternative

State Highway 82	($ Million)
1. Construction Cost	
Highway	$ 30.8
LRT	$ 35.3
Subtotal	**$ 66.1**
2. LRT Stations	**$ 2.2**
3. Right-of-Way	
Highway/LRT	$ 2.6
LRT Stations	$ 3.0
Subtotal	**$ 5.6**
4. Multimodal Facilities	
Airport	$ 60.0
Buttermilk	$ 8.5
Subtotal	**$ 68.5**
5. LRT Vehicles	**$ 13.9**
Total	***$ 156.3***

6. Realigned Owl Creek Road and West Buttermilk Road	($ Million)
Construction Cost	0.5
Right-of-Way	2.8
Total	***3.3***
Grand Total	***159.6***

2. LRT Stations
The design and construction costs of the LRT stations are based on an average cost of $275,000 to $325,000 per station. The total cost of the seven LRT stations is $2.2 million. This does *not* include the multimodal facilities at Buttermilk and the airport or a potential cover structure at the Moore Property.

3. Right-of-Way
The cost of the right-of-way can be separated into general highway/LRT right-of-way and LRT station right-of-way. The total cost of right-of-way for the Preferred Alternative is estimated to be approximately $5.6 million. The highway/LRT right-of-way cost is based on the amount of new right-of-way outside of the existing State Highway 82 right-of-way.

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The new right-of-way limit assumes an additional 1.5 meters (5 feet) of right-of-way is needed beyond the limit of construction (top of cut slope; bottom of fill slope) for fencing and drainage. The cost of right-of-way for the highway and LRT alignment is $2.6 million.

The cost of right-of-way for the LRT stations is $3.0 million. This includes the right-of-way needed for the Buttermilk multimodal facility and the Moore Property.

4. Multimodal Facilities

The cost of the multimodal facilities at the airport and Buttermilk are separate from the cost of the LRT stations and right-of-way requirements at these locations. The cost of the multimodal facilities is based on the need for approximately 4,350 parking spaces. The parking spaces are needed based on the high growth transportation demand model scenario (assuming no down-valley extension of light rail) and account for the increased demand for parking in the summer. The total number of spaces to be placed at the Buttermilk site is 750, as identified in the BBFEIS. The cost of the Buttermilk multimodal facility is about $8.5 million and includes a two-level parking structure. The remaining 3,600 parking spaces will be located at the airport. This capacity includes the 1,650 spaces identified in the BBFEIS. The cost of the airport multimodal facility is $60 million and includes a six-level parking structure with four levels below grade and two levels above grade.

5. LRT Vehicles

The estimated cost of eight new low-floor transit vehicles at a cost of $1.735 million each is $13.9 million.

6. Design and Construction Costs of Owl Creek Road and West Buttermilk Road

The design and construction costs of the Owl Creek Road and West Buttermilk Road realignment include design engineering, construction management, construction mobilization, traffic control (for construction), labor and materials, right-of-way, and contingencies. The total design and construction cost is estimated to be approximately $3.3 million.

5b. Operations and Maintenance Costs

The operation and maintenance cost estimate for the Preferred Alternative is based on the most recent (1996) cost data available. The estimate was derived from costs of transit agencies currently operating a light rail system.

This operation and maintenance cost estimate is an approximation of the expected cost for a light rail transit system. Several factors could influence the cost of such a system.

Cost estimates are provided for two scenarios: 1) 15 minute service during peak (high-volume) periods, and 30 minute base service, which will be the operating headway system at the opening of light rail service; 2) 10 minute service during peak periods and 20 minute base service, which is a possible future modification of the operating headway system. The cost estimate includes expenses for the following five items:

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1. *Administration* -- This includes general administration of the LRT system by RFTA and fare inspection to enforce proof of payment.

2. *Transportation* -- This includes transportation and training.

3. *Vehicles and Facilities Maintenance* -- This includes the cost of maintaining, servicing, and cleaning light rail vehicles (LRV's), and maintaining facilities.

4. *Track Maintenance* --This includes maintenance of signals, traction power, track, and structures within the LRT right-of-way.

5. *RFTA Administration Credit* -- Cost data from earlier projects has demonstrated that RFTA previously has been able to operate at lower costs in comparison to other transit agencies. It is expected that RFTA will perform certain administrative and management functions for the light rail system, resulting in economies to the light rail operations. For these reasons, this administration credit is included to provide a more accurate cost estimate for this light rail system.

Table II-6 provides operation and maintenance costs for the Preferred Alternative. Table II-7 shows the annual operating costs per hour of train operation and per mile of train operation for each headway scenario.

Table II-6
Annual Operation and Maintenance Costs for the Preferred Alternative
($ millions)

O&M Cost Item	*15 Minute Peak/ 30 Minute Base*	*10 Minute Peak/ 20 Minute Base*
1. Administration	$ 0.10	$ 0.14
2. Transportation	$ 0.56	$ 0.80
3. Vehicle and Facilities Maintenance	$ 0.72	$ 0.97
4. Track Maintenance	$ 0.32	$ 0.41
5. RFTA Administration Credit	$ (0.05)	$ (0.05)
Total	**$ 1.65**	**$ 2.27**

The 15 minute peak/30 minute base operating system has costs of $129 per train-hour and $9 per train-mile, while the 10 minute peak/20 minute base operating system has costs of $113 per train-hour and $8 per train-mile.

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Table II-7
Operating Costs Per Train-Hour and Train-Mile

	15 Minute Peak/30 Minute Base	*10 Minute Peak/20 Minute Base*
Cost per Train-Hour	$129	$113
Cost per Train-Mile	$ 9	$ 8

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III. System Management

System management refers to the coordination of various transportation factors, including transportation management (TM) programs, parking demand, and transit ridership characteristics. TM refers to programs and policies designed to reduce travel demand and to improve utilization of the transportation system. TM encompasses both transportation demand management (TDM) and transportation systems management (TSM). Parking demand refers to the parking requirements for the Aspen Airport Business Center (AABC) / Airport light rail transit (LRT) Station and the Buttermilk LRT Station. The parking demand is based on meeting the zero-growth goal for a 2015 summer high growth scenario. Transit characteristics refer to the changes in the community and Roaring Fork Transit Agency (RFTA) that will occur with implementation of the LRT and the incremental TM program.

System management TM is a necessary step to achieve the goal of zero vehicle growth (1993 traffic volume)[1]. Although TM is a key element in the State Highway 82 Entrance to Aspen Environmental Impact Statement (EIS), the measures described in this section will be implemented by local jurisdictions without state or federal financial assistance.

A. THE PREFERRED ALTERNATIVE INCREMENTAL TM PROGRAM

The primary goal of the Incremental TM Program is to maintain future traffic volumes at or below the 1993 traffic levels in the project corridor. The TM program was designed to keep traffic levels to 24,800 vehicle trips per day during the winter and 28,600 vehicle trips per day during the summer at the Castle Creek Bridge. With the implementation of the light rail system from the airport terminal area to downtown Aspen, the goal of the Preferred Alternative is to reduce vehicle trips to meet the zero-growth target. Other goals include the development of TM programs that allow greater flexibility in implementation and recognize Aspen as a community that is more responsive to TM programs than typical U.S. urban centers.

An effective TM program includes a combination of incentives, disincentives, and supporting measures to encourage the use of transit, carpools, bicycles, and walking. Instead of single-occupant vehicle (SOV) trips, people would be more inclined to combine or eliminate a trip. The three categories of TM measures are described below.

Disincentives, such as paid parking or congestion pricing, tend to be the most effective TM measures. Because of the "out-of-pocket" impact of these measures, drivers are more likely to either seek out transit or other transportation alternatives, or to combine or eliminate non-essential trips.

Incentives, such as improved transit service or reduced rates for high occupancy vehicle (HOV) parking, make non-SOV alternatives more attractive, without penalizing the SOV user.

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[1] Existing traffic levels at the entrance to Aspen are shown as 1993 volumes because the transportation demand model is based on and calibrated to 1993 traffic volumes.

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Supporting measures provide information and services to assist commuters, residents, and visitors in selecting non-SOV alternatives. Examples include carpool ridematching and guaranteed ride home programs. These programs by themselves are unlikely to provide much traffic reduction. However, they can remove a barrier to those who would otherwise be reluctant to use another travel mode.

The most successful programs often include elements of all three measures. The City of Aspen, for example, has experienced success with a combination of information programs (supporting), increased transit service (incentive), and pay parking in the downtown core (disincentive). These programs have resulted in higher transit ridership and lower traffic levels. Examples of TM measures are shown below.

Examples of TM Measures

Guaranteed Ride Home Program	Congestion Pricing
Subsidies	Limited Capacity for SOVs
In-town Shuttle Service	Paid Parking
Travel Allowance (parking cash-out)	Limited Parking Supply
Telecommuting	Licensing Fees or Quotas
Transportation Coordinator	Gasoline Tax
Commute Information Center	Annual Tax on Private Parking
Real-Time Commuter Information	First-Come, First-Served Access
Demand Transit	Transit Expansion
Vanpool Programs	Park & Ride Lots
Flex-Time	Seamless Transit Service
Compressed Work Week	Rail Transit
Land Use Restrictions	Free or Reduced Transit Fares
Maximum Parking Limits	HOV Lanes
Taxi Sweeper	Jitneys
Bicycle and Pedestrian Improvements	Carpool Programs/Ridematching
Free or Discounted HOV Parking	Preferential HOV Parking
Auto-Free Zones	Intercept Remote Parking Lots

The most reasonable strategy for implementing TM programs is an incremental approach. The number of TM measures applied depends on the extent to which traffic exceeds the target (in this case, zero growth). Public awareness elements in the program give area drivers the opportunity to change their behavior to avoid additional TM measures such as higher parking rates or limitations on vehicle use. Additionally, the program allows decision-makers to learn from past successes and failures so they can more accurately predict the impact of future TM measures.

1. Incremental TM Program Requirements

A major aspect of the Incremental TM Program is the collection and analysis of data. The Incremental TM Program monitors the average daily traffic (ADT) during the month and responds by implementing TM measures whenever the growth target is exceeded. If the counts show that the zero-growth target is exceeded by less than 5 percent, no additional monitoring is needed. If the

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counts reveal that the target is exceeded by 5 percent or more, additional monitoring is conducted, including:

- A survey to measure trip purpose by time of day, average car occupancy, origin and destination, and classification of vehicle (commercial/non commercial).
- A parking utilization study to determine the use of internal parking, multimodal, and other park & ride lots.

The results of this monitoring will help determine if any modifications need to be made to the TM program to achieve the zero-growth target. TM program elements are classified in three levels. Table III-1 shows examples of measures for each level. The levels are defined as:

- Level 1 - Starter level actions implemented when zero growth level is first exceeded.
- Level 2 - Programs designed to reduce traffic by 0-5 percent.
- Level 3 - Programs designed to reduce traffic by 7-10 percent.
- Supporting Actions - TM measures that would help ensure the success of Level 1-3 programs.

The program works as follows:

- If vehicle levels are at or below 1993 levels, then no new TM measures are implemented.
- The first time vehicle counts exceed the zero-growth goal, then the Level 1 (Starter Level) program is introduced.
- If vehicle counts again exceed the zero-growth goal, then adjustments are made to the TM program, as follows:

If the ADT during the month is ...	*Then...*
Less than 5 percent above the zero-growth target	Implement one item from the second level list at each additional occurrence.
Between 5 and 10 percent over the zero-growth target	Implement two items from the second level list and at least one supporting program.
10 percent or more over the zero-growth target	Implement one item from the third level list and at least one supporting program.

Monitoring the monthly ADT not only provides information on how much traffic currently exists, but it sets the amount of TM measures that need to be implemented and provides details about the characteristics of those who are driving. The Incremental TM Program calls for year-round monitoring of traffic volumes. Daily counts would be used to establish whether a month's ADT levels exceed the monthly targets. The peak winter (March) and summer (July) months are the keys to the Incremental TM Program. When these peak monthly targets are exceeded, monitoring and TM measures would be applied as shown in Table III-2. Monitoring actions would include average daily counts to establish program performance, an intercept survey to determine trip characteristics, and a parking study to determine the use of internal parking, multimodal facilities, and park and ride lots.

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Table III-1
Incremental TM Program Measures

Early Action Item (Level 1)	*Level 2 Programs*	*Level 3 Programs*	*Supporting Action*
TM Authority	Improved transit:	Parking cap	Guaranteed ride home
Program staff	• shorter average headways	Parking reduction	Park & ride lots
Permanent road counter	• larger area coverage	Auto Free Zones	Recreation equipment
Information support:	• increased subsidies	Major increase in internal parking rates	Bus stop shelters
• Kiosks	New capacity: light rail, new bus service	Parking Space Tax - Congestion Pricing	Parking ratio maximums for developments
• Ridematch	Improvements to internal shuttles	Vehicle quotas	Bicycle & Pedestrian Facilities
• Trip planning	Jitneys	Vehicle permits	Vanpool Programs
• Transit literature	Demand responsive transit	HOV Subsidy	Employer Programs:
• On-line route info	Minor increase in internal parking rates	Other potential programs	• Cash out Parking
• Parking controls	Additional HOV revisions		• Reduced Work Week
• Targeted marketing	Multimodal station		• Telecommuting
	Gondola		Modifications to development standards
	Commute Ordinance		remote employee parking
	Vehicle metering		transit information systems
	Other potential programs		Satellite office development
			Other potential programs

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Table III-2
Incremental TM Program Requirements

Monthly ADT Compared to the Zero Growth Target	*Monitoring Action Required*	*TM Measure Required*
Equal or Below	Counts	Continue with early-action items and supporting actions
Less than 5 Percent Above	Counts	One Level 2
Between 5 and 10 Percent Above	Counts /Survey/Parking	Two Level 2 and 1 Supporting
10 Percent or Over	Counts /Survey/Parking	One Level 3 and 1 Supporting

Although the winter and summer peak months will be used to determine what TM measures must be implemented, a separate monthly target should be set to get the community in the habit of using transportation alternatives. The monthly targets in Table III-3 are based on the 1993-94 ADT for each month. These volumes may need to be adjusted to reflect changes in the annual profile, such as the growth in off-season traffic.

Table III-3
Zero Growth Targets by Month

Month	*Average Daily Traffic Target by Month*
January	23,800
February	24,300
March*	24,800
April	18,800
May	19,300
June	26,200
July*	28,600
August	28,600
September	24,000
October	20,500
November	20,000
December	25,200

* *Peak month for determining seasonal adjustments to TM program.*

The amount of TM needed depends on how much the traffic levels exceed the zero-growth target. Figures III-1 and III-2 show actual and projected summer and winter traffic levels through the year 2000 at Cemetery Lane. Winter traffic growth has risen at a rate of 1.2 percent per year, approximately mid-way between the Winter High and the Winter Low projections. The summer graph shows that traffic is rising at nearly 1.3 percent annually, close to the Summer High growth projection. Depending on which projection is followed, by the year 2000, between 5 and 12 percent of winter traffic and 9 and 12 percent of summer traffic must be reduced through the use of TM measures.

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Figure III-1
Growth Rate Comparison
Winter Year 2000

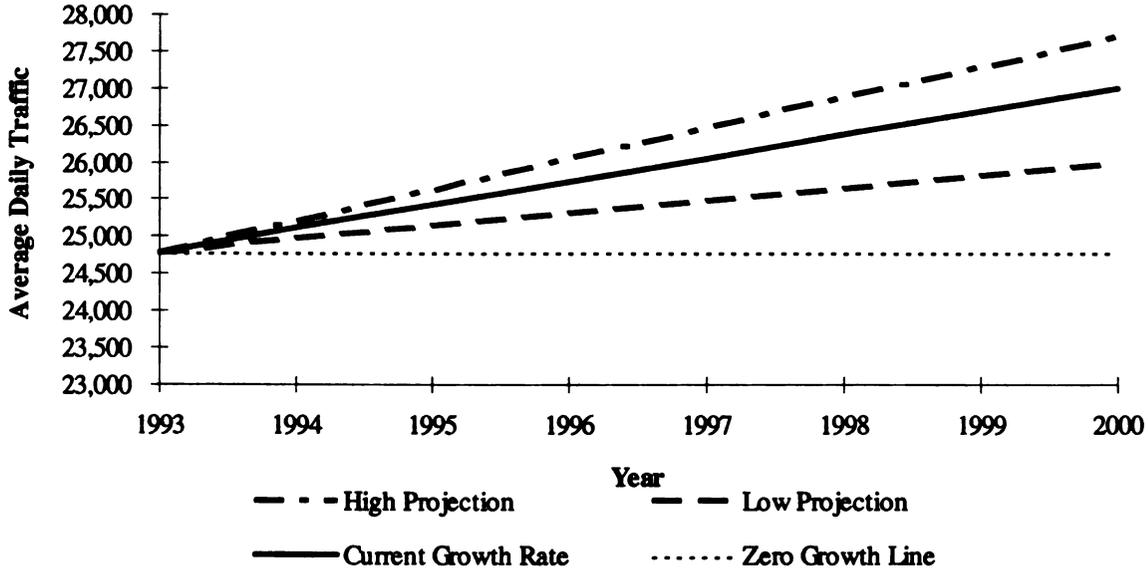
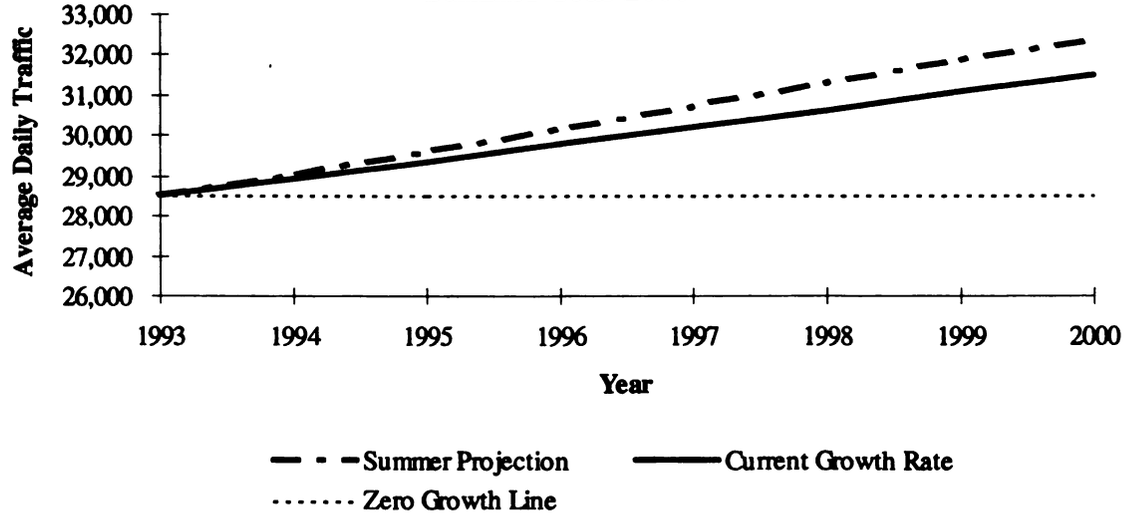


Figure III-2
Growth Rate Comparison
Summer Year 2000



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To illustrate this point further, the RFTA gained approximately 3,900 daily new summer peak riders during the 1993-1995 period, yet traffic levels have still increased by 2,500 daily vehicle trips. As impressive as the RFTA ridership increases have been, vehicle trips in the project corridor continue to increase.

2. Early Action Items

Data on recent traffic levels indicates that the Incremental TM Program should be implemented sooner rather than later. According to the most recent Colorado Department of Transportation (CDOT) counts (1995), traffic now is already at least 2.4 percent over the winter growth target and 2.7 percent over the summer growth target. Unless action is taken now, it is likely that by the year 2000, when the light rail system opens between the airport and Aspen, traffic levels could exceed the zero-growth target by as much as 12 percent.

Because entry traffic already exceeds the zero growth target, the items below should be implemented as soon as possible to help reduce daily vehicle trips. The focus of these items is to build the organizational structure for implementing the TM program and to start initiating changes to driver behavior. The successful implementation of these early action items is expected to bring traffic to near or below the zero-growth target.

- *TM Program Authority* -- An Authority needs to be established to oversee the TM program and recommend the implementation of TM measures. A five to seven member board should be appointed that represents the key stakeholders in the process. Additionally, a process needs to be established where the recommendations of the Authority can be forwarded to decision makers.

- *Program Director* -- A full-time program director will have the responsibility of implementing the TM program. The program director's primary role will be to secure program funding, coordinate with the City of Aspen and adjoining jurisdictions, act as a community liaison, be a spokesperson for the program, and establish relationships with key employers and other major companies who attract a high number of vehicle trips. Additionally, up to two support staff may be necessary to carry out marketing, accounting and program administration functions.

- *Permanent Road Counter* -- A permanent road counter would gather count data and act as an educational tool to display the number of vehicles that pass a given point in the project corridor. A "daily total" display screen could show commuters how their travel behavior is affecting the attainment of the zero-growth goal. Display options include showing an actual daily total that changes as a car passes, or a predicted total for the day that estimates whether the target is likely to be exceeded on that day. Further, symbols, percentages, or lights could be used to indicate if too many vehicle trips are crossing the entrance, requiring drivers to further change their behavior. The road counter emphasizes driver behavior modification.

- *Parking Controls* -- Although parking itself does not generate new trips, excess parking can make traveling by automobile more convenient. As an early action item, the City of Aspen should establish a moratorium on principal use parking lot development within Aspen's

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boundaries. Additionally, the City of Aspen should establish maximum parking development standards associated with the code required for new developments.

- *Target Marketing Efforts* -- Marketing efforts would begin to increase awareness of the TM program's goals and to vest the community in the program's success. These could include:

  - press releases, and radio and television spots that discuss traffic levels and potential TM measures that might need to be applied.
  - information sent with tourist information packages explaining transportation options.
  - information for employer-based trip reduction programs.
  - implementation of a guaranteed ride home program.
  - TM packets sent to area residents and employees explaining the program and the community's role in the program's success.

The official opening for the light rail system is the year 2000. The TM measures that are necessary to meet the zero-growth goal depend on several items. These items include the extent to which the early action items described above are implemented, the effect these actions have on driver behavior, and whether additional TM measures are introduced to curb the estimated growth in vehicle traffic.

For this analysis, it is assumed that TM measures are not put into place until the year 2000. As seen earlier, traffic growth is projected to increase to 27,800 vehicles per day in the winter (high growth scenario) and to 31,300 vehicles in the summer (high growth scenario), or about 12.5 percent over the zero-growth target. Accordingly, the following actions would be required under the Incremental TM Program guidelines:

1. *Early Action (Starter) Items* -- As previously described above, organizational, staffing, monitoring, and informational programs would be put into place.

2. *Monitoring Actions* - A survey to measure trip purpose by time of day, average car occupancy, and classification of vehicles would need to be completed, as well as a parking utilization study of internal, multimodal, and park and ride lots.

3. *TM programs* - Because the multimodal lot and light rail system qualify as level 2 programs, no additional TM measures would need to be implemented at this time. However, drivers should be warned of the specific disincentives that will be put into place if vehicle travel is not reduced below the zero-growth target. For example, to obtain a 10 percent reduction in traffic levels, Aspen parking rates would be increased by 25 to 40 percent. In addition, it is suggested that a variety of supporting actions be implemented, such as a vanpool programs, rural postal delivery, a telecommuting program, and an airport baggage delivery service.

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3. Costs of the TM Programs

Table III-4 shows cost estimates for implementation of the opening day TM measures. The overall costs of particular TM measures vary considerably due to regional variations, number of participants, and economies of scale. Costs are based on costs of programs similar in scope to measures that might be implemented in Aspen.

The Incremental TM Program will require constant and extensive advance planning. Once the growth target is exceeded it will be necessary to get TM measures implemented quickly so the community has time to adjust its behavior before the next monitoring period. Future programs will have to be planned in detail with budgets estimated prior to implementation. Additionally, any cost-sharing arrangements will have to be worked out among the participating jurisdictions prior to the implementation of a new TM measure.

Table III-4
Starter TM Costs

	Annual Program Cost	
TM Measure	*Capital*	*Operating*
Full-time Coordinator Plus Marketing*		$75,000-$250,000
Permanent Road Counter	$10,000-$15,000	
Intercept Survey	$10,000	
Overhead Display (each)	$30,000-$35,000	
Supporting TM Programs		$30,000-$100,000

** Includes one program administration plus two staff personnel*

4. Example Monitoring Program

To provide a better understanding of how the Incremental TM Program will work, two hypothetical cases have been developed. The two hypothetical cases are shown in Table III-5. The first case shows how the program might work if it started in the year 2000, the opening day for the light rail system. The second case shows how the program might work assuming a 1997 start focusing on efforts that vest the community and begin to change driver behavior (early action items).

Data and proposed TM measures are for illustrative purposes only. The example reflects fictitious summer vehicle counts and assumes the monitoring program, with adjustments to the TM program, will actually be done in both winter and summer. As seen in the examples, delaying the initiation of TM until after year 2000 could result in the need to implement more TM measures. In the hypothetical case, the first example requires more TM measures and more Level 3 TM measures than the early start alternative.

Figure III-3 shows the traffic volume fluctuation without early action items for TM and with early action items for TM. The chart illustrates how an early action program can reduce the need for higher level TM programs.

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Table III-5
Examples of Incremental TM Programs

Year	*Example 1: Without Early Action*	*Example 2: With Early Action*
1997	No action taken until year 2000	Program implemented with starter level programs and a Level 2 program, as required by the program guidelines. Aggressive efforts are made to shift drivers to HOVs and transit.
2000	Approximately 9 percent over zero growth target. Starter level actions put into place along with the light rail and multimodal center.	Commuters welcome the anticipated opening of the light rail. The community is behind the effort to keep traffic levels below the zero-growth target.
2001	Area growth requires that two additional Level 2 measures are necessary to move traffic levels back towards the zero-growth target.	Traffic levels remain slightly below the zero-growth target.
2002	Traffic levels are headed down towards zero-growth target as community begins to change behavior to avoid future TM measures. An additional TM Level 2 TM measure is added.	Traffic levels remain below the zero-growth target.
2005-2007	Additional second Level 2 TM measures are added and adjustments are made each year.	Additional second Level 2 TM measure is necessary to lower traffic growth in 2005.
2008	Rapid traffic growth occurs due to surge in home building and growth in summertime tourism. Summer counts are 12 percent above goal requiring a Level 3 program and supporting actions.	Rapid traffic growth occurs overwhelming attempts by the community to keep traffic levels down. Traffic levels reach 7 percent over target. Two Level 2 programs are implemented in response.
2009	An additional Level 2 TM measure must be added to bring traffic levels below the zero growth target	The additional TM measures plus supporting marketing efforts result in a drop below the zero growth target.
2010-2015	Efforts to gain community vesting begin to finally come into place. Only minor adjustments in TM measures are necessary	Only minor TM measure adjustments are necessary.
2015	Zero-growth target is met	Zero-growth target is met

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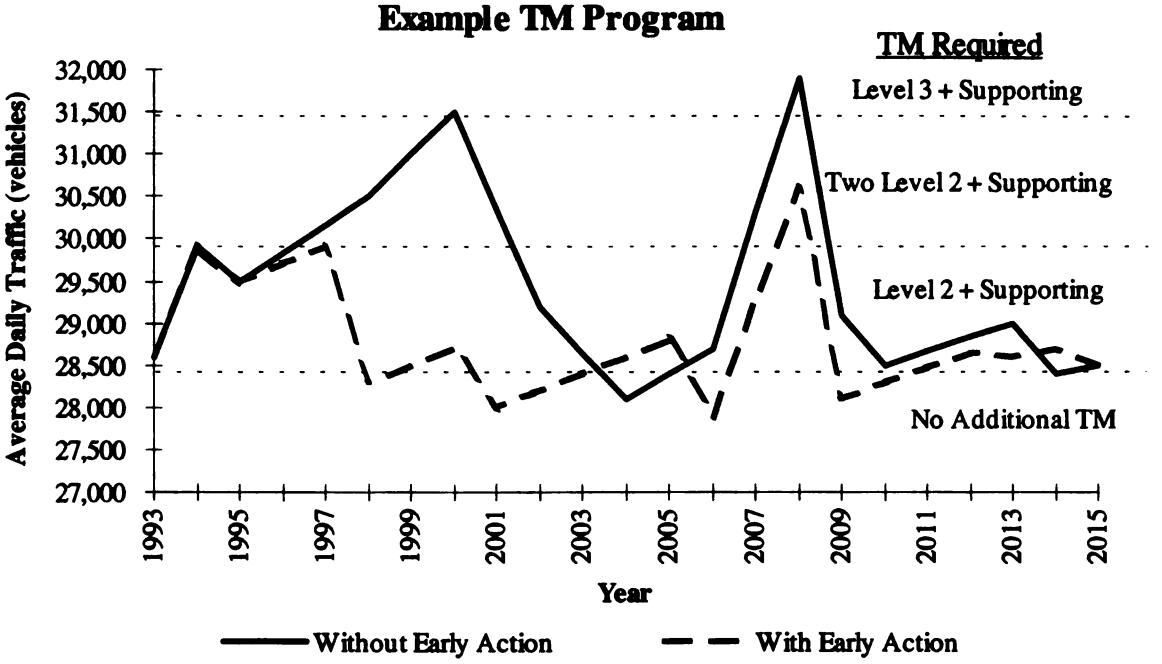
Figure III-3
Example TM Program



B. PARKING DEMAND

Parking facilities will be developed at two locations within the project corridor: a structured parking lot at the airport multimodal center and at the Buttermilk Ski Area. This section discusses the parking demands and parking requirements for these facilities for years 2000 and 2015.

1. Airport Multimodal Center

Results of the modeling process indicate a large demand for parking at the airport multimodal center, assuming the summer high growth demand and no downvalley extension of light rail. Table III-6 shows the projected parking demand and parking requirement for both year 2015 and year 2000 (the opening day of rail operation). The table assumes that no parking fee is charged at the airport multimodal parking lot, bus riders receive free transfers to rail, and sufficient TM measures exist to meet the goal of maintaining existing traffic volume. Vehicles from Aspen home-based trips are assumed not to park at the multimodal lot. These trips will drive downvalley or use LRT out of Aspen and transfer to RFTA bus service.

To meet the projected summer high growth demand at the multimodal center, approximately 3,600 spaces will be needed to allow for the practical capacity of the lot. Practical capacity refers to the fact that parking facilities are rarely completely full due to continuous turnover and the difficulty in finding the last few remaining spaces. In this case, the parking facility is assumed to be full when 90 percent of the parking spaces are occupied.

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The opening day demand and requirement will be almost half of year 2015 demand. The opening day demand for 1,600 parking spaces is based on growth in corridor traffic and the large number of persons expected to move from other forms of travel to rail at the multimodal center.

Table III-6
Summary of Parking Requirements

	Year 2015			*Opening Day (2000)*		
	Winter High	*Winter Low*	*Summer High (2)*	*Winter High*	*Winter Low*	*Summer High*
Total Parking Demand	2,900	1,700	3,300	1,400	600	1,600
Total Parking Requirement (1)	3,200	1,900	3,600	1,600	700	1,800

(1) Total parking requirement assumes a 90 percent practical capacity of parking.
(2) Summer parking demand has been adjusted to reflect TM programs in the summer similar to winter programs.

Table III-7 shows the trip purposes of those parking at the airport multimodal center. The majority of those expected to use the multimodal center are commuters. Recreation trips would make up about 17 percent of those using the multimodal lot.

Table III-7
Trip Purpose - Multimodal Parking Users
Winter High Growth Year 2015

Trip Purpose	*Vehicles Parked*	*% of Total at Multimodal*
Recreation	490	17%
Work	2,310	79%
Other	130	4%
Total	2,930	100%

Source: MK Centennial, TDA Inc.

Other factors could be applied to either raise or lower the required size of the facility. Some factors that may influence the demand for parking are:

- Transit - The frequency, cost, convenience, and travel time of downvalley bus service and light rail service.
- Parking - Fewer parking spaces could be provided at the multimodal lot as a TM measure, however, the result may create greater demand downvalley or reduced LRT ridership.
- TM Programs - For example, a pay parking program at the multimodal lot would likely shift the demand to downvalley park-and-ride facilities. Parking demand in 2015 could be decreased by as much as 700 spaces with the institution of a $5 daily fee.
- Actual traffic and population growth experience.

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2. Buttermilk Multimodal Center

A 750-space parking lot is planned at the Buttermilk station, reserved for those with a Buttermilk destination. As seen in the Table III-8 below, the demand for parking at Buttermilk exceeds the 750 spaces anticipated at the site if no restrictions are applied. The total winter high growth scenario for 2015 is projected to exceed the proposed parking supply of 750 spaces by almost 50 percent. The majority of this demand is Aspen-based, meaning that the focus of any TM program must include measures to reduce Aspen-origin driving trips and increase use of the LRT system.

Table III-8
Parking Demand at Buttermilk Lot for Home-Based Trips

	Year 2015 Winter High without TM Applied		*Year 2015 Winter High with TM Program*	
Origin	*Parking Demand*	*Percent*	*Parking Demand*	*Percent*
Aspen	918	84%	452	82%
Airport-Aspen Rail Corridor	135	12%	81	14%
Snowmass Village	19	2%	12	2%
Downvalley	26	2%	12	2%
Total Demand	1,098	100%	557	100%
At 90% Practical Capacity	1,220	---	619	---

Source: MK Centennial O-D survey 1993-94, Year 2015 projection.

Possible TM measures that could reduce or restrict Aspen-based demand for Buttermilk parking include:

- A transportation access pass issued to all arriving Aspen visitors.
- A restriction on westbound left turns into Buttermilk lot during a.m. peak hours.
- Reserved parking spaces in the Buttermilk lot for downvalley travelers with a Buttermilk destination through a medallion/pass program available to downvalley residents and hotel patrons.
- Reduced parking fee with proof of Buttermilk destination, such as a validated ski pass.

C. FUTURE TRANSIT RIDERSHIP CHARACTERISTICS

The light rail service between Rubey Park and the airport will change how people get to and from Aspen. By year 2015, more than one in three person trips through the project corridor will be on the LRT system if zero-growth targets are met. The focus of this section is to describe the changes to the community and RFTA that will occur through the implementation of the LRT system.

Assumed in this analysis are the multimodal facilities, the LRT system, two general traffic lanes on State Highway 82 between the airport and Aspen, and the implementation of sufficient levels of TM to keep traffic volumes at the zero-growth target. Not assumed in the rail ridership calculations are

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the possibilities that the LRT system could be extended to Brush Creek Road or that the Aspen Ski Company continues to operate ski bus service between the ski areas.

1. Ridership Trends

RFTA has experienced rapid growth in service and transit ridership levels over the last few years. As seen in Figure III-4, ridership in 1993-1996 has grown from 10,200 to 14,400 daily winter passengers or an average rate of 10 percent per year. Despite this increase in RFTA ridership, there has not been a reduction in the number of vehicle trips along State Highway 82. Winter traffic has grown at a rate of 1.2 percent per year, and summer traffic is rising at nearly 1.3 percent annually.

Transit ridership crossing the Castle Creek Bridge is expected to grow to 14,800 riders by the year 2000 and nearly 23,000 passengers by the year 2015 (winter high growth scenario). This increase is based on the expected future growth of transit ridership regardless of TM and other measures and effect of TM measures and the zero-growth target, including the multimodal intercept lots and light rail service.

Figure III-5 shows the 1993-2015 projected winter high growth rate of transit ridership with and without TM measures (including the LRT and multimodal center) to meet the zero-growth target. Transit ridership is estimated to be 36 percent higher in year 2015 with TM measures and the LRT system.

The LRT ridership will vary depending on the season. Figure III-6 shows the ridership projections at the Castle Creek Bridge for year 2000 and 2015 for the Winter High, Winter Low, and Summer High projections. The Winter High projection for year 2015 is 38 percent higher than the Summer High projection. This lower seasonal ridership is due to a more relaxed zero-growth standard during the summer months. The relaxed standard may result in more vehicles in the project corridor with a lower-than-average vehicle occupancy. Fewer work-related trips in the summer lowers the number of persons likely to be affected by TM programs.

2. Characteristics of the Light Rail Ridership

A profile of typical riders can be developed using the results of the transportation demand model and origin/destination data. This section describes the trip purposes, travel mode, origin/destination, and the role of skier trips for the year 2015 Winter High Growth scenario.

Table III-9 shows the trip purpose for those transferring at the airport multimodal center to the LRT for the year 2015 Winter High Growth scenario. This table is based on the 19,300 person trips that either transfer from bus or private automobiles to LRT. The largest share is expected to come from work trips.

The LRT system and implementation of TM measures will create a modal shift to transit. Table III-10 shows the modal shift in person trips from other modes to the LRT at the airport multimodal center for winter high year 2015 projection. As seen in the table, the largest shift (other than bus trips) is from SOVs to rail.

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Figure III-4
1993-1996 Winter Transit and Vehicle Growth

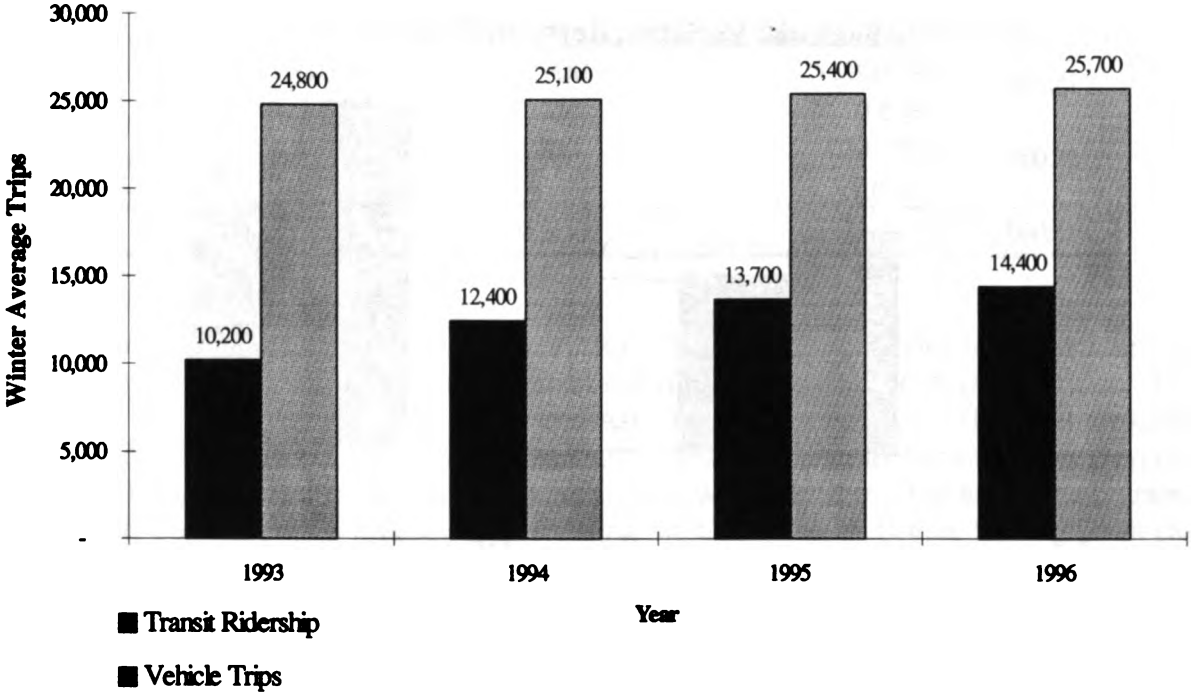

Figure III-5
Transit Ridership Growth 1993-2015 East of Cemetery Lane
Winter High Growth Projection

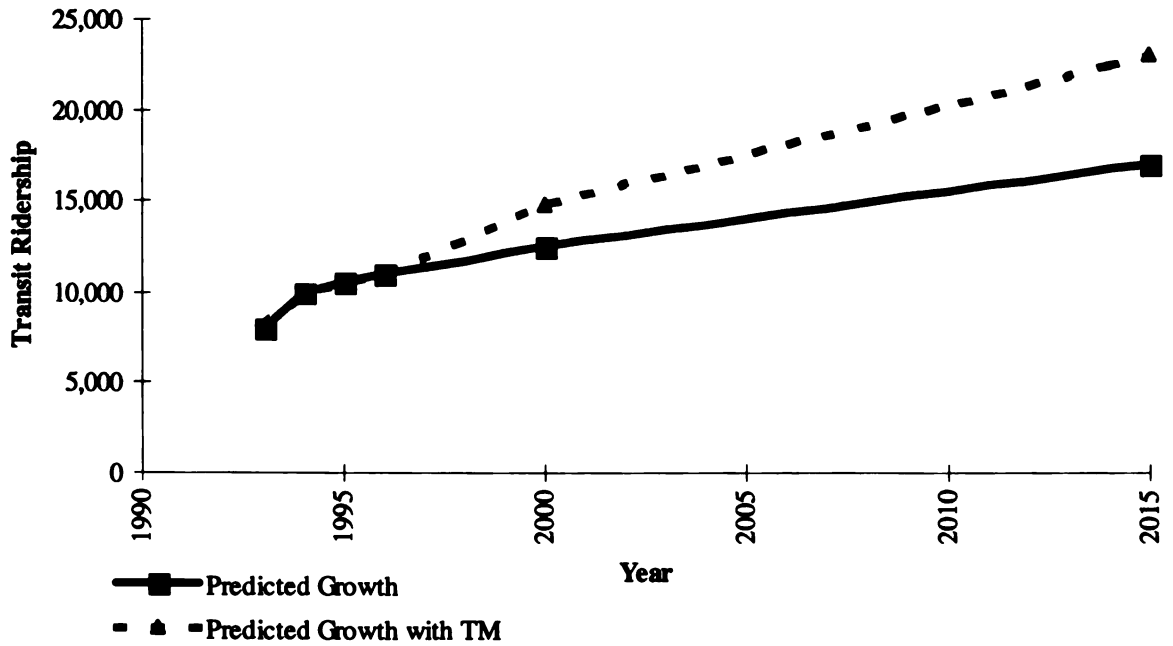

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Figure III-6
LRT Ridership at Castle Creek Bridge
Seasonal Variation Between 2000 and 2015

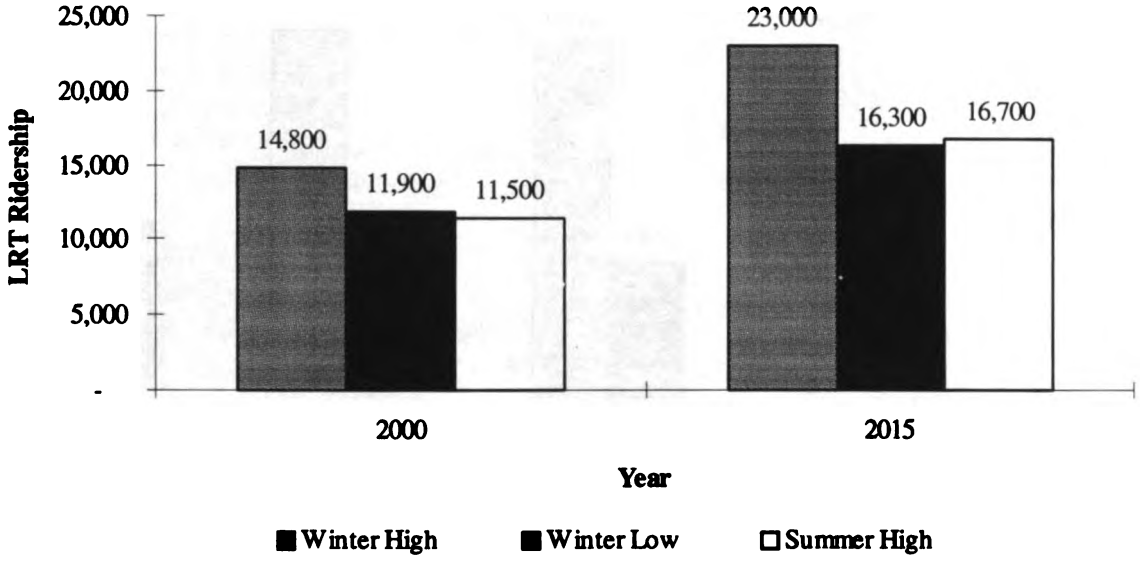

Table III-9
Trip Purpose of Rail Ridership Transferring at the Airport Multimodal Center Winter High 2015

Purpose	*Number of Riders*	*% of rail ridership*
Recreation	1,300	7%
Work	5,400	28%
Other	700	3%
Transit[2]	11,900	62%
Total	19,300	100%

Source: MK Centennial, TDA Inc. TDM model

[2]Trip purpose was not available for transit ridership.

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Table III-10
Mode of Travel to Airport Multimodal Center
Winter High 2015

Mode	*Person Trips*	*Trips Shifting to Rail*	*% of Mode Shifting to Rail*
Bus	11,900	11,900	(100.0%)
HOV	22,500	2,400	(10.6%)
SOV	15,800	4,700	(29.7%)
Trucks	10,100	300	(3.0%)
Total	60,300	19,300	(32.0%)

Source: MK Centennial, TDA Inc. TDM model

Table III-11 shows the origin and destination of LRT ridership in the corridor for the winter high year 2015 projection. This table reflects the total rail ridership within the Aspen corridor. This includes trips that do not cross Castle Creek into Aspen. For Winter High 2015, total projected ridership is 24,800 person trips. The data is separated to show the difference between those traveling to the LRT by bus or by other means. Included are all trips with at least one trip end in the Entrance to Aspen study corridor, but not necessarily crossing the Castle Creek Bridge loading point (for example, those traveling from downvalley to Buttermilk). Nearly four out of every ten trips are expected to travel between Snowmass and the Aspen corridor.

Table III-11
Origin and Destination of LRT Ridership within the
Aspen Corridor Winter High 2015

	Bus Transfer	*Other Transfers*	*Total*	*% of Total*
Downvalley to Aspen Area	4,100	3,500	7,600	30.6%
Snowmass to Aspen Area	7,700	3,300	11,000	44.4%
Within Aspen Area	3,400	2,800	6,200	25.0%
Total	15,200	9,600	24,800	100.0%

Source: MK Centennial, TDA Inc. TDM model.

Skier ridership is an important component of projected LRT ridership levels. In the year 2015, skiers are expected to make up approximately 31 percent of winter daily LRT ridership within the Aspen corridor. Table III-12 shows the expected skier ridership in the Aspen corridor for the Winter High 2015 scenario.

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Table III-12
Skier Ridership within the Aspen Corridor
Winter High 2015

Transit Service	Daily Ridership	Skier Ridership	Percent Skiers
Snowmass Skier Shuttle	5,500	4,700	85%
Non-Snowmass Skier Shuttle	3,200	2,700	85%
Snowmass-Aspen Fare Service	2,200	200	10%
Other Downvalley Buses	4,100	200	5%
Aspen Corridor	9,800	0	0%
Total	24,800	7,800	31%

Source: RFTA estimates of skier ridership.

3. Downvalley Feeder Service

To better serve future downvalley ridership and reduce the parking demand at park and ride facilities, a system of neighborhood feeder buses is proposed that would meet the State Highway 82 express buses running between Downvalley and Aspen. Consisting of 25 passenger mini-buses (or similar) and running on primarily fixed routes, these neighborhood buses would provide service from the communities (such as Basalt and El Jebel) and nearest park and ride facilities. Total round trip cycle time for these routes would be approximately 12 minutes and would be scheduled to minimize transfer time for the State Highway 82 buses. Each bus would likely serve two different routes on an alternating basis, increasing the service area while minimizing total trip time.

Estimated year 2015 annualized costs for the feeder service are shown in Table III-13. Two scenarios have been considered. The first scenario provides service operating for 18 hours a day during peak summer and winter seasons. For the remainder of the year only peak service (two hours in the morning and two hours in the evening) would be provided. This would require approximately five vehicles with annual operating and maintenance costs of $1.13 million. The second scenario would provide only peak service 365 days per year. This would require six vehicles and annual operating and maintenance costs would be $0.49 million.

Table III-13
Estimated Annual Downvalley Feeder Service Costs (1996 $'s), Year 2015

	Daily Service	Peak Hour Service
Hours of Operation	18(1)	4
Daily Ridership (Peak Month)	1,050	600
Vehicles Required	5	6(2)
Annualized Vehicle Costs	$80,000	$90,000
Annual Operation & Maintenance Costs	$1,050,000	$400,000
Total Annualized Costs (1996 dollars)	$1,130,000	$490,000

(1) During peak summer and winter season only. Off-peak season service operates only during peak hours.
(2) If service is provided during peak hours only, some off-peak demand will likely shift to peak periods. To accommodate this, one additional bus is required.

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4. Cost Savings

The construction of the LRT would result in a cost savings to RFTA due to shorter trip lengths and running times. However, the combined effect of the TM program and general growth in service levels will result in demands for additional service. Table III-14 shows the net savings that will be generated upon completion of the LRT system to the airport. The net savings in operations decreases with time as service is increased to meet future demand for transit services. In addition, the table includes the annualized purchase of four new buses for year 2000 and eleven new buses for year 2015. These buses need to be brought into service to meet the future growth in ridership levels.

Table III-14
Cost Savings in RFTA Service Year 2015

Description of Savings/Costs	*Year 2000 Annual Savings/(Costs) (1997 Dollars)*	*Year 2015 Annual Savings/(Costs) (1997 Dollars)*
Existing bus routes modification	$730,000	$820,000
Increase in transit demand	$(270,000)	$(680,000)
Net savings in operations	$460,000	$140,000
Net annualized costs of new bus service	$(110,000)	$(300,000)

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IV. Affected Environment

Section IV.A. Social Environment and **Section IV.B. Economic Environment** include information developed from several sources including (but not limited to) the ***1987 Aspen/Pitkin County Annual Growth, Population, and Housing Report***, 1990 U.S. Census Data, data from several state sources, ***Aspen Area Community Plan, Mid Valley Community Master Plan***, the ***1991 Aspen/Pitkin County Housing Survey***, and several Pitkin County organizations. **Section IV.C. Physical Environment** was developed from various technical studies conducted as part of the environmental impact evaluation and documentation process (see **Chapter VIII. Availability of Technical Reports** for the complete list).

A. SOCIAL ENVIRONMENT

1. Population

At least three distinct population groups -- Pitkin County residents, non-resident employees, and visitors -- traverse State Highway 82 and are impacted by the Entrance to Aspen. For the residents, this section of State Highway 82 is the only outside road access in the winter. The section of State Highway 82 that continues over Independence Pass is closed for several months each year because of snow. Although this study corridor is contained entirely within Pitkin County, a considerable number of Garfield County and Eagle County residents drive through this section daily as they commute to work in Aspen. Visitors traveling to the resorts of Aspen and Snowmass Village, including seasonal residents, may fly into the Pitkin County Airport or travel (by bus, car, or bicycle) on State Highway 82 through Glenwood Springs. Each of these populations will be addressed separately.

It should be noted that minor differences between the State of Colorado population projections for Pitkin County, the county's own projections, and the 1990 U.S. Census are caused by differences in collection and analysis methods and dates that data were collected.

1a. Pitkin County

Aspen, the county seat of Pitkin County, was incorporated in 1879. By the 1880s, this was one of the largest silver mining areas in the country. After the end of the mining boom in the 1890s, the county experienced a decline in population, with periodic fluctuations. The first ski slope was developed in the 1930s, and Pitkin County's population has been increasing steadily since the expansion of the area's ski and recreational industry in the 1950s.

Since the early 1970s, an attempt has been made to regulate growth in different sectors of the county, and a Growth Management Policy Plan was formulated in 1975. The preparation of the ***1987 Growth, Population and Housing Report*** was part of this effort. The ***1987 Aspen/Pitkin County Annual Down Valley Comprehensive Plan*** established a strategy and several policies to guide growth and development of much of undeveloped Pitkin County. The ***1993 Aspen Area Community Plan*** continued these efforts.

Pitkin County's year-round population increased from 6,185 in 1970 to 10,466 in 1980. U.S. Census data for 1990 shows a total county population of 12,661. Of this, 5,049 lived in Aspen, 1,449 lived in Snowmass Village, and the remaining 6,163 lived in unincorporated

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Pitkin County. The 1990 Census data show a lower population for Pitkin County than that projected in the ***1987 Aspen/Pitkin County Annual Growth, Population, and Housing Report*** but a larger downvalley population. This indicates a shift of population from Aspen to downvalley areas as more residents move downvalley and commute to Aspen, a trend that is expected to continue.

The Colorado Department of Revenue's ***1992 Annual Report*** listed Pitkin County's population as 12,872 as of July 1, 1991. This is consistent with the ***1992 Projections of Total Population for Colorado Counties*** by the Colorado Department of Local Affairs (DLA). The Colorado DLA estimated Pitkin County's year-round residential population at 12,703 in 1990 and 13,108 in 1992. Population figures for Pitkin County, in five-year incremental projections through year 2015, are detailed in Table IV-1.

Table IV-1
Estimated Permanent Pitkin County Population

1990	*1995*	*2000*	*2005*	*2010*	*2015*
12,703	13,771	14,786	15,763	16,696	17,648

Source: Colorado Department of Local Affairs

A study prepared for the United States Forest Service on the impacts of the proposed Burnt Mountain Ski Area development at Snowmass Village is consistent with the Aspen/Pitkin County population projections. The ***Snowmass Ski Area Draft Environmental Impact Statement*** (DEIS), released in May 1993, projects population through the year 2002 for six alternative scenarios. For Pitkin County's permanent population, the projections for 2002 range from 14,154 to 18,078 persons.

1b. Downvalley Commuter Population: Eagle, Garfield, and Pitkin Counties

One of the effects of Aspen and Pitkin County being an attractive resort destination with resulting high prices for housing is that many of the service and tourist related jobs are filled by employees who cannot afford to live in Aspen or Snowmass Village. (This is discussed further in **Section IV.B. Economic Environment.**) This downvalley commuter population significantly increases the traffic on State Highway 82. Conversely, relatively few Pitkin County residents work in a different county. Pitkin County's downvalley neighbors in the Roaring Fork Valley are Eagle County and Garfield County. The 1990 U.S. Census reported that 8.52 percent of Pitkin County residents worked outside the county compared with 17.41 percent of Eagle County residents and 21.38 percent of Garfield County residents.

1c. Visitor Population

A wide seasonal fluctuation occurs in Pitkin County's general population related to its resort economy and the associated second-home market. The county's permanent population accounts for approximately one third of the total county population. Because of seasonal fluctuations, inconsistencies have occurred in city and county population data presented in past local studies. Most population counting methods, including the U.S. Census, focus only on the year-round, or permanent, population. The ***1987 Aspen/Pitkin County Growth,***

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Population and Housing Report was an effort to provide more accurate and consistent data regarding the two populations. This Final Environment Impact Statement (FEIS) includes resident/visitor information from the 1987 document, calculations from Colorado DLA projections, and data from the ***1993 Aspen Area Community Plan***.

The relationship between resident (permanent and seasonal) and visitor populations in Pitkin County is illustrated in Table IV-2. To develop the table, 1987 resident and visitor counts from the ***1987 Aspen/Pitkin County Annual Growth, Population and Housing Report*** were used as a baseline. These 1987 figures were based on the estimated number of resident and visitor dwelling units and an average number of occupants per dwelling. Ratios of resident to visitor populations and percentage of Pitkin County population allotted to each separate area of the county were calculated from the 1987 counts.

These ratios and percentages were then applied to Colorado DLA population projections for Pitkin County through the year 2015 (Table IV-1). Several calculations were performed to reconcile the two counts. The original 1987 counts were also separated into permanent residents and seasonal residents. Because DLA population figures include only those defined by the U.S. Census as permanent residents, it was determined that seasonal residents needed to be added to the DLA counts. The percentage of seasonal residents was also developed from the 1987 figures. In addition, visitor population figures were calculated to reflect the resulting change in the resident/visitor ratio. Table IV-2 contains the combined permanent and seasonal resident counts and the adjusted visitor counts.

Table IV-2 was developed as a "low growth" scenario, but growth rates for the area have historically been higher. Therefore, a high growth scenario was used for the Entrance to Aspen traffic model. These high and low growth projections are the same as those used in the ***State Highway 82 East of Basalt to Buttermilk Ski Area Final Environmental Impact Statement*** (BBFEIS).

In comparison, the ***1993 Aspen Area Community Plan*** reported a 1991 population count for the Aspen Metro area of 12,600 visitors and 9,940 residents. No figures were given for Pitkin County as a whole. Projections from the ***1987 Aspen/Pitkin County Annual Growth, Population and Housing Report*** were not updated.

As Aspen and Snowmass Village become more expensive, the number of commuters and the distance they travel have been steadily increasing. In addition, population in each of the downvalley counties has also risen, as shown in Table IV-3. For three decades, each of the counties has out paced the state's annual rate of growth, as shown in Table IV-4. Future growth rates are expected to continue to reflect a growing population within the region, as shown in Table IV-5.

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Table IV-2
Pitkin County Population Estimates

Geographic Area	*1987 1/*	*1990*	*1992*	*1995*	*2000*	*2005*	*2010*	*2015*
Snowmass Village								
Visitor	9,611	11,958	12,452	13,241	14,412	15,508	16,525	17,548
Resident	1,584	2,175	2,305	2,517	2,844	3,160	3,460	3,764
Permanent	1,297	1,775	1,881	2,054	2,319	2,575	2,819	3,067
Seasonal	287	400	424	463	525	585	641	697
TOTALS	11,195	14,133	14,757	15,758	17,256	18,668	19,985	21,312
City of Aspen								
Visitor	10,097	10,658	10,788	11,005	11,345	11,679	12,002	12,336
Resident	5,450	5,762	5,832	5,947	6,121	6,289	6,449	6,614
Permanent	4,622	4,887	4,946	5,043	5,191	5,333	5,469	5,608
Seasonal	828	875	886	904	930	956	980	1006
TOTALS	15,547	16,420	16,620	16,952	17,466	17,968	18,451	18,950
Unincorporated Aspen								
Visitor	3,321	4,393	4,647	5,075	5,750	6,419	7,075	7,753
Resident	2,588	3,466	3,661	3,981	4,471	4,942	5,392	5,851
Permanent	2,302	3,082	3,255	3,539	3,974	4,392	4,792	5,199
Seasonal	286	384	406	442	497	550	600	652
TOTALS	5,909	7,859	8,308	9,056	10,221	11,361	12,467	13,604
Unincorporated Pitkin County								
Visitor	1,885	2,076	2,125	2,210	2,346	2,485	2,624	2,771
Resident	3,078	3,424	3,502	3,628	3,822	4,008	4,187	4,369
Permanent	2,660	2,959	3,026	3,135	3,302	3,463	3,617	3,774
Seasonal	418	465	476	493	520	545	570	595
TOTALS	4,963	5,500	5,627	5,838	6,168	6,493	6,811	7,140
Total County								
Visitor	24,914	29,085	30,012	31,531	33,853	36,091	38,226	40,408
Resident	12,700	14,827	15,300	16,073	17,258	18,399	19,488	20,598
Permanent 2/	10,881	12,703	13,108	13,771	14,786	15,763	16,697	17,648
Seasonal	1,819	2,124	2,192	2,302	2,472	2,636	2,790	2,950
TOTALS	37,614	43,912	45,312	47,604	51,111	54,490	57,714	61,006

1/ Figures for 1987 are from the 1987 Aspen/Pitkin County Growth, Population, and Housing Report.

2/ "Permanent Resident" total county projections are from the Colorado Department of Local Affairs. Other projections were calculated from these figures using a series of ratios derived from tables in the 1987 Aspen/Pitkin County Annual Growth, Population, and Housing Survey. Calculations may vary slightly due to differences in rounding.

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Table IV-3
Area Population by County
(in thousands)

	1982	*1984*	*1986*	*1988*	*1990*	*1995*
Eagle	15.4	16.8	18.9	19.6	22.4	28.7
Garfield	29.1	29.0	26.2	27.4	30.5	35.7
Pitkin	10.1	10.8	12.0	12.0	12.7	14.3

Source: Colorado Department of Transportation and Colorado Department of Local Affairs and Colorado Department of Revenue

Table IV-4
Growth Rates by State and County
(Percentage)

	1940-1950	*1950-1960*	*1960-1970*	*1970-1980*	*1980-1990*
Eagle	-16.3	4.2	60.3	77.6	64.6
Garfield	10.0	3.4	23.3	51.9	33.1
Pitkin	-10.3	44.7	59.8	67.1	22.5
Colorado	18.0	32.0	26.0	30.8	14.0

Source: Colorado Department of Transportation and Colorado Department of Local Affairs

Table IV-5
Future Population Growth by County
(in thousands)

	2000	*2005*	*2010*	*2015*
Eagle	27.7	29.7	31.5	33.1
Garfield	36.3	38.5	40.6	42.5
Pitkin	14.8	15.8	16.7	17.7
Total	78.8	84.0	88.8	93.3

Source: Colorado Department of Transportation and Colorado Department of Local Affairs

County-level social and economic data for each of the three counties have been used to illustrate interdependence and differing factors among the counties. However, it is important to note that only Eagle County 1990 U.S. Census Tract is along the State Highway 82 corridor. Census Tract 8532, which includes Basalt, had a 1990 population of 4,355 (Eagle County census count was 21,928). Growth rates for this tract and Eagle County are comparable. The Mid Valley Community Master Plan, which includes Census Tract 9532, reported a growth rate of 66.0 percent between 1980 and 1990. The growth rate for Eagle County during that period was 64.6 percent.

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2. Demographic Characteristics

Bureau of Census data for 1990 showed that 47 percent of the population in Pitkin County was female and 53 percent was male. The median age was 34.8 years, which is older than the Colorado median of 32.5 years. This represents a significant change from 1980 when the median age was 29.4 years, indicating a maturing population. This trend was corroborated in the ***1991 Aspen/Pitkin County Housing Survey***, in which respondents reported an average age of 39 years. In conjunction with this, the percentage of residents under thirty years of age fell from 65 percent in 1981 to 18 percent in 1991. This may represent a shift of the younger service-oriented employees to more affordable downvalley housing, or the national effect of the maturing "baby-boom" generation.

Approximately 35 percent of the work force was housed in the Aspen area in 1990, as compared to approximately 65 percent shown in surveys conducted in 1979, 1981, and 1983 and 55 percent in 1987. The ***1991 Aspen/Pitkin County Housing Survey*** concurred with this trend, finding that 32.9 percent of the Aspen work force resided in the Aspen metro area. Regarding ethnicity, 94.4 percent of the population was white, with no concentrations of any minority or ethnic group.

When compared with the State of Colorado and the two other counties in the study, Pitkin County residents have higher education levels, are older, and have fewer married couple families. Income levels are also higher, as discussed in **Section IV.B. Economic Environment.** Selected population characteristics from the 1990 U.S. Census are displayed in Table IV-6.

Table IV-6
Selected Population Characteristics

	Eagle	*Garfield*	*Pitkin*	*Colorado*
% Caucasian	91.6	97.2	97.4	88.2
% Hispanic Origin	13.3	5.6	3.8	12.9
% College Degree	33.0	21.6	49.8	27.0
% Children in Private School	5.3	5.8	12.1	6.4
% Married - Couple Family	50.4	59.7	37.8	53.8
% 25 to 44 years of age	49.1	37.2	50.8	35.8
Median Age	30.6	32.8	34.8	32.5

Source: U.S. Department of Commerce, 1990 U.S. Census

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3. Services

3a. Schools

The Aspen School District serves the City of Aspen and the Town of Snowmass Village. Aspen public schools include two elementary schools (one in Aspen, one in Snowmass), a middle school, and a high school. The Aspen Elementary School, Middle School, High School, and administrative offices are located on High School Road in unincorporated Pitkin County, west of State Highway 82, accessed from Maroon Creek Road (See Map, Figure IV-1).

Total annual enrollment for the Aspen School District from 1979 to the present ranged from a low of 889 students to the 1,245 students present for opening day of 1996/97. There were 1,205 students for the 1994/95 school year. The largest increases in enrollment for 1994/95 were in grades kindergarten, 5th, 9th, and 12th.

As shown in Table IV-6, 12.1 percent of the school age children in Pitkin County are enrolled in private schools. Day-care and preschool facilities are located throughout the study area, although a recent survey indicated that some residents felt the number of existing facilities was not adequate.

Colorado Mountain College, a public two-year institution, operates fourteen facilities in six western counties, including four along the State Highway 82 corridor in Aspen, Basalt, Carbondale, and Glenwood Springs. Total year end 1995/96 enrollment for all four campuses along State Highway 82 was 7,761 students. Enrollment on the Aspen campus has been steadily increasing. In 1990/91 there were 2,921 students; by 1995/96 there were 3,492 students enrolled.

Approximately 800 children were bused to school in the 1995/96 school year. This accounts for approximately 114,900 vehicle kilometers (71,400 vehicle miles) of travel for the school buses in the Aspen school district.

3b. Health Care

Aspen Valley Hospital, a 49-bed full-service facility, is the only hospital in Pitkin County. Aspen Valley Hospital is located off Castle Creek Road west of State Highway 82, accessed from Maroon Creek Road (Figure IV-1). An estimated 30 physicians practice in the Aspen/Snowmass Village area. The hospital operates a full time Advanced Life Support ambulance service with a service district ranging from Independence Pass to a point east of the Old Snowmass area. The district does not include Snowmass Village or Old Snowmass. The ambulance service responded to 827 calls in 1996, with 559 transports. Additional ambulance companies offer primarily non-critical response to the ski areas. The Aspen Valley Hospital admitted 1,765 patients in 1996, and cared for 33,264 out-patients.

3c. Law Enforcement

The Pitkin County Sheriff's Office provides law enforcement along State Highway 82, with support from the Aspen Police Department. Aspen has a central dispatch system that serves the two law enforcement departments, the Snowmass Village Police Department, the State Patrol, fire departments, and other emergency equipment. In April 1997, the Pitkin County

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Sheriff's department employed 38 law enforcement officers and support staff, and the Aspen Police Department employed 34. The county operates a detention facility in Aspen that maintains an average of 18 detainees, about half of which are typically Pitkin County residents.

3d. Fire Protection

The Aspen Volunteer Fire Department (AVFD) maintains four stations in Pitkin County. The main station is located at 420 East Hopkins in Aspen (Figure IV-1). Other stations are located at the Aspen/Pitkin County Airport, the entrance to Starwood, and the Stutsman-Gerbaz, Inc. garage near milepost (MP) 30.6 on State Highway 82. The AVFD has submitted a request to Pitkin County to build a major substation near Aspen Village off State Highway 82. Distributed among the four stations are eight pumper trucks, a ladder truck, and a "Rescue Seven" unit. The AVFD offers secondary emergency response in support of the Aspen Valley Hospital. The AVFD serves approximately 180-square kilometer (70-square mile) area and responds to calls along State Highway 82 from the Aspen Village mobile home community to east of Aspen. The AVFD has one paid fire chief, three paid employees, and an average of 40 to 45 volunteers.

Records of AVFD fire/rescue calls are separated into department calls and fire officer calls. Often, only the fire officer on duty responds and the entire department is not required. Therefore, on average, the officers recorded more calls. During the calendar year 1996, the department responded to 70 fire calls and 44 rescue calls; the officers responded to a total of 232 calls.

4. Recreation

Recreation and its associated activities are the mainstay of Pitkin County's economy and lifestyle. Although the winter ski industry (downhill and cross country) is still a primary attraction for both residents and visitors, year-round opportunities include fishing, hunting, rafting, kayaking, bicycling, hiking, and golf.

4a. Skiing

Pitkin County is internationally acclaimed for both downhill and cross country/nordic skiing. In an average year, the downhill ski season lasts from mid November to early April. The cross country season is about two weeks shorter, although back-country skiing can last into June. There are four separate downhill ski areas in Pitkin County: Aspen Highlands, Aspen Mountain, Buttermilk, and Snowmass. These are primarily destination resorts. Because the Denver metropolitan area is at least four hours away by vehicle, most winter visitors stay overnight or longer. Historic data for downhill skier visits are included in the Economic Profile section of this chapter. Cross country skiing is also addressed.

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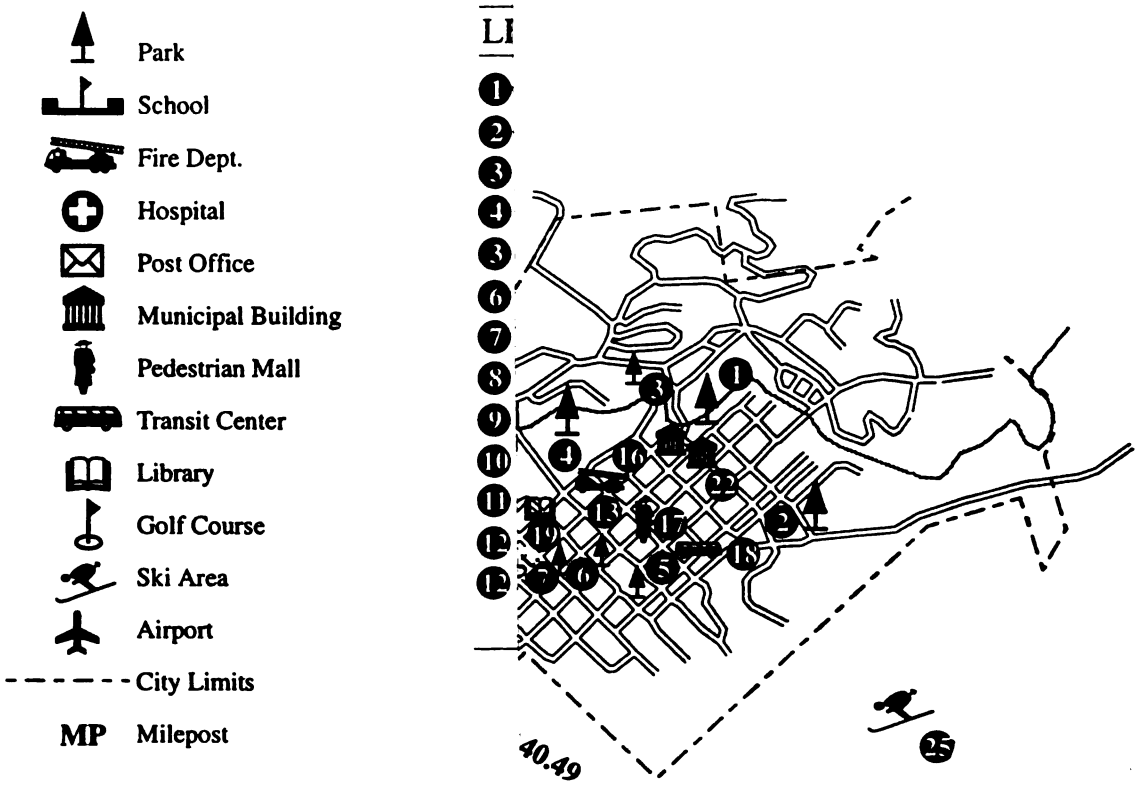

Figure IV-1
State Highway 82
Entrance to Aspen FEIS
Project Corridor Vicinity

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Downhill

Table IV-7 contains data for each of the four ski areas, including the number of skier visits, acres of skiable terrain, number of trails and lifts, and the percent of skiable terrain allotted to each level of skiing proficiency. As the table illustrates, the areas vary in size, and two of the areas are focused on opposite ends of skier levels of ability: Aspen Mountain has no runs for beginners; Buttermilk has no runs for experts.

Each of the downhill trails is groomed and served by some form of ski lift (chairlift, gondola, etc.). Aspen Mountain also has skiing on the backside of the mountain, accessible only by SnoCats. The backside has 607 hectares (1,500 acres) of terrain, and skiers average 2,730 vertical meters (9,000 vertical feet) of skiing per day. Skier visits to this area are not included in counts for the main area, and the exact number of users is unknown.

Table IV-7
Pitkin County Ski Resorts

Ski Area	*1995/96 Skier Visits*	*# Skiable Hectares (Acres)*	*# of Trails*	*# of Lifts*	*Type of Terrain (%)* *Begin*	*Intermed*	*Advanced*	*Expert*
Aspen Highlands	153,800	218 (540)	77	10	23%	48%	14%	15%
Aspen Mountain	322,300	256 (631)	76	8	—	35%	35%	30%
Buttermilk	176,000	166 (410)	45	7	35%	39%	26%	—
Snowmass	690,100	1,013 (2,500)	72	16	10%	51%	18%	21%

Sources: Aspen Skiing Company; Colorado Ski Country USA

Cross-Country

An extensive network of cross country trails and systems connects Pitkin County towns with one another and with other counties. Hut systems for over-night camping are located along the longer trails. Nine to eleven huts lie within a day's ski trip from Aspen, with others accessible for longer treks.

Two sets of groomed trails are also available. Both are open to the public. The Aspen-Snowmass Nordic Council maintains 60 kilometers (37.3 miles) of groomed trails. The longest trail is 15 kilometers (9.3 miles) in length and connects Snowmass Village and Aspen. There is no charge to use these trails. Several other organizations access these trails as well, including the Snowmass Club Touring Center and the Aspen Cross Country Center. Ashcroft Ski Touring maintains 35 kilometers (21.7 miles) of groomed trails. This system has a trail fee.

4b. Fishing

The Roaring Fork River is classified by the Colorado Division of Wildlife as a cold water fishery and is the best winter fishery in the state for large trout and mountain whitefish. From above Aspen to Basalt, the river is classified as Wild Trout Water. From above Carbondale to Glenwood Springs, the river is classified as Gold Medal Water, a designation given to only 254 kilometers (158 miles) of the 12,875 kilometers (8,000 miles) of trout

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stream in Colorado. In 1982, the Eagle County section of the river produced the record Colorado whitefish: 2.32 kilograms (five pounds, two ounces), and 48 centimeters (18.75 inches) in length. Brown trout, brook trout, and Colorado River cutthroat trout, are found in the Roaring Fork.

In addition to the native species, the section of the Roaring Fork from the Upper Woody Creek Bridge to Glenwood Springs is stocked with rainbow trout. Fishing along this stretch of river is with artificial flies or artificial lures only. The bag and possession limit for trout is two fish, with a size limit of 40.6 centimeters (16 inches) or longer. Fishing designations and requirements vary along other lengths of the river. Other good fishing opportunities exist throughout Pitkin County, including Cunningham Creek, the Fryingpan River, Frying Pan Lakes 2 and 3, Rocky Fork Creek, and Ruedi Reservoir.

4c. Hunting

According to the Colorado Division of Wildlife, both hunting and trapping are permitted along the rural areas of this section of State Highway 82. Game species in the area include deer, elk, and bighorn sheep. The State of Colorado is geographically divided into Wildlife Management Units. The area surrounding and including Aspen is divided among three of these units. Unit 43 is south of State Highway 82 and west of Aspen which includes the Watson Divide area. Unit 47 is north of the highway and west of Aspen. Unit 471 is south of the highway and east of Aspen.

Hunting seasons for elk and deer begin in late August and continue through mid-November. Seasons vary according to the type of weapon used. Archery is the opening season, followed by muzzle-loading rifles. Three successive regular/combined rifle seasons generally begin in mid-October. Hunting season dates for 1997 are shown in Table IV-8.

Table IV-8
Hunting Season Dates for 1997
(Deer and Elk)

Archery	August 30 - September 28
Muzzleloading Rifle	September 13 - 21
Regular Rifle:	
First Combined Rifle	October 11 - 15
Second Combined Rifle	October 18 - 29
Third Combined Rifle	November 1 - 9

Source: Colorado Division of Wildlife

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Table IV-9 records the number of deer harvested and the number of hunters in each unit for the 1996 season. Table IV-10 contains corresponding information for the 1996 elk season. It should be noted that each of the three units includes a wider area than the State Highway 82 corridor. Counts specifically for this corridor are not available.

Table IV-9
1996 Deer Harvest and Number of Hunters
For All Seasons and Manner of Take

Unit	*Bucks*	*Does*	*Fawns*	*Total Harvest*	*Total Hunters*	*% Success*
43	737	317	15	1,069	3,244	32.95
47	108	48	0	156	615	25.37
471	26	13	0	39	115	33.91

Source: Colorado Division of Wildlife

Table IV-10
1996 Elk Harvest and Number of Hunters
for All Seasons and Manner of Take

Unit	*Bulls*	*Cows*	*Calves*	*Total Harvest*	*Total Hunters*	*% Success*
43	631	428	55	1,114	4,307	25.86
47	191	110	11	312	1,066	29.27
471	34	18	2	54	166	32.53

Source: Colorado Division of Wildlife

The area's bighorn sheep hunting units are S13E and S13W. In the 1996 season, a total of three rams and one ewe were harvested from these two units. The number of hunters was not reported.

4d. Rafting

According to the owner of three local rafting companies, the stretch of the Roaring Fork River along State Highway 82 from Aspen to Basalt is known among rafters as a fast, moderate to difficult run. Rivers are classified for rafting from Class I (easiest) to Class V (most difficult); this particular section has been designated as Classes II and IV. The rafting season for commercial rafting companies runs from approximately mid-May to mid-July, depending on the amount of snow runoff each year. Private rafters continue to run this section through the end of July.

Most commercial rafts hold six passengers and a guide. Professional rafters escort at least 3,000 passengers through this section each year, and some years the count may be as high as 8,000 people. The annual number of private-use rafters is estimated at 2,000 to 3,000 individuals.

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4e. Kayaking

Kayak enthusiasts make up a smaller but substantial portion of the river traffic on the Roaring Fork River along State Highway 82. The stretch of river from Wink Jaffee Park to Wingo Junction is considered to be an easy to moderate kayak run, suitable for beginning to intermediate skill levels. More advanced kayakers often enter the water above this section, at Slaughterhouse Bridge, using Wink Jaffee Park as a takeout. Approximately 800 to 1,500 kayakers run the river each year, and instruction is available year-round at the Aspen Kayak School.

4f. Hiking/Bicycle Trails

Hiking and bicycling are popular Pitkin County activities, accommodated by trails of varying lengths and surfaces. Much of the county's open space is accessed from these trails for picnicking, wildlife observation, and other activities. Horses are welcome on some of the trails, and some Pitkin County ranchers rent horses to visitors. Although commuters bike along the highway, most mountain bikers prefer off-road trails. In recent years, in-line (roller blade) skaters have also taken advantage of the trail system. Several organizations are involved in creating and maintaining trails throughout Pitkin County and the Roaring Fork Valley. Most of these trails are displayed on the Pitkin County Open Space and Trails Map, developed as a comprehensive effort to delineate the various trails, and to inventory and categorize parcels of open space throughout the county.

There are five trails which either follow or cross the State Highway 82 Entrance to Aspen project corridor. The Airport Business Center Trail runs along the north side of State Highway 82, from the Aspen-Pitkin County Airport to Cemetery Lane. This trail is approximately 3.86 km (2.4 miles). The High School Bike Path begins at Aspen High School where it follows the east side of High School Road to State Highway 82, it then continues running south of State Highway 82 to Castle Creek. This trail is approximately 1.29 km (0.8 miles). The Marolt Trail runs north and south and crosses State Highway 82 just west of Power Plant Road. The Marolt Trail is approximately 0.45 km (0.28 miles). The Maroon Creek Nordic Trail crosses State Highway 82 just east of Maroon Creek. The Moore Nordic trail is generally located in the Moore Open Space, however, it extends across State Highway 82 to the Golf Course.

The Aspen area has many kilometers of paved and unpaved trails. The Rio Grande trail, which parallels the old highway from Wink Jaffee Park upstream to Aspen, has been developed as a pedestrian/bike trail. Of the trail's 10.5 kilometer (6.5 mile) length, approximately 7.2 kilometers (4.5 miles) are unpaved.

There are several other trails/paths surrounding the State Highway 82 Entrance to Aspen project corridor. They include:

- Aspen Chance Trail
- Aspen Mountain Trail
- Benedict Nordic Trail
- Castle Creek Bike Path
- Creektree Trail
- Golf Course Nordic Trail

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- Government Trail
- High School Nordic Loop
- Marolt Bridge Trail
- Owl Creek Bike Path
- Post Office Trail
- Thomas/Marolt Nordic Trail
- Ute Benedict Bike Path
- Ute Trail

All of these trails/paths are shown in Figure IV-2a and Figure IV-2b.

4g. Additional Activities

Aspen United Soccer Club offers a thriving program for area youngsters from kindergarten to eighth grade. The club, composed of children from around the county, had 350 members on 25 teams in fall of 1996.

Three 18-hole golf courses are located in Pitkin County: the public Aspen City Golf Course near the west end of Aspen, the public Maroon Creek Golf Course, and the private Snowmass Club in the Town of Snowmass Village. All are open to the public upon payment of fees.

The Snowmass Village Club also offers full health club facilities, with two outdoor and eleven indoor tennis courts, and a squash/racquetball court. Several other health and fitness facilities operate in the Aspen metropolitan area. The City of Aspen operates a public swimming pool and several recreational programs, as listed in Table IV-11.

A portion of the Marolt-Thomas property south of the Modified Direct alignment and east of Castle Creek Road is used for a hang-gliding/paragliding landing site. This location is approximately 400 meters (0.25 miles) south of the existing State Highway 82.

5. Land Use

Figure IV-3a and Figure IV-3b show the current land use surrounding the State Highway 82 Entrance to Aspen corridor. The figure illustrates primarily residential and agricultural uses.

The corridor begins at the Aspen-Pitkin County Airport with public (PUB) and industrial (I) land use surrounding State Highway 82. This land designation extends east for approximately 1.6 km (1.0 mile). The land adjacent to the northeast side of State Highway 82 is designated as business district (B-2) for approximately 0.8 km (0.5 miles). The PUB and I land use surrounds the highway to the intersection with Owl Creek Road. The land along State Highway 82 from Owl Creek Road to Maroon Creek Road is designated as Agriculture and Forestry (AF-2) with Planned Urban Development (PUD) allowed.

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Table IV-11
City of Aspen Recreation Programs for 1992

Activity	*Participation*
Youth Basketball	200 youth for 10 weeks
Youth Gymnastics	80 youth per month
Science Class	10-25 students per month
Youth Baseball	200 youth for 10 weeks
Girls Softball	30 youth for 8 weeks
Youth Flag Football	70 youth for 8 weeks
Day Camp	80 youth/day for 12 weeks
Fishing	12 youth for one 4-week class
Adult Softball	17 co-ed teams 6 women's teams 24 men's teams
Adult Basketball	10 men's teams 4 women's teams
Adult Volleyball	Drop in play 2x/wk for 6 mos.
Moore Pool	
Swimming Lessons	350 youth/week during school 90 youth/week during summer
Public Swim	average 200/week - summer average 50/week - winter
Lap Swim	12/day
Swim Team	40 youth for 20 wks of summer
Scuba, kayak & first aid	varies
Ice Garden	
Skating Lessons	50/week
Public Skating	40/session
Skating Club	60 youth
Hockey	160 - youth 125 - adult
Special Events	200 youth - hockey school 200 youth - skating shows
Aerobics	12 participants/2x/wk - 3 mos.
Ski Conditioning	12 participants/2x/wk - 3 mos.
Adult Flag Football	8 teams - 8 weeks
Tennis	
Lessons	60/week for 12 weeks
Team	20 members - 6 weeks
Public Play	20/day - summer
Tournament	50 participants

Source: City of Aspen Recreation Department

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Figure IV-2a
Hiking/Bicycle Trails
State Highway 82 Entrance to Aspen FEIS

N

Not to Scale

Legend:

11 Airport Business Center Trail
16 Owl Creek Bike Path
Trails

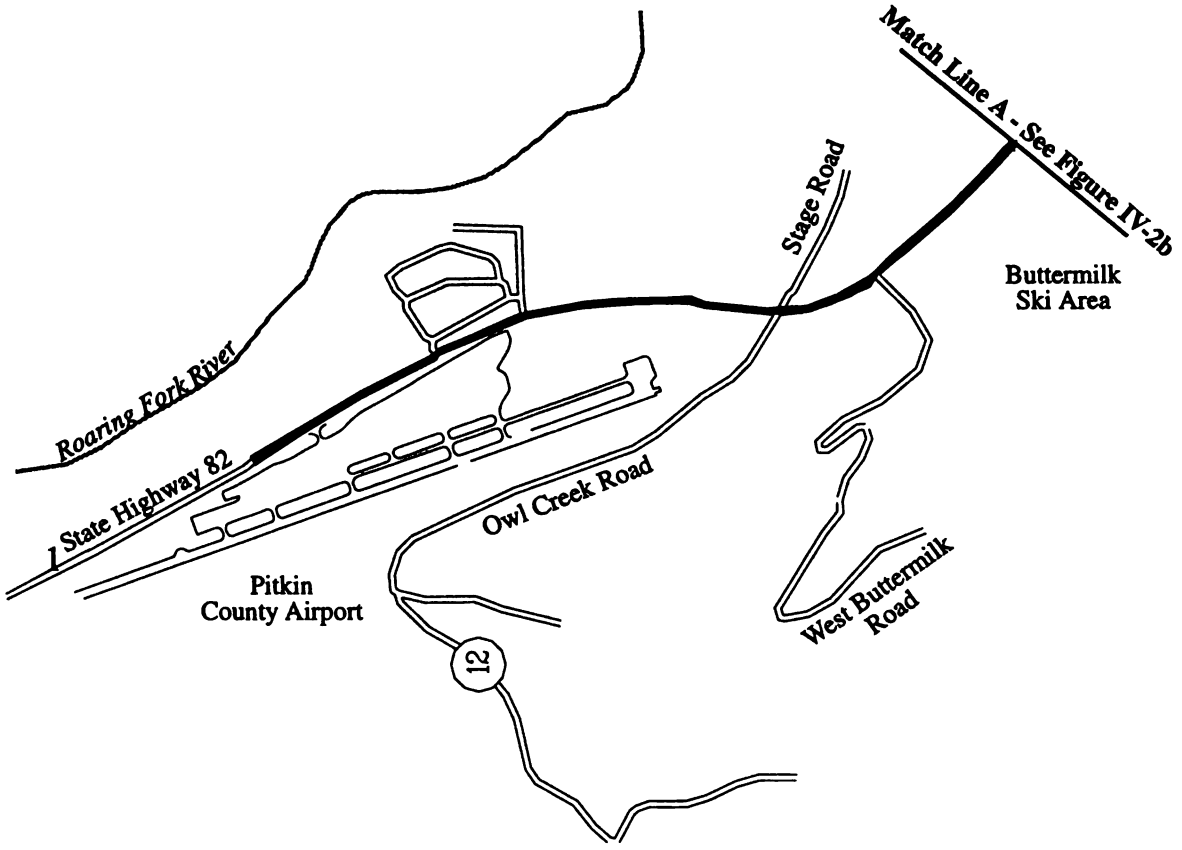

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Figure IV-2b
Hiking/Bicycle Trails
State Highway 82 Entrance to Aspen FEIS

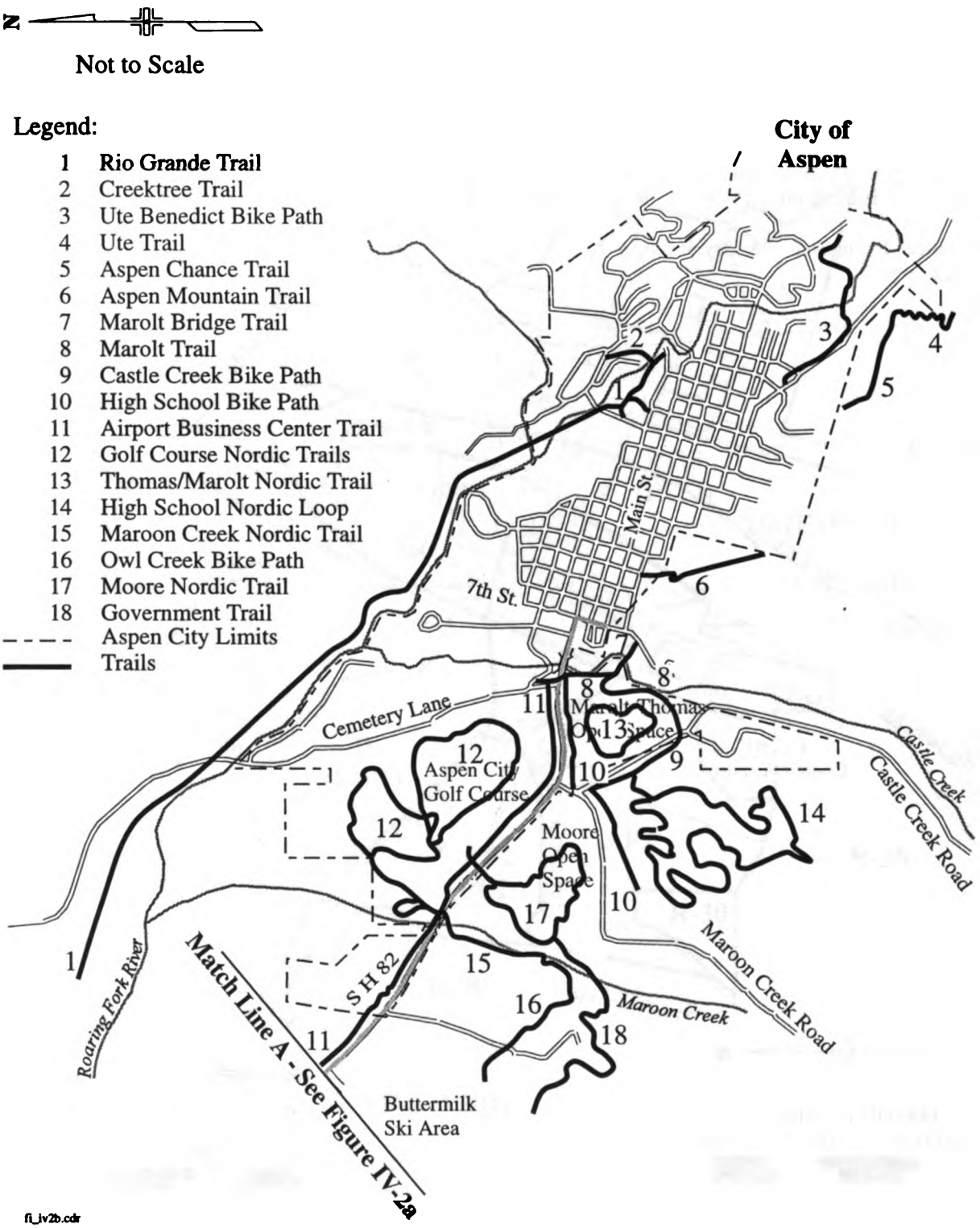

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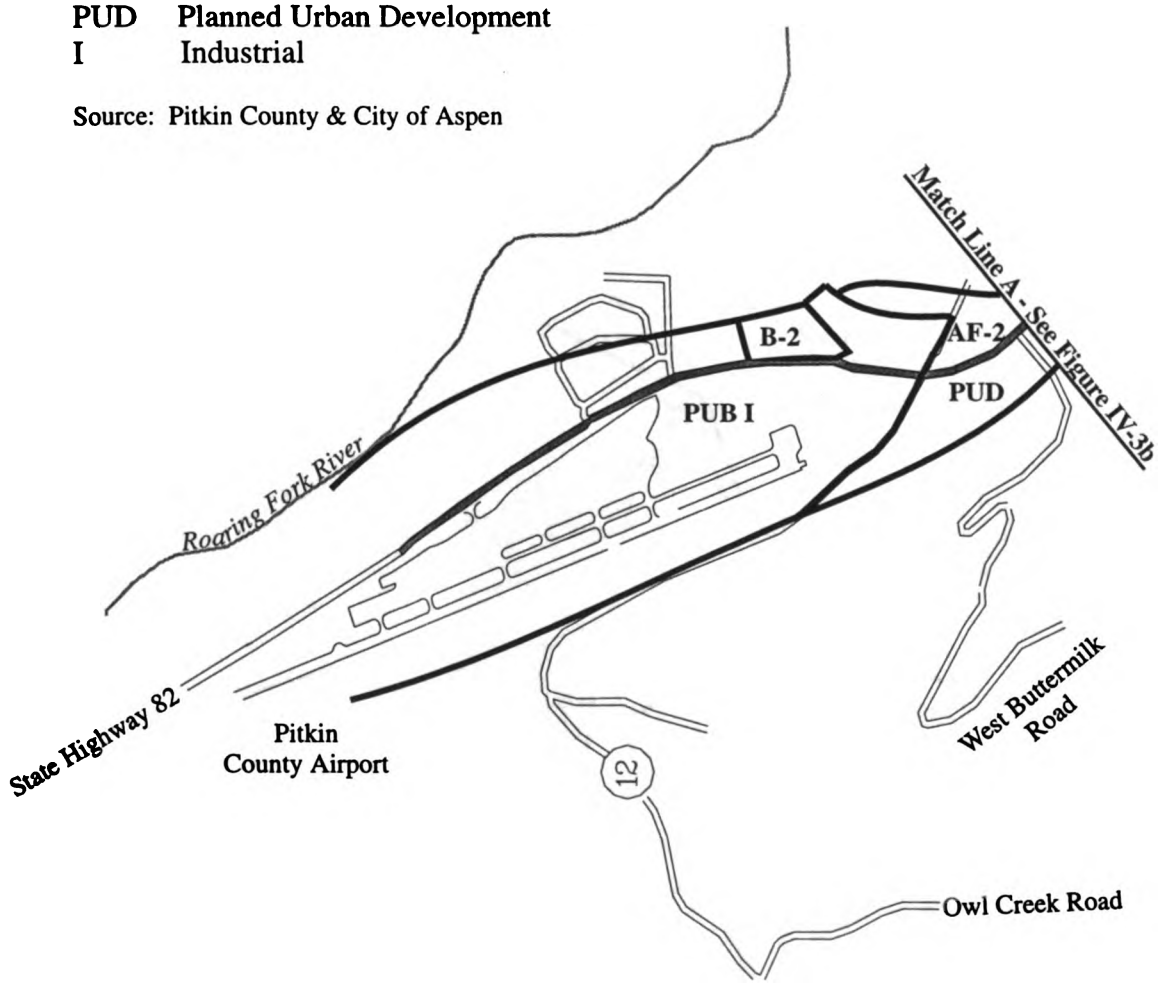
Figure IV-3a
State Highway 82 Entrance to Aspen FEIS
Land Use

Legend:

AF-2	Agricultural & Forestry Districts
B-2	Business District
PUB	Public
PUD	Planned Urban Development
I	Industrial

Source: Pitkin County & City of Aspen



Scale = 1:30,000

0 500 1000 meters

0 1000 2000 3000 feet

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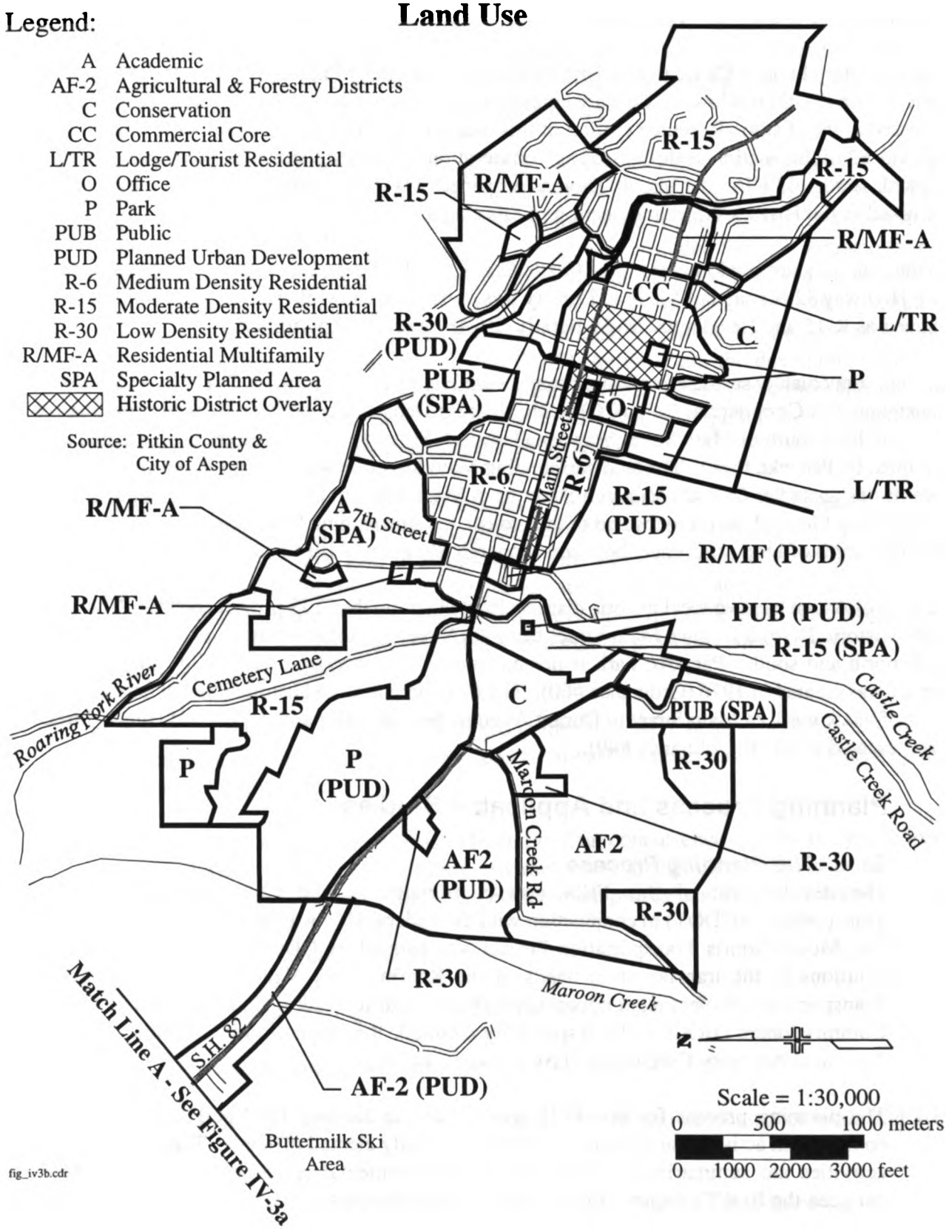
Figure IV-3b
State Highway 82 Entrance to Aspen FEIS
Land Use



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As the corridor enters the Aspen City Limits, land use along the north/east side of State Highway 82 to approximately Cemetery Lane is classified as Park (P), which is occupied by the Aspen Golf Course. Land along the south/west side of the highway to Maroon Creek Road is unincorporated land that has been designed as Open Space/AF-2. Scattered throughout this space are Single Family Residential, that is accordingly zoned as Low Density Residential (R-30).

From Cemetery Lane to Castle Creek, land on the north/east side of the highway is designated as P, where Public (PUD) is allowed. This area includes the historic Castle Creek Power Plant which is addressed in the Historic Resource section of this chapter. Land along the south/west side of State Highway 82 of this section is designated as Conservation (C) and Moderate Density Residential (R-15), with scattered PUB. The Marolt-Thomas properties are located within this area, which is also addressed in the Historic Resource Section of this chapter.

Residential uses are predominant from Castle Creek to 7th Street. Land on the north/east side of State Highway 82 is zoned as Medium Density Residential (R-6), while land on the southwest side is zoned as R-15 and Residential Multi-Family (R/MF) with PUD permitted.

The land immediately surrounding Main Street (State Highway 82) from 7th Street to Aspen Street is designated as Commercial Core (CC), with Medium Density Residential (R-6) surrounding the CC. The land south of Main Street between Garmisch Street and Aspen Street is designated as P (occupied by Paepcke Park). The land surrounding Main Street between Aspen Street and Monarch Street is designated as CC. On Monarch Street from Main Street to Durant Avenue, and on Durant Avenue from Monarch Street to the end of the project, the surrounding land is designated as CC with P located north of Durant Avenue, between Monarch Street and Mill Street (Wagner Park).

The City of Aspen has two local historic districts located within the FEIS project corridor. The Main Street Historic District follows Main Street from 7th Street to Monarch Street, extending one-half block north and south. Paepcke Park is not included in this overlay. The Main Street Historic District was created in 1976 (Ordinance #60). The Commercial Core Historic District extends from one-half block north of Main Street to Durant Avenue; between Monarch Street and Hunter Street. It was created in 1974 (Ordinance #49).

6. Planning Process and Applicable Studies

6a. The Planning Process

The development of this FEIS was coordinated by the Colorado Department of Transportation (CDOT) in conjunction with the Federal Highway Administration (FHWA). The Mount Sopris Transportation Project was formed by CDOT to develop long-range solutions to the transportation needs of the Roaring Fork Valley. The Mount Sopris Transportation Project team coordinated efforts with the Pitkin County Board of County Commissioners (BOCC), the Aspen City Council, the Aspen/Pitkin Planning Office, a Technical Advisory Committee (TAC), and the public.

The planning process for this FEIS was created in January 1994 and was designed to complement activities and policies adopted by locally elected officials. These policies and activities are summarized in the 1992 intergovernmental agreement, Resolution #396, between the BOCC, Aspen City Council, and the Snowmass Village Town Council. This

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agreement sets forth a transportation framework to develop an integrated transportation system that includes transportation management (TM) strategies, transportation enhancements to the existing roadway system for both automobiles and buses, and the development of a fixed guideway system as an alternative transportation link between downtown Aspen, the Airport and the Snowmass Village Mall. These TM solutions, transportation enhancements to the existing transportation system, and the multimodal solutions will be developed jointly with local governments located within the Roaring Fork Valley, Roaring Fork Transit Agency (RFTA), and CDOT, as funding permits.

This FEIS identifies both short and long range solutions for the 6.9 kilometer (4.3 mile) transportation link between the City of Aspen and the Pitkin County Airport. The FEIS planning process adheres to the cooperative theme of the Mount Sopris Transportation Project, and to support the philosophy of the new Intermodal Surface Transportation Efficiency Act (ISTEA) legislation, which requires that the public be involved in all aspects of the transportation decisions. In addition to the public notification process, scoping meetings, and public meetings required under the National Environmental Policy Act of 1969 (NEPA), the Federal Highway Manual and CDOT Action Plan, the development of the Entrance to Aspen Environmental Impact Statement (EIS) included various other public actions. The entire process was one of the most substantial public involvement and community outreach programs ever undertaken by CDOT.

A TAC was established consisting of area staff with various professional responsibilities. The TAC provided overall direction and guidance to CDOT. A list of the TAC members is included in **Chapter VII. List of Preparers.** This advisory group ensured that the EIS project team acknowledged all relevant plans, studies and adopted policies, and future confirmed transportation enhancements in the development of the EIS. This group also ensured that the alternatives complemented transportation programs already implemented in the upper end of the valley.

In addition to the TAC, numerous focus group meetings were held. These meetings were designed to obtain information and opinions from various groups who are affected by the Entrance to Aspen project.

The public involvement process was designed to gain concurrence on how to best address traffic congestion, traffic capacity, safety, environmental, and quality of life concerns in this unique mountain environment. The public involvement process and outreach effort included:

- Public open house meetings.
- Focus group meetings with affected interests.
- Confidential interviews with a cross section of the community.
- Periodic reconnaissance interviews with elected and appointed officials and area staff.
- One and two day Transportation Symposiums or Round Table discussions.

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- TAC meetings.
- Regularly scheduled project status reports and dialogue with the Pitkin County Board of County Commissioners and Aspen City Council, as well as the intergovernmental group of elected officials known as the "Decision-Makers".
- Roaring Fork Valley Transit Council briefings.
- Presentations to area civic organizations, neighborhood and special interest groups in cooperation with Leadership Aspen on an as-requested basis, with written questionnaires to survey audience preferences.
- Periodic newsletters distributed as inserts to the local papers.
- A 24-hour telephone hot line for area citizens to call in with comments, suggestions, or to request additional information.
- Comprehensive display at the Pitkin County Library as described in **Chapter S. Summary.**
- On-going media coverage through the two local papers, Grass Roots TV, and the local radio station.

A complete list of public meetings, TAC meetings, focus group events, symposiums and briefings can be found in Volume II of this FEIS.

6b. Applicable Plans, Policies, and Technical Reports

In addition to the documents described in **Chapter I. Purpose and Need**, the following planning documents were reviewed by the EIS project team during preparation of the FEIS:

Colorado State Implementation Plan (SIP) for Particulate Matter 10 Microns or Smaller In Diameter (PM_{10}) Aspen Element

The Aspen/Pitkin Planning Office and the Colorado Air Pollution Control Division prepared the SIP in a joint effort. The SIP was adopted in November 1991 and revised September 1994.

The Aspen SIP includes transportation control measures to reduce vehicle miles traveled, including expanded transit service and paid parking in the core business area. The SIP also requires the Colorado Department of Transportation and the City of Aspen to use clean sand for winter street sanding and to do more frequent street sweeping on State Highway 82.

In 1988, the Aspen City Council and the Pitkin County Commissioners enacted several ordinances to control smoke from woodburning fireplaces and a limit of one certified Phase II wood stove per dwelling. Aspen has also experimented with several street sanding/cleaning measures in an effort to reduce re-entrained dust. These measures include asphalt coated sand, harder and cleaner sand, sanding fewer streets, liquid deicers, and frequent street washing.

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Aspen Area Community Plan

The Aspen/Pitkin Planning Office prepared the Aspen Area Community Plan. This plan was adopted on February 2, 1993 by the Aspen City Council and the Pitkin County Board of County Commissioners.

The overall intent of the Transportation Action Plan is:

> *The community seeks to provide a balanced, integrated transportation system for residents, visitors and commuters that reduces congestion and pollution.*

This intent is further stressed in the section of the Plan called Community Development Features. Under the heading of transportation, two themes are stated:

- Reduce auto impacts
- Develop a multimodal valley-wide transportation system

As part of the transportation element of the adopted Comprehensive Plan, the City of Aspen is committed to seek innovative ways to limit vehicle trips into Aspen. Critical measures that are being pursued by the upper valley governmental entities include the implementation of a valley wide mass transit system, increasing the number of available transportation choices and continued education and marketing of transportation alternatives within the Aspen Metro community.

The transportation action plan also contained three general action themes: Actions to Create a Vehicle Limited Downtown Core, Actions to Improve Transit Facilities, and Actions to Improve the Pedestrian/Bicycle System. These actions for each theme were designated short-term (1992-1993) and mid-term (1993-1995). Actions relating to and affecting the EIS study corridor include:

- The implementation of a paid parking system within the commercial core of the City of Aspen.
- The development of an airport intercept lot and the further intention to develop intercept lots at Brush Creek Road/State Highway 82, Buttermilk Ski Area or other appropriate locations, which would be free to the users of the lot. Provide frequent, effective and free transit service between the lot and the City of Aspen (mid-term action).
- Create a long term car storage/impound facility at Brush Creek/State Highway 82 or the Airport Business Center (mid-term action).
- Continue and enhance bus service between the City of Aspen and Glenwood Springs (short-term action).
- Establish a high occupancy vehicle (HOV) lane on State Highway 82 between Brush Creek Road and the City of Aspen (mid-term action).

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- Evaluate the utilization of a bus/transit corridor along Owl Creek Road (mid-term action).

- Endorse the continued work of the Roaring Fork Forum Transportation Task Force in their efforts to develop an integrated valley-wide transportation system (mid-term action).

- Recognize the Rio Grande Railroad right-of-way as a multi-use transportation corridor (mid-term action).

- Establish a designated transit corridor between the Town of Snowmass Village and the City of Aspen (mid-term action).

- Designate all existing transit corridors as such (i.e., Highway 82, Rio Grande right-of-way).

City of Aspen Transportation Implementation Plan

A Transportation Implementation Committee was subsequently formed to implement the transportation elements in the Aspen Area Community Plan. The document developed by this committee is the ***Transportation Element Implementation Plan.*** Specific items which were considered in the development of the FEIS include the following:

A Parking Element to include:

- a parking control system
- a residential parking permit program
- all-day parking pass in specific spaces within the residential parking control areas
- preferential HOV on-street parking
- on-street lodge parking
- annual business vehicle parking stickers
- increase in loading and service vehicle spaces
- a Parking Information Center
- an East End Parking Facility

Transit Service to include:

- expansion in downvalley/Snowmass service
- park and ride facilities
- the upvalley transit corridor which is a high-frequency free transit service on State Highway 82 between Aspen and the upvalley park-and-ride lots
- a return to and expansion of full year round city transit service
- the cross town shuttle
- the Dial-a-Ride/cab coupon program

Pedestrian and Bicycle Facilities to include:

- an improved Galena Street pedestrian corridor
- improved bicycle connections
- improved sidewalks between the commercial core and the residential areas

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City of Aspen: Parks, Recreation and Open Space Needs Assessment and Master Plan

The Parks, Recreation and Open Space Plan was adopted by the Aspen City Council in 1994. Items in the plan which relate to the EIS study corridor include:

- Develop parallel trails on both sides of State Highway 82 from the City of Aspen to the airport. Insure safe crossing (above or below grade) of State Highway 82 where trails need to cross the highway right-of-way.

- Consider using the Marolt-Thomas Property for the construction of either regulation baseball/softball or multi-purpose football/soccer fields. The plan goes on to say:

  "While the Marolt-Thomas site has been recommended to remain natural and undeveloped (according to the Aspen Area Community Plan), the area is only one of two city owned properties that can accommodate regulation ball fields....Plans to develop ball fields in this park should be sensitive to the open character, history and existing use of the site.

  "The Marolt Park location was determined viable for the following reasons:

  - Property owned by the City of Aspen.
  - Access to park via the existing trail.
  - The proposed recreational use is compatible with the employee housing.
  - The proposed recreational ball fields are compatible with the history of the site and City of Aspen.
  - With proper planning the improvements could be visually screened from residents and State Highway 82.
  - The proposed location would not conflict with the paragliding landing point.
  - The existing site conditions (topography, access, vegetation, etc.) is excellent for ball field development.
  - The location is near the schools which is excellent for after school programs."

  "Members of the Citizen's Advisory Committee (CAC) met with the Aspen parks Association and the Aspen Area Community Plan Open Space/Recreation/ Environment Committee on two different occasions to discuss the Marolt-Thomas Property. It was agreed to by all three groups that there is potential for use of the Marolt parcel as a multi-use recreation field... The CAC has identified the Marolt parcel as the number one potential location for the construction of the new recreational fields...to address everyone's concerns, the CAC is recommending that a conceptual master plan be completed for the Marolt-Thomas parcel."[1]

- Under the Implementation Section of the Plan the following statements were included:

[1] Reference: Pages v: 7-8 of Parks and Recreation Master Plan.

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- "Develop a pocket park on the Marolt Property in the area between the barn and housing complex." (Short term project)
- "Explore design concepts to develop recreational fields at the Marolt Property which is sensitive to the history, open rural character and surrounding residents." (Short term project)
- "Study plans to develop to regulation ball fields/multi-use fields at the Marolt Property."

The Pitkin County Public Works Department: Mission, Goals, Road Management and Maintenance Objectives and Alternative Transportation Investment Objectives

The adopted Pitkin County Transportation Mission Statement is as follows:

> *"Provide an intermodal transportation system that moves people safely and efficiently while maintaining the unique character of our community and resort. Our future efforts will be invested in providing transportation alternatives to automobiles."*

There are two stated transportation goals: 1) safety and 2) compatibility with the unique environment which includes: air quality, scenic visual impact, relieve congestion, minimum capital improvement, rural experience, preservation of character, managed levels of service, resort/community balance, energy efficiency and cost. A key Existing Road Management and Maintenance objective stated by Pitkin County is:

"Continue to develop, implement and staff the Aspen to Snowmass Transportation Plan.

- Provide capacity improvements which enhance safety while maintaining our existing, unique community.
- [Development should be] Consistent with the BOCC's goal of preserving and enhancing the unique quality of life in Pitkin County, and promoting a safe and healthy community."

Down Valley Comprehensive Plan

The 1987 Pitkin County Down Valley Comprehensive Plan, prepared by the Aspen/Pitkin Planning Office, was adopted by Resolution No. 87-7 of the Pitkin County Planning and Zoning Commission. The Down Valley Comprehensive Plan establishes strategy and policies to guide the growth of unincorporated Pitkin County. Included in the Down Valley Plan is this Transportation Goal:

- Upgrade State Highway 82 in a manner that complements the rural character of the Roaring Fork Valley and provides a more efficient and safer highway than the one that exists.

Also included are the following Transportation Objectives:

- Plan for a travel facility that complements the unique environmental qualities of the Roaring Fork Valley but is designed to meet the future travel demands of Pitkin County.

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- Provide a safe operating environment for all modes of transportation including bicycles.
- Make special provisions for mass transit as part of or parallel to State Highway 82 improvements.
- Improve safety for pedestrians in the State Highway 82 right-of-way and provide safe access points for recreation along the Roaring Fork River.
- Generally maintain the existing highway alignment where feasible unless undeniable safety, environmental, or cost factors which support a new alignment can be demonstrated.
- Manage land uses adjacent to State Highway 82 by the use of land use controls such as the 60 meter (200 foot) greenbelt and the scenic foreground overlay technique.
- Upgrade State Highway 82 in a timely fashion with proper phasing to minimize disruptions to traffic flow.

The Colorado Department of Transportation has implemented these objectives, wholly or in part, in the BBFEIS.

State Highway 82 Corridor Master Plan

The 1985 State Highway 82 Corridor Master Plan, prepared by the Aspen/Pitkin Planning Office, was adopted by Resolution No. 85-2 of the Pitkin County Planning and Zoning Commission. It was the first adopted area plan of the Aspen Area Comprehensive Plan. Its focus is on planning a visually pleasing Entrance to Aspen for residents and visitors. The Corridor Master Plan presented the Transportation Goal and the first two objectives cited in the description of the Downvalley Comprehensive Plan. It also included these objectives:

- Identify and preserve right-of-way for the future alignment of State Highway 82.
- Provide a travel facility that does not create overwhelming pressures for change in land use in the corridor.

The Corridor Master Plan includes a map depicting realignments of State Highway 82 northeast and southwest of the airport as alternatives and widening of the existing highway entrance to Aspen. The Corridor Master Plan outlined these guidelines for upgrading the highway:

- Provide for the future possibility of the upgrading of State Highway 82 between Brush Creek Road and Maroon Creek to four lanes.
- The Colorado Department of Transportation should acquire a limited access, four-lane right-of-way for the upgrading of State Highway 82 generally following the alignment identified in the transportation element of the State Highway 82 Corridor Master Plan.
- If highway lanes are constructed on the southwest side of the airport, land development on the contiguous lands should be minimized to the greatest extent possible. The specific intent of the county is that there be no land use development contiguous with the new alignment.
- A prerequisite to the upgrading of State Highway 82 is the development of a plan to better accommodate mass transit in the Entrance to Aspen.

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- Provisions should be made for adequate flexibility to allow for a smooth transition from a four-lane highway to a two-lane highway if segments of the highway either upvalley of Maroon Creek or downvalley of Brush Creek Road remain only two lanes.
- If possible, future highway plans should maintain the highway crossing of Maroon Creek in approximately the same location.
- Future highway plans should incorporate consolidated, manageable intersections to minimize the need for traffic signals or grade-separated interchanges.
- Consideration should be given to the State Highway 82 Corridor Master Plan or the relevant Aspen or Pitkin County adopted plans in any upgrading of the highway which is to take place.

CDOT has made every effort to follow these guidelines during the preparation of the Entrance to Aspen FEIS. Many of these same guidelines were incorporated into the adopted BBFEIS.

1983 Goals Task Force Report

The ***1983 Goals Task Force Report***, prepared by a nine-member committee of Aspen citizens, reports the results of three open community meetings held in September 1983 to solicit ideas from the public concerning the future of the Aspen/Snowmass Village community. Transportation issues emerged clearly as the overwhelming goal or priority of those who participated. It was repeatedly suggested that State Highway 82 be made safe and that consideration be given to the expansion to four lanes. Auto disincentives, bus system improvements, and development of a regional mass transit system were also mentioned.

Transit/Transportation Development Program

In 1986, the Roaring Fork Transit Agency Transit Development Program 1986-1990 was prepared as an element of the Aspen/Pitkin County Transit/Transportation Development Program 1986-2000 by Leigh, Scott & Cleary, Inc. The Transit Development Program described the demographic characteristics of the Roaring Fork Valley and its existing transportation services, evaluated the performance of the RFTA, and presented alternatives and recommendations for public transportation. RFTA is currently updating their transit development program (TDP).

High Occupancy Vehicle Study

In 1988, the RFTA funded the State Highway 82 High Occupancy Vehicle Facility Feasibility and Conceptual Design Study, prepared by Leigh, Scott & Cleary, Inc. The Final Report for the study, dated June 17, 1988, evaluates five variations of an inbound HOV lane between the airport and Main Street in terms of cost and time savings and recommends short-term and long-term improvements. Among the report's conclusions are:

"The need for a four-lane Highway 82 between Brush Creek Road and Aspen cannot be avoided through the provisions of HOV facilities... The need for four lanes is driven by the growth in summer traffic volumes, which are not substantially impacted by transit usage."

Plans to provide a short 1.6 km (1 mile) segment of HOV along the existing highway between Maroon Creek and the Airport were tabled in 1989 by the Pitkin County

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Commissioners due to the cost of such a project and the desire to support the advanced construction schedule for replacement of the Maroon Creek Bridge on State Highway 82.

In addition to the HOV study, RFTA initiated a carpool program for the Roaring Fork Valley in February 1990 in an effort to reduce the number of vehicles using State Highway 82. The response to the program has been very limited and has had little, if any, noticeable effect on reducing vehicular traffic on State Highway 82.

7. Environmental Justice

Executive Order 12898, "***Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations***," was signed on February 11, 1994. This Executive Order requires CDOT and FHWA to identify and address disproportionately high and adverse human health or environmental effects of its activities on minority populations and low-income populations. Where disproportionately high and adverse effects are identified, the activity may not be carried out unless: a) avoidance or mitigation of these effects is not practicable or b) a substantial need for the activity, based on the overall public interest, can be demonstrated or c) the alternatives that would avoid the disproportionately high and adverse effects are shown to have increased costs of extraordinary magnitude or other high adverse social, economic, environmental or human health impacts that are more severe.

The Entrance to Aspen project is an "activity" which requires analysis under the Executive Order. Within the project study corridor, no minority (persons who are citizens or lawful permanent residents of the United States who are African American, Hispanic, Asian American, American Indian or Alaskan Native) or low-income (persons whose median household income is below poverty guidelines) populations have been identified that would be disproportionately effected by this project. Socio-economic data on the project study corridor is presented in **Section IV.A. Social Environment** and **Section IV.B. Economic Environment.** An extensive effort has been taken to involve all segments of the community, including minority and low-income individuals, in the public participation activities associated with the development of this project. These public involvement activities are described in **Volume 2. Comments and Coordination.**

B. ECONOMIC ENVIRONMENT

1. Economic Base

Since the introduction of downhill skiing to Pitkin County in the late 1930s, the basis of employment in the county has shifted from agriculture to tourism. The earlier mining employment base had already deteriorated. Tourism (winter downhill skiing and summer fishing, rafting, hiking, sight-seeing, and bicycling) along with conference center activity and cultural programs has become the focus of employment in Pitkin County. Retail trade and services, including hotels, restaurants, bars, and the ski industry, accounted for 57 percent of total county employment in 1987, increasing to 62 percent in 1993.

Although Pitkin County has developed and encouraged a variety of year-round recreational activities, downhill skiing continues to be a significant factor in the local economy. Aspen Skiing Company owns and operates the four Pitkin County ski resorts: Aspen Mountain, Buttermilk, Aspen

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Highlands, and Snowmass. Skier visits to the four ski areas during the 1995/96 ski season totaled 1,342,109; down from the 1,424,771 visits in 1994/95. Table IV-12 details skier visits for the past six seasons, 1990/91 through 1995/96.

Most of the other employment industries are in some way supportive of the tourist-oriented employment base, including construction, transportation, communications, utilities, finance, insurance, and real estate activities. A low level of mining and agricultural employment continues in the county.

Table IV-12
Annual Skier Visits in State Highway 82 Corridor

Ski Season	Aspen Highlands	Aspen Mountain	Buttermilk	Snowmass	Total
1995/96	153,764	322,338	175,940	690,067	1,342,109
1994/95	159,288	329,535	168,439	767,509	1,424,771
1993/94	106,197	359,846	172,948	814,852	1,453,843
1992/93	145,364	1,381,753*	--	--	1,527,117
1991/92	152,379	395,591	163,658	732,617	1,444,245
1990/91	145,678	366,962	144,419	645,374	1,302,433

Source: Colorado Ski Country U.S.A.

* *Figures were not separated for 1992/93 for Aspen Mountain, Buttermilk, and Snowmass.*

2. Commercial Growth Trends

Table IV-13 compares the commercial development totals in the City of Aspen, the Town of Snowmass Village, and unincorporated Pitkin County for the period from 1975 through 1990.

An examination of retail sales in the State and the three counties for the past six years indicates that retail sales are up for each of the areas, as shown in Table IV-14. Growth rates were in fact higher for Eagle County, which is also home to Vail and Beaver Creek ski resorts. However, when retail sales per capita are analyzed (Table IV-15), the economic discrepancy between Pitkin County and the others is again apparent.

3. Employment

The residents of Pitkin County are primarily individuals and families who have selected the area for the recreational opportunities and high level of services available in a beautiful mountain environment. This population includes those who are financially independent or own second homes in Pitkin County as well as the large number of residents who are willing to work in the area even though employment opportunities are often seasonal and generally have an unfavorable average wage/average housing cost ratio. Because many of the area's employees reside outside the county,

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primarily in Eagle County and Garfield County, information is included for each of the three counties.

Table IV-13
Commercial Expansion in Pitkin County
1975 Through 1990

	Aspen	*Snowmass Village*	*Unincorporated Pitkin County*	*Total*
Commercial Square Footage (01/01/75)	1,014,964	87,000	150,390 [1]	1,252,354
New Construction (01/01/75-12/31/86)	407,275	155,565	269,544	832,384
Commercial Square Footage (12/31/86)	1,422,239	242,565	419,934	2,084,738
Annual Average New Square Footage	33,940	12,964	22,462	69,366
Commercial Square Footage 1990	1,451,466	339,284	461,891	2,252,641

[1] *Due to the unavailability of accurate records, the data on commercial buildings in existence in unincorporated Pitkin County prior to 1970 is sketchy and may be incomplete.*

Sources: Aspen/Pitkin Planning Office documents: 1987 Aspen/Pitkin County Annual Growth, Population and Housing Report; Appendix A, Housing Master Plan Technical Background Report, January, 1988; Aspen Area Community Plan, 1993.

Table IV-14
1991 - 1996 Retail Sales ($1,000)

	1991	*1992*	*1993*	*1994*	*1995*	*1996*	*% Growth 1991-96*
Eagle	618,991	642,018	764,530	890,727	955,025	1,013,193	63.37
Garfield	529,584	593,362	665,941	725,771	729,349	753,874	42.24
Pitkin	486,412	540,749	596,628	648,626	686,735	708,862	45.73
Colorado	48,971,153	53,872,626	59,193,254	66,761,142	69,327,267	72,102,659	47.23

Source: Colorado Department of Revenue, 1996 Annual Report.

Table IV-15
Retail Sales Per Capita

	1995
Eagle	$33,285
Garfield	$20,409
Pitkin	$48,057
Colorado	$18,504

Source: Colorado Department of Revenue, 1996 Annual Report.

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3a. Jobs and Labor Force

According to the Colorado Division of Labor and Employment, both the total number of jobs and the labor force within the area have increased considerably during the last decade. Table IV-16 shows the changes in both between 1980 and 1990 and the percent of growth for each area. Labor force figures for 1993 are also included. The Bureau of Economic Analysis (BEA) forecasts employment and labor force trends through 2015. Based on the projections in Table IV-17 both labor force and jobs are expected to continue to increase. As the two tables indicate, both Pitkin County and Eagle County have more jobs than can be filled by the resident labor force. Although studies show that many Pitkin County residents hold more than one job (the ***Aspen Area Community Plan*** reports an average of 1.29 jobs per person), a significant level of outside labor is required on a daily basis. Table IV-18, which assumes one job per employee, estimates the necessary amount of outside labor. Table IV-19, prepared with 1990 U.S. Census data, details the number of employees who work outside their county of residence. Together, the tables offer a range of the possible number of commuters traveling along State Highway 82 into Aspen each day.

Information from the State of Colorado, Pitkin County and the 1990 U.S. Census supported the rising employment figures for Pitkin County. State labor force estimated the total employment for Pitkin County for 1986 at 7,849. Locally calculated figures, which were based on projections for commercial growth for Aspen only, varied somewhat, totaling 8,118 employees for Pitkin County, with figures for Aspen at 7,064, Snowmass Village at 854, and downvalley at 200 employees. The 1990 U.S. Census, which used different reporting boundaries, reported a Pitkin County labor force of 8,869. Of these, 5,713 were in the Aspen division (3,751 in Aspen) and 1,011 were in Snowmass Village.

3b. Employment Surveys for Pitkin County

In 1987 and 1990/91, the Aspen/Pitkin Housing Authority conducted surveys of employment and place of residence. Although each survey was administered to both Pitkin County residents and Pitkin County employees, the collection methods varied. The 1987 survey was sent to 11,300 mailing addresses between Carbondale and Aspen; 3,415 individuals (30 percent) responded to the survey. Based on the survey results, the Housing Authority compiled a series of tables that describe the relationships between where people live and where they work (Figure IV-4).

The 1990/91 survey was administered in two phases. The September 1990 questionnaire was distributed to 2,690 randomly selected households throughout the County, or approximately one of every two households. A total of 962 responses were received, for a rate of 36 percent. The March 1991 questionnaire was a shorter version distributed by employers to a pre-designed sampling of employees, to ensure that all employees had an equal chance of inclusion in the study. A total of 200 businesses participated, and approximately 3,300 employee surveys were distributed. Of these, 893 completed responses were received, for an approximately 27 percent return rate. Responses were received from employees residing in Pitkin, Eagle, and Garfield counties. Results of these surveys indicate that the number of employees who work in the Aspen/Snowmass area and commute from downvalley, or further, is increasing.

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Table IV-16
Area Jobs/Labor Force Comparisons

JOBS				
County	*1980*	*1990*	*% Growth*	*1992/1993*
Eagle	11,048	20,669	87	22,432
Garfield	12,144	18,311	51	18,743
Pitkin	11,807	17,804	51	17,553
Colorado	1,643,556	2,056,659	25	2,166,239
LABOR FORCE				
Eagle	8,914	13,650	53	14,483
Garfield	12,732	15,725	24	17,448
Pitkin	6,826	9,117	34	8,227
Colorado	1,500,000	1,695,000	13	1,904,000

Sources: Colorado Division of Local Government, Colorado Division of Labor and Employment.

Table IV-17
Estimated and Projected Jobs/Labor Force
1990 - 2015

JOBS						
County	*1990*	*1995*	*2000*	*2005*	*2010*	*2015*
Eagle	20,669	19,900	22,500	24,500	25,900	26,350
Garfield	18,311	17,400	18,900	19,900	20,500	20,550
Pitkin	17,804	16,600	18,100	19,100	19,800	19,850
Colorado	2,234,409	2,155,300	2,304,300	2,405,200	2,466,100	2,459,850
LABOR FORCE						
Eagle	15,037	16,280	17,900	19,480	21,030	22,660
Garfield	17,550	17,410	18,760	20,100	21,410	22,780
Pitkin	10,378	10,960	11,810	12,640	13,450	14,310
Colorado	1,756,000	1,821,200	1,934,900	2,057,500	2,165,500	2,279,200

Source: U.S. Bureau of Economic Analysis.

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Table IV-18
Outside Labor Force Required
(By County)
1990

County	*Jobs*	*Labor Force*	*Outside Labor Force Required (*)*	*% Outside Labor Force*
Eagle	18,252	13,650	4,602	25.21
Garfield	16,334	15,725	609	3.73
Pitkin	15,579	9,117	6,462	41.48

* *Assume 1.0 job per person; however, many employees hold more than one job. The Aspen Area Community Plan and the Aspen/Pitkin Housing Study estimate 1.29 jobs per person.*

Source: Colorado Department of Transportation

Table IV-19
Commuter Percentile Analysis

County	*Labor Force*	*Worked In County of Residence*	*% Worked In County of Residence*	*Worked Outside County of Residence*	*% Worked Outside County of Residence*
Eagle	13,156	10,865	82.59	2,291	17.41
Garfield	14,756	11,601	78.62	3,155	21.38
Pitkin	8,179	7,482	91.48	697	8.52

Source: U.S. Department of Commerce, 1990 U.S. Census
Note: Labor force data varies among sources due to different collection and analysis methods.

The results of the 1987 Housing Authority survey indicated that 65 percent of the people who worked in the Aspen metropolitan area also lived there. The 1990/91 survey separated Aspen and the Aspen metropolitan area. It found that, of the people who worked in Aspen, 50 percent lived in Aspen/Aspen metropolitan area. Of those who worked in the Aspen metropolitan area, 38 percent of employees lived in Aspen/Aspen metropolitan area.

The survey showed that of the people who lived in the Aspen metro area in 1987, 93 percent worked there, 4 percent worked in Snowmass Village, and 3 percent worked downvalley. In 1990/91, 87 percent of the people who lived in Aspen worked in the Aspen area, 10 percent worked in Snowmass Village, and 3 percent worked downvalley/elsewhere. In the Aspen metropolitan area, 73 percent worked in the Aspen metropolitan area, 20 percent worked in Snowmass, and 8 percent worked downvalley/elsewhere. Of the non-Pitkin County respondents, 68 percent worked in the Aspen metropolitan area, 21 percent worked in Snowmass Village, 5 percent worked in Basalt, and 6 percent worked downvalley/ elsewhere (in Pitkin County).

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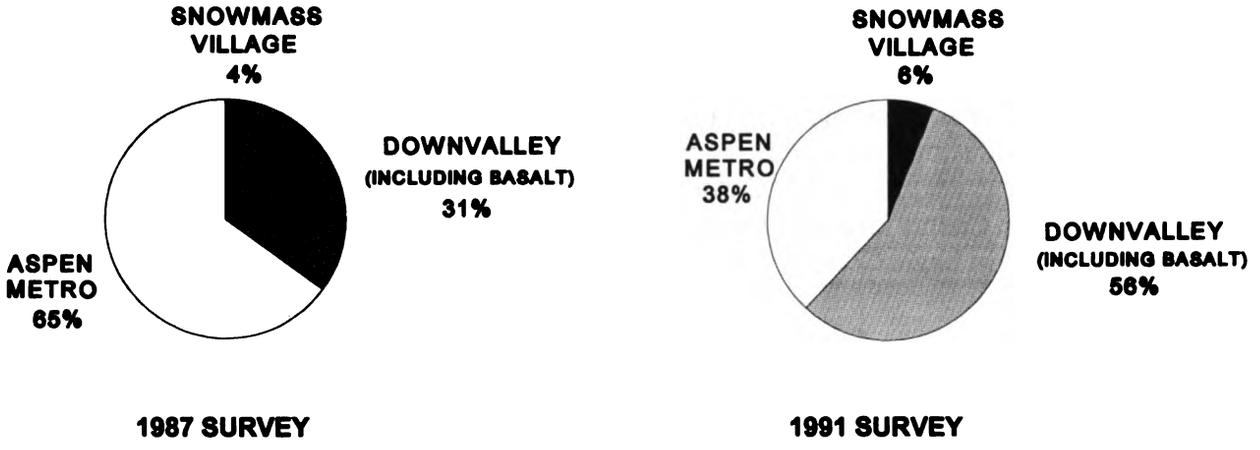
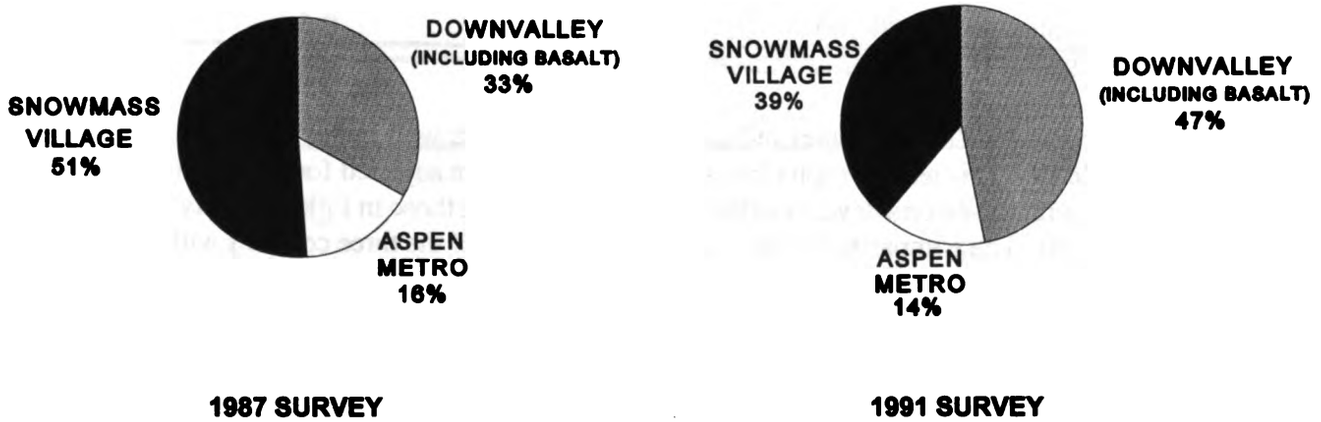
Figure IV-4
Where Aspen Metro Employees Live



Where Snowmass Village Employees Live



Sources:

- *Aspen/Pitkin Housing Authority, 1988.*
- *Rosall, Remmen and Cares, Inc., Aspen/Pitkin Housing Study. Final Report, July 1991.*
- *Colorado Department of Labor and Employment, Colorado Labor Force Averages: January 1991 - December 1991.*

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The information described above provides an understanding of the use of State Highway 82 for commuter traffic. Approximately 94 percent of the people employed in Pitkin County work in the Aspen/Snowmass Village area. The large amount of travel to the Aspen and Snowmass Village areas from downvalley for work purposes is apparent.

4. Income

When the income levels for residents within the State of Colorado and the tri-county study area are analyzed, it becomes abundantly clear that there are significant differences at all levels when median household, family, and non-family incomes are compared. Table IV-20, derived from 1990 U.S. Census figures, indicates that only Garfield County's income levels fall below the State level in every instance. Pitkin County levels are higher in all instances except non-family income, which is slightly lower than that in Eagle County.

Table IV-20
Median Income Levels
(By County)

	Household	*Family*	*Non-Family*	*% Families below Poverty Level*
Eagle	36,931	41,183	30,082	4.9
Garfield	29,176	32,377	17,193	7.3
Pitkin	39,991	52,976	29,548	2.9
Colorado	30,140	35,930	18,948	8.6

Source: U.S. Department of Commerce, 1990 U.S. Census

Per capita income levels are another indicator of the economic well being of area residents. As shown in Table IV-21, when per capita income levels of 1989 are adjusted for the effect of inflation and compared with the income levels in 1980, all incomes except those in Pitkin County are less than they were in 1980. The comparison of per capita income levels of the three counties within the study area reveals a significant level of disparity. While overall income levels have risen throughout the decade, when adjusted for inflation, all except those of Pitkin County residents have fallen below 1980 levels.

Table IV-21a
Per Capita Income
(Current $, in thousands)

	1980	*1982*	*1984*	*1986*	*1988*	*1989*
Eagle	13.0	14.9	16.0	15.3	17.5	18.6
Garfield	10.3	13.0	13.3	13.2	14.4	15.0
Pitkin	16.5	21.1	22.2	22.8	27.4	29.7
Colorado	10.6	12.7	14.2	15.2	16.6	17.7

Source: U.S. Department of Commerce, 1990 U.S. Census

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Table IV-21b
Adjusted Per Capita Income
(Constant 1989 $)

	1980	1982	1984	1986	1988	1989
Eagle	19.3	18.2	17.8	16.5	17.8	18.6
Garfield	15.2	15.8	14.8	14.2	14.7	15.0
Pitkin	24.5	25.7	24.6	24.5	27.9	29.7
Colorado	15.7	15.4	15.7	16.4	16.9	17.7

Source: Colorado Division of Labor and Employment. Colorado Department of Transportation.

5. Housing

5a. State Highway 82 Corridor

The type of households and the housing stock within the study area vary significantly, as shown in Table IV-22. The predominant household type in both Eagle and Garfield counties is the family household composed of people related through marriage. The predominate household type in Pitkin County is the non-family household composed of people not related through marriage.

Table IV-22
Household Characteristics

	Total Households	*% Family*	*% Non-Family*
Eagle	8,354	61	39
Garfield	11,266	71	29
Pitkin	5,877	46	54
Colorado	1,282,487	66	34

Source: U.S. Department of Commerce, 1990 U.S. Census

The value of homes in the study area varies considerably, with homes in Pitkin County having the highest value in the state. Data from the 1990 Census, showing the variations in the median price of owner occupied housing and the differences in the value of those homes, is displayed in Table IV-23a and Table IV-23b. In Aspen, the most profitable use of available land and housing stock is for expensive homes and visitor lodging. Many working people who choose to reside in Aspen live in crowded conditions because of the high cost of housing. Pitkin County housing prices continue to escalate, particularly in Aspen. According to the Aspen Board of Realtors, in 1995 the average sales price for single family homes was $1.7 million and almost $500,000 for condominiums. In 1996, the average single family residence price rose to $1.8 million, and condominiums dropped to $460,000. By the first quarter of 1997, these figures were $1.7 million and $575,000, respectively.

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Table IV-23a
Value of Owner Occupied Housing

	less than $99,000	*$100,000 to $200,000*	*more than $200,000*
Eagle	28%	48%	24%
Garfield	60%	34%	6%
Pitkin	6%	17%	77%
Colorado	70%	25%	5%

Table IV-23b
Median Price of Owner Occupied Housing

Eagle	135,900
Garfield	90,400
Pitkin	452,800
Colorado	82,700

Source: U.S. Department of Commerce, 1990 Census

This has resulted in the movement of growing families from Aspen to downvalley areas in search of affordable housing. Although prices have risen downvalley, the 1996 average single family home in Basalt was $337,000, and a condominium averaged $178,000.

According to the ***Aspen Area Community Plan***, the housing stock available for permanent residents is decreasing. In 1986, units for permanent residents made up 85 percent of the housing inventory. By 1991, only 71 percent of the units were for permanent residents. At the same time, the average annual growth rate for new residential construction in the City of Aspen during the last fifteen years has been 1.9 percent, and a rate of 2.8 percent in the Aspen metro area.

The lack of affordable housing has directed much attention toward the issue of employee housing in Aspen during the past decade. A decision to provide rent-controlled and price-controlled housing for employees was reached in 1979 by the City of Aspen and Pitkin County. The Aspen/Pitkin Housing Authority was formed in 1982, and its original regulations required developers to construct housing units for 25 percent of the employees generated by their projects. The percentage was increased to 35 percent in 1986. In April 1988, the Aspen City Council agreed to require developers to house 100 percent of the employees generated by their projects. Developers are allowed to make "cash-in-lieu" payments to support Housing Authority efforts to provide employee housing instead of building housing as part of their projects. Under Housing Authority regulations, employee housing units may be legally occupied only by residents of the county who live in them full time and meet income guidelines.

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In early 1988, approximately 800 employee housing units had been provided and more than $500,000 in cash-in-lieu payments from developers was available for Housing Authority use. As of June 1990, the Housing Authority inventory of affordable housing units totaled 966. By 1992, there were approximately 1,225 deed-restricted units, according to the ***Aspen Area Community Plan***. At the end of October 1994, the city had completed 50 additional units, and 285 were proposed for completion in the following 2-1/2 years. These units can only be sold or rented to area employees, and re-sale prices are restricted to ensure that the units continue as affordable housing for employees. The Housing Authority projects a need for an additional 805 affordable units in 1995.

Both Aspen and Pitkin County, through the Housing Authority, have begun to address the need for affordable housing with publicly initiated developments: Hunter Longhouse, Aspen Valley Hospital, Truscott Place, Marolt Ranch, Twin Ridge, East and West Hopkins, the accessory dwelling program, and several other potential developments that both the City and County are discussing. In addition, the City adopted the Affordable Housing Zone District, an area where incentives are offered for building reasonably priced housing units to encourage private sector development of affordable housing. The County has had the Permanent Moderate Housing (PMH) zone district in place for a number of years to encourage development of affordable housing, such as Centennial, Hunter Longhouse, and Lone Pine.

In addition to these production efforts, the County has up to $6 million in bonding authorization for affordable housing. The City has also dedicated tax revenues of more than $2 million per year for 10 years for affordable housing (1.0 percent local Real Estate Transfer Tax [RETT] and 0.45 percent sales tax).

5b. Housing and Traffic Volume

State Highway 82 is frequently mentioned during consideration of employee housing needs. The analysis for this FEIS concluded that changes in future employee housing and commuting characteristics would not be significant enough to remove the need for the transportation improvements. Current employee housing regulations are aimed primarily at providing for the employees generated by future growth and development. If successful, it may reduce the rate of overall traffic growth, but not significantly.

Serious traffic capacity and congestion problems presently exist and are expected to get worse. From origin and destination studies conducted by CDOT, 74 percent of the trips on State Highway 82 at Cemetery Lane in 1993 were internal traffic (Figure IV-5). Internal traffic is defined as trips having both the origin and destination within the Aspen/Snowmass area. External traffic consists of trips having the origin or destination outside the Aspen/Snowmass area.

The traffic volumes in the Buttermilk Ski Area increased approximately 12 percent between 1987 and 1992. Downvalley near Basalt the traffic increased 37.3 percent during the same period. Traffic volumes are far above the existing State Highway 82 capacity, and the highway frequently operates at very low level of service (LOS) during peak hours and bad weather conditions.

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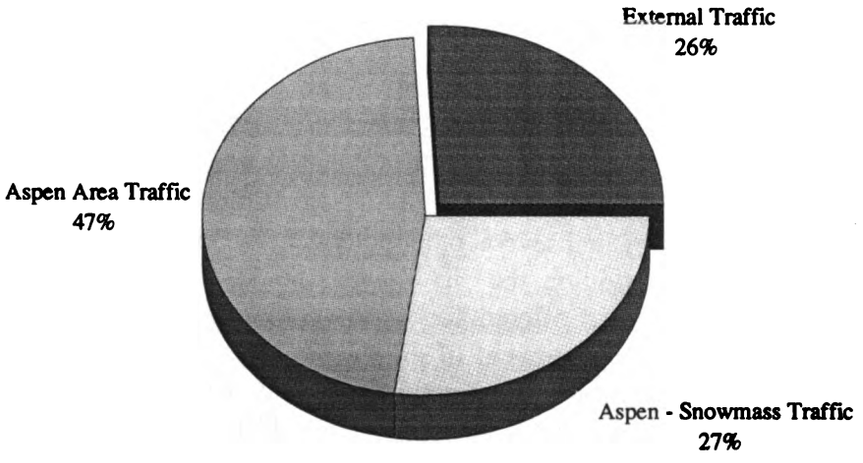
Figure IV-5
Trip Characteristics on State Highway 82 at Cemetery Lane (1993)



Source: Colorado Department of Transportation Origin and Destination Survey, 1993.

Currently, 44 percent of the Aspen metropolitan employees live upvalley from Aspen Village. The ***Aspen Area Community Plan*** has a projected goal of housing 60 percent of its employees upvalley, which in theory would decrease the number of commuter trips on State Highway 82. However, while more employee housing units are developed, the population and number of jobs will also increase. Therefore, the 40 percent of employees who are not housed in the Aspen area would be similar to the actual number of present-day commuters, as demonstrated in Table IV-24. If the 60 percent goal is not reached, the number of commuters would be even greater.

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Table IV-24
Labor Force

	1992 (Current Condition)	*2015 (Projected Buildout)*
Estimated Total Aspen Area Labor Force	8,400	10,700
Estimated Labor Force Living in the Aspen Area	3,780 (45%)	6,420 (60%)
Estimated Commuting Labor Force	4,620 (55%)	4,280 (40%)

Source: Aspen Area Community Plan, 1993.

Employee housing has been suggested for an area at the Brush Creek Road and State Highway 82 intersection. If this project is successful, the employees would still be traveling the State Highway 82 study corridor. In order for the employee housing to reduce trips on this study corridor it must be east of Castle Creek.

C. PHYSICAL ENVIRONMENT

1. Air Quality

The City of Aspen and its surrounding area are designated as an air quality non-attainment area for suspended particulate matter referred to as PM_{10} (particulate matter less than 10 microns in diameter--by comparison a human hair is about 75 microns in diameter). The non-attainment designation by the Environmental Protection Agency (EPA) is in response to the air quality being worse than National Ambient Air Quality Standards (NAAQS). This standard is defined as concentrations of PM_{10} of 50 micrograms per cubic meter of air averaged over an annual period and 150 micrograms per cubic meter during a 24-hour period. Three exceedances of the federal 24-hour PM_{10} standard (150 micrograms per cubic meter) have been recorded in Aspen since PM_{10} monitoring began in January 1988.

The non-attainment boundary for the Aspen area includes the City of Aspen, the Aspen Airport Business Center and the developed areas around Aspen. The northerly boundary on State Highway 82 is approximately milepost 37.2. The entire EIS study corridor is within the non-attainment boundary.

Over 80 percent of the PM_{10} in Aspen is reentrained dust from paved roads which are heavily sanded in winter (suspended particulate matter which is kicked up off of the highway as vehicles drive over the sanded surfaces). The remainder is wood smoke from fireplaces, wood stoves, and restaurant grills with a certain percentage being from unknown sources.

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The Aspen SIP includes transportation control measures to reduce vehicle miles traveled, including expanded transit service and paid parking in the core business area. The SIP also requires the Colorado Department of Transportation and the City of Aspen to use clean sand for winter street sanding and to do more frequent street sweeping on State Highway 82.

In 1988, the Aspen City Council and the Pitkin County Commissioners enacted several ordinances to control smoke from woodburning fireplaces and to establish a limit of one certified Phase II wood stove per dwelling. Aspen has also experimented with several street sanding/cleaning measures in an effort to reduce re-entrained dust. These measures include asphalt coated sand, harder and cleaner sand, sanding fewer streets, liquid deicers, and frequent street washing.

2. Water Quality

The Roaring Fork River and two of its tributaries, Maroon Creek and Castle Creek, are the primary water resources within the study corridor. The Roaring Fork River and Maroon Creek originate within the Hunter/Fryingpan and Maroon Bells/Snowmass Wilderness Areas, respectively; the mainstream of Castle Creek begins on the slopes of Castle Peak. Maroon Creek and Castle Creek join the Roaring Fork northwest of the town of Aspen. The mainstream of the Roaring Fork then flows in a northwesterly direction for approximately 80 kilometers (49.7 miles) before joining the Colorado River near the town of Glenwood Springs.

The headwaters of the river and its major tributaries are located in high alpine terrain where elevations exceed 4,285 meters (14,060 feet) above mean sea level. Rocks form the predominant ground cover in the upper elevations where snowpack persists through much of the year. Streambeds in the upper elevations are typically steep and the flow is turbulent, especially during peak flow periods. Below the headwaters, the river and its tributaries flow through alpine ecosystems where the slope of the streambeds becomes flatter. The river and tributaries ultimately reach the valley floor where the flow velocities decrease and the water bodies become wider and shallower relative to the higher elevation segments. In the valley, the river and creeks flow within incised beds; the beds consists primarily of rock cobbles.

2a. Sources of Water

The principal sources of water in the Roaring Fork River and its tributaries are runoff from snowmelt and precipitation and groundwater discharge. During the winter months, groundwater discharge is the primary source of flow. Snowmelt and precipitation runoff are the primary sources of flow in the warmer months. Water is diverted from the Roaring Fork to Twin Lakes and Turquoise Lake in the Arkansas River basin from the eastern portion of the Roaring Fork basin.

2b. Stream Classification

The Colorado Department of Health's Water Quality Control Commission (WQCC) has classified all segments of the Roaring Fork River and its tributaries in and above the study corridor for beneficial uses and has adopted water quality standards necessary to protect those uses. The segment of the Roaring Fork River and its tributaries within the project area has been classified for the following beneficial uses:

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- Recreation, Class 1
- Aquatic Life, Cold Water, Class 1
- Water Supply
- Agriculture

The segment of the Roaring Fork River and its tributaries occurring within the project area is defined within the WQCC's ***Classifications and Numeric Standards for Upper Colorado Basin and North Platte (Planning Region 12)*** as Region 12; Basin: Roaring Fork River; Stream Segment Description: (3) Mainstream of the Roaring Fork River, including all tributaries, lakes, and reservoirs from a point immediately below the confluence with Hunter Creek to the confluence with the Colorado River except for those tributaries included in Segment 1 and specific listings in Segments 4 through 10 (WQCC, 1997)[2].

2c. Water Quality Standards

The water quality standards adopted for the segment occurring within the project area are summarized in Table IV-25. All of the adopted standards have been established using criteria set forth in the WQCC's ***Basic Standards and Methodologies for Surface Water.*** The WQCC establishes these standards based on the segment's current suitability for its designated uses or goals for future uses. Standards for some parameters are numeric while others are considered table value standards (TVS). TVS are employed for metals where the toxicity of the metal is related to water hardness; TVS are determined using an equation that includes a factor for water hardness.

2d. Ambient Water Quality

The ambient water quality of the Roaring Fork River and its tributaries was assessed during the development of the BBFEIS. The assessment included a visual inspection of the river and its tributaries, and evaluation of data available in the STORET database (water quality data compiled by the United States Environmental Protection Agency [USEPA]) and in CDOT records. The results of these data analyses were presented in the technical reports prepared in support of the FEIS. The analyses include data collected from three stations along the Roaring Fork and one station along each of Castle and Maroon Creeks.

The data, collected primarily from the late 1970s through the early 1980s, did not include all parameters for which standards had been established. The available data indicated that the waters were of high quality for most parameters with the exception of metals. Numeric standards for copper, lead, and zinc were exceeded at stations in Maroon Creek and Castle Creek. Free cyanide and arsenic were recorded at levels above the numeric standards downstream of the town of Aspen.

The analysis indicated that the minimum dissolved oxygen standards are exceeded at all times in all segments. The pH standards were also met or exceeded with the exception of a few low values in the segment above Aspen. The waters are low in hardness and alkalinity. Historical data indicates that fecal coliforms, total ammonia, boron, nitrite, nitrate, chloride,

[2] Water Quality Control Commission (WQCC), 1997. Classifications and Numeric Standards for Upper Colorado Basin and North Platte (Planning Region 12).

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sulfate, soluble or total manganese, selenium, and nickel parameters are within established limits.

The segment above the study corridor and Maroon Creek and Castle Creek tributaries near the southeast end of the study corridor had mean concentrations of copper, lead, and zinc that exceed the applicable numeric standards. The size of the database was sufficient to conclude that the ambient levels (defined in Colorado as the 85th percentile value) for these three metals are above the adopted standards. The maximum values observed for total and soluble iron exceeded the numeric limits at the stations in this segment, so the ambient value for total and soluble iron may also have exceeded the standards.

At the stations below Aspen within the study corridor, mean values for free cyanide and arsenic were above the numeric standards. The number of observations was not sufficient, however, to conclude that these standards were being exceeded. Furthermore, the maximum values for cadmium, copper, iron, lead, and zinc exceeded the numeric standards although the means were below the limits in effect at that time.

A meaningful evaluation of previous water quality data in terms of current water quality standards is precluded by the incompatibility of data based on differences in analytical methods. The WQCC changed the water quality standards from numeric to table values in 1988 based, in part, on the ambient water quality within each stream segment. Considering the analyses conducted by the state in revising the standards and the lack of industrial development within the project area, it is unlikely that water quality within the project area has undergone significant changes since the initial analyses were conducted.

3. Upland and Floodplain Vegetation

Most land within the project area between Buttermilk Ski Area and downtown Aspen has been developed for either agricultural, residential, commercial, or recreational uses. Native vegetation is limited to small parcels of sagebrush shrublands near the airport, and the floodplain communities immediately surrounding the Roaring Fork River, Maroon Creek, and Castle Creek drainages. Vegetation growing on land developed for agricultural purposes consists primarily of grasses to support their use as irrigated pastures. Bluegrass and landscape plants are the predominant vegetation associated with residential and recreational land uses.

Sagebrush uplands consist of big sagebrush (*Artemisia tridentata*) interspersed with western wheatgrass (*Agropyron smithii*) and Indian ricegrass (*Oryzopsis hymenoides*). Agricultural pastures consist primarily of smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), and timothy (*Phelum pratense*).

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Table IV-25
Numeric Water Quality Standards for the Roaring Fork River and Tributaries Within the Project Area

Parameter	Units	Maximum	Minimum
Dissolved Oxygen			
w/o spawning	mg/l	-	6.0
w/ spawning	mg/l	-	7.0
pH	S.U.	9.0	6.5
Fecal Coliforms	/100 ml	200	-
Ammonia			
acute	mg/l	TVS	-
chronic	mg/l	0.02	-
Chloride			
acute	mg/l	0.019	-
chronic	mg/l	0.011	-
Cyanide (free)	mg/l	0.005	-
Sulfur	mg/l	0.002	-
Boron	mg/l	0.75	-
Nitrite	mg/l	0.05	-
Nitrate	mg/l	10.0	-
Chlorine	mg/l	250	-
Sulfate	mg/l	250	-
Arsenic			
acute	µg/l	50 (total recoverable)	-
Cadmium			
acute	µg/l	TVS (dissolved)(trout)	-
chronic	µg/l	TVS (dissolved)	-
Chromium			
III acute	µg/l	50 (total recoverable)	-
III acute/chronic	µg/l	TVS (dissolved)	-
Copper	µg/l	TVS (dissolved)	-
Iron			
chronic	µg/l	300 (dissolved)	-
chronic	µg/l	1000 (total recoverable)	-
Lead			
acute/chronic	µg/l	TVS (dissolved)	-
Manganese			
chronic	µg/l	50 (dissolved)	-
chronic	µg/l	1000 (total recoverable)	-
Mercury	µg/l	0.01 (total recoverable)	-
Nickel			
acute/chronic	µg/l	TVS (dissolved)	-
Selenium	µg/l	10.0 (total recoverable)	-
Silver			
acute	µg/l	TVS (dissolved)	-
chronic	µg/l	TVS (dissolved)(trout)	-
Zinc			
acute/chronic	µg/l	TVS (dissolved)	-

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Floodplain vegetation types consist primarily of woody species. The overstory of the Castle Creek and Maroon Creek drainages is dominated by narrow-leaf cottonwood (*Populus angustifolia*) and the understory is composed of willow (*Salix* spp.) and red-osier dogwood (*Cornus stolonifera*). Minor woody components of the understory include snowberry (*Symphoricarpos* sp.) and Woods rose (*Rosa woodsii*). Alder (*Alnus tenufolia*), blue spruce (*Picea pungens*), and gambel oak (*Quercus gambelli*) are present in the Roaring Fork River drainages. Herbaceous components of these moist to mesic communities include smooth brome, Kentucky bluegrass, sedges (*Carex* spp.), and rushes (*Juncus* spp.). One small wetland area located adjacent to the highway is composed of herbaceous species including sedges, rushes, and pasture grasses. Wetland vegetation is discussed in the next section.

4. Wetlands

The wetlands along the Roaring Fork River and its tributaries occur in response to changes in water patterns caused by shifts in stream flow and damming by beavers. Wetland vegetation also exists in upland areas where, in response to snowmelt or precipitation runoff, water collects for extended periods within the growing season. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and Executive Order 11990. The United States Army Corps of Engineers (USACOE) and USEPA administer dredge and fill activities within these areas that are defined as:

> Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Three requirements are necessary to define wetlands: vegetation, soils, and hydrology. The definitions used by the agencies to identify wetlands differ somewhat in text but all focus on the three wetland criteria. Wetlands are typically identified by vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation).

Hydrophytic vegetation is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. Obligate wetland plants (OBL) almost always (>99 percent probability) occur in wetlands under natural conditions. Facultative wetland plants (FACW) usually (67-99 percent probability) occur in wetlands under normal conditions but are occasionally found in non-wetlands. Facultative plants (FAC) are equally likely (34 to 66 percent probability) to occur in wetlands and non-wetlands. Facultative upland plants (FACU) usually (67 to 99 percent probability) occur in non-wetlands but occasionally (1 to 33 percent) occur in wetlands (United States Fish and Wildlife Service [USFWS] 1988).

Hydric soils refer to characteristics sufficient to support predominantly wetland vegetation. Soils that are saturated, flooded, or ponded for sufficient periods during the growing season to develop anaerobic conditions in the upper part are referred to as hydric. Sufficient duration for saturation is generally considered to be 1 week or more when soil temperatures are above 5 degrees centigrade (°C) (biological zero). It should be noted that the duration period required for saturated soils is key to the identification of wetlands.

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Wetland hydrology includes the frequency and duration of inundation and soil saturation. Permanent or periodic water inundation or soil saturation are considered significant forces in wetland creation. Although hydrology is essential for creating and maintaining wetlands, it is often difficult to quantify during field surveys. Wetland hydrology, including soil saturation or inundation, is generally required for a period of 2 consecutive weeks during the growing season. In the absence of actual observations during this 2-week period, hydrologic indicators are often used to assess whether wetland hydrology is present.

4a. Wetland Functions

Wetlands are widely recognized as providing a variety of important functions. Wetlands vary in the functions they provide and the value of these functions. Functions and values of wetlands are often used for evaluating wetlands and for guidance in selecting appropriate wetland mitigation. There are six wetlands located within the project area. All of these wetlands provide some degree of primary production export, sediment stabilization, sediment/toxicant retention, and floodflow alteration. Wetlands 2 and 3 also provide groundwater recharge/discharge, wildlife diversity/abundance, aquatic diversity/abundance, nutrient removal/transformation, and recreation.

4b. Wetland Survey Methodology

A wetland survey was conducted in August 1994 for the study corridor and the alignment alternatives under consideration in the DEIS. A second survey was conducted in May 1996 for the extended study corridor and the alignment alternatives under consideration for the Draft Supplemental Environmental Impact Statement (DSEIS). The entire length of State Highway 82 within the project area was investigated on foot, including riparian areas under the bridges crossing Castle Creek and Maroon Creek. Aerial photographs, topographic maps, and personal communication were used to ensure that potential wetland areas within the project area were not overlooked. A review of hydric soils for the Aspen and Gypsum areas indicated that the only soil type containing hydric inclusions, fluvaquents, was restricted to the drainages associated with Castle Creek and Maroon Creek.

The USACOE 1987 manual was followed for identification of wetlands (***Environmental Laboratory***, 1987). This methodology requires that each of three parameters--hydrology, vegetation, and soils--be present at a site for it to be identified as a wetland. Hydrologic indicators were assessed in the field in conjunction with the use of floodplain maps. Vegetation was identified in the field and soils were assessed using maps and descriptions published by the United States Soil Conservation Service (now National Resources Conservation Service). Soil pits dug at each site were used to assess potential hydric qualities of the soils present. A Munsell Soil Color Chart was employed to document soil color in assessing hydric qualities. Six wetland areas were located in the project area. Three wetland areas were located in the extended DSEIS project area (Figure IV-6a), and three wetland areas were located in the DEIS project area (Figure IV-6b). Results of the DEIS survey were verified by the USACOE during a follow-up visit to the site in November 1994.

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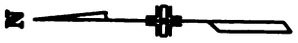
Figure IV-6a
State Highway 82 Entrance to Aspen FEIS
Wetland Locations



Scale 1:30,000

0 500 1000 meters

0 1000 2000 3000 feet

Legend:

Wetland

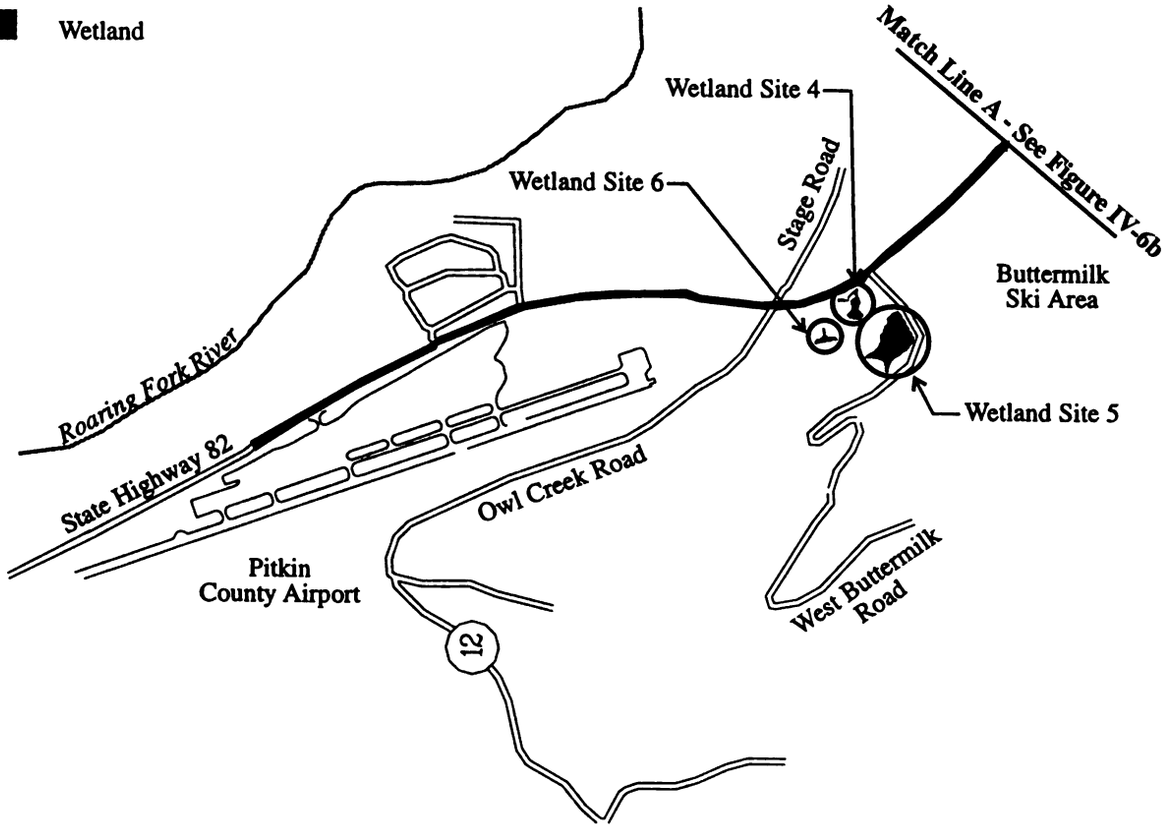


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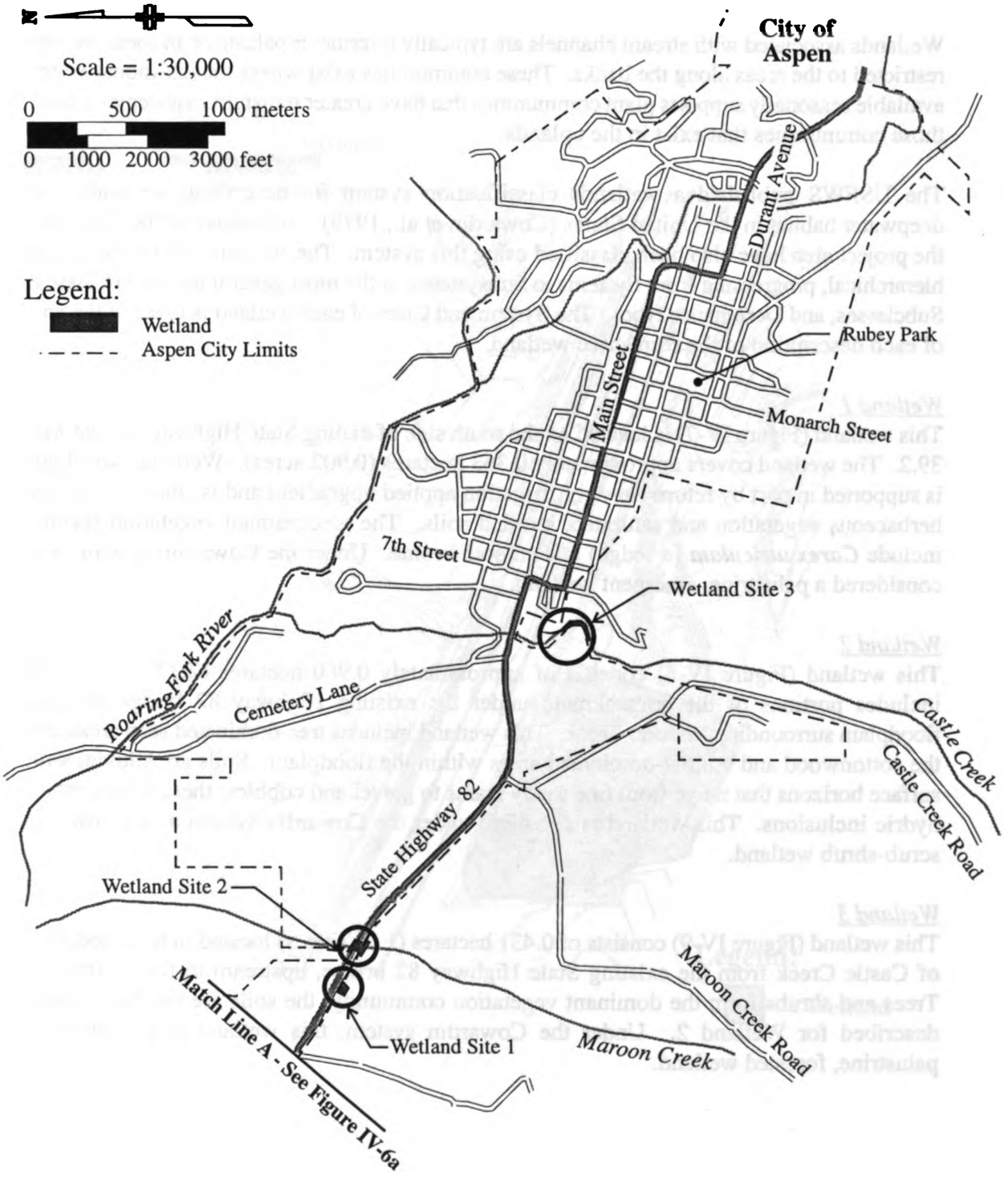
Figure IV-6b
State Highway 82 Entrance to Aspen FEIS
Wetland Locations



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The wetlands located in the extended DSEIS project area are referred to as potential jurisdictional wetlands due to the complex nature of site hydrology (hydrology in the area is comprised of irrigation water and natural snowmelt). For the purpose of the FEIS, and to ensure that all potential impacts to wetlands are accounted for, all three wetlands are assumed to represent jurisdictional wetlands.

4c. Wetland Community Types

Wetlands associated with stream channels are typically riverine or palustrine in form and are restricted to the areas along the banks. These communities exist where the additional water available seasonally supports plant communities that have greater moisture requirements than those communities that exist in the uplands.

The USFWS published a wetlands classification system for describing wetlands and deepwater habitat in the United States (Cowardin et al., 1979). Individual wetlands within the project area have also been classified using this system. The structure of this system is hierarchical, progressing from Systems to Subsystems, at the most general levels, to Classes, Subclasses, and Dominance types. The System and Class of each wetland is given at the end of each description of the respective wetland.

Wetland 1

This wetland (Figure IV-7) is located on the south side of exiting State Highway 82 near MP 39.2. The wetland covers approximately 0.363 hectares (0.902 acres). Wetland hydrology is supported in part by return flows of irrigation applied upgradient and is characterized by herbaceous vegetation and saturated, mottled soils. The predominant vegetation species include *Carex utriculata* (a sedge) and smooth brome. Under the Cowardin system, it is considered a palustrine, emergent wetland.

Wetland 2

This wetland (Figure IV-8) consists of approximately 0.960 hectares (2.372 acres) and includes portions of the embankment under the existing Highway 82 bridge and the floodplain surrounding Maroon Creek. This wetland includes tree-dominated seep areas and the cottonwood and willow-dominated areas within the floodplain. Soils are alluvial with surface horizons that range from fine sandy loams to gravel and cobbles; these soils contain hydric inclusions. This wetland is classified under the Cowardin system as a palustrine, scrub-shrub wetland.

Wetland 3

This wetland (Figure IV-9) consists of 0.431 hectares (1.065 acres) located in the floodplain of Castle Creek from the existing State Highway 82 bridge, upstream to the footbridge. Trees and shrubs form the dominant vegetation community; the soils are similar to those described for Wetland 2. Under the Cowardin system, this wetland is considered a palustrine, forested wetland.

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Figure IV-7
State Highway 82 Entrance to Aspen FEIS
Wetland Site No. 1

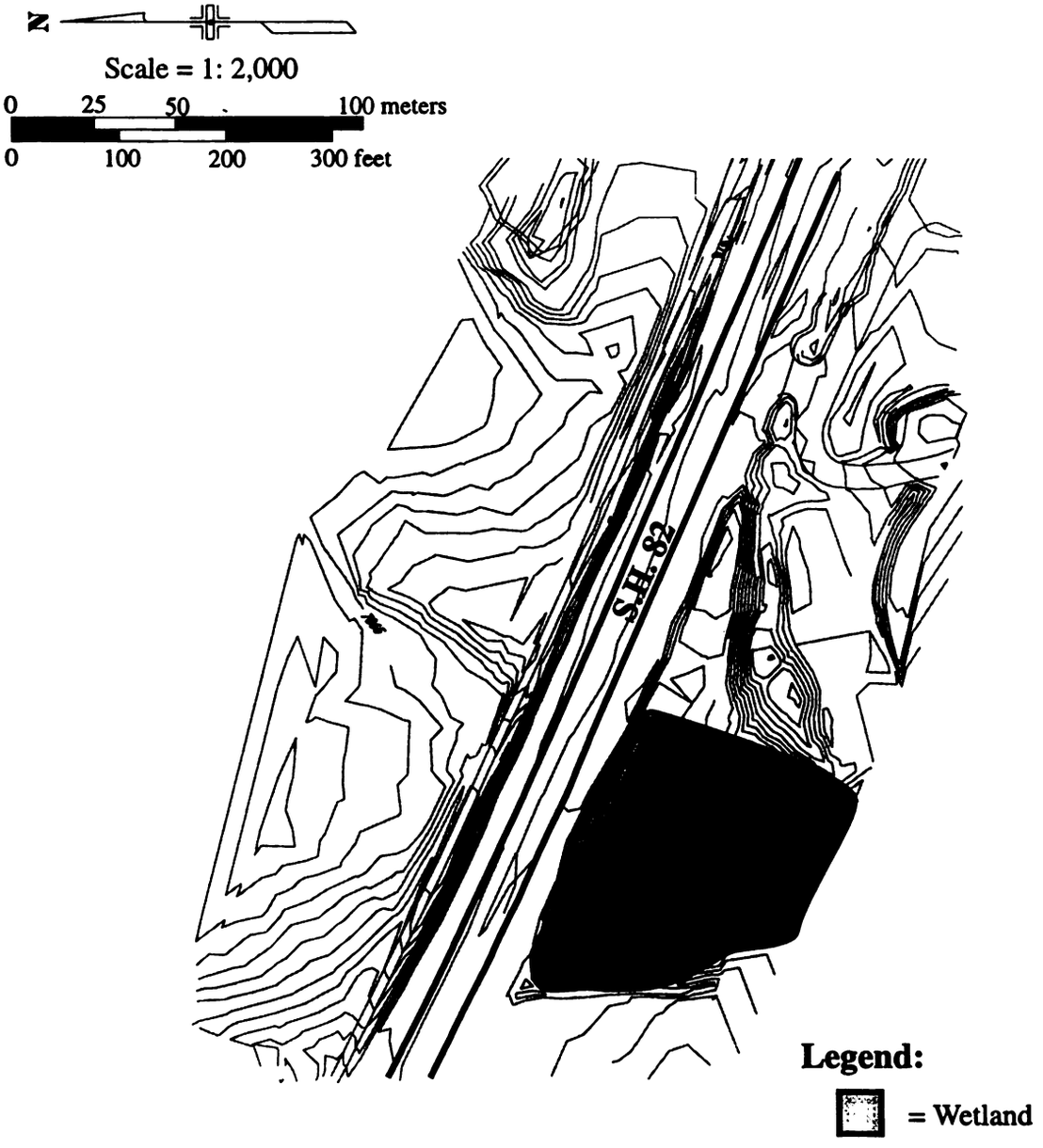

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Figure IV-8
State Highway 82 Entrance to Aspen FEIS
Wetland Site No. 2

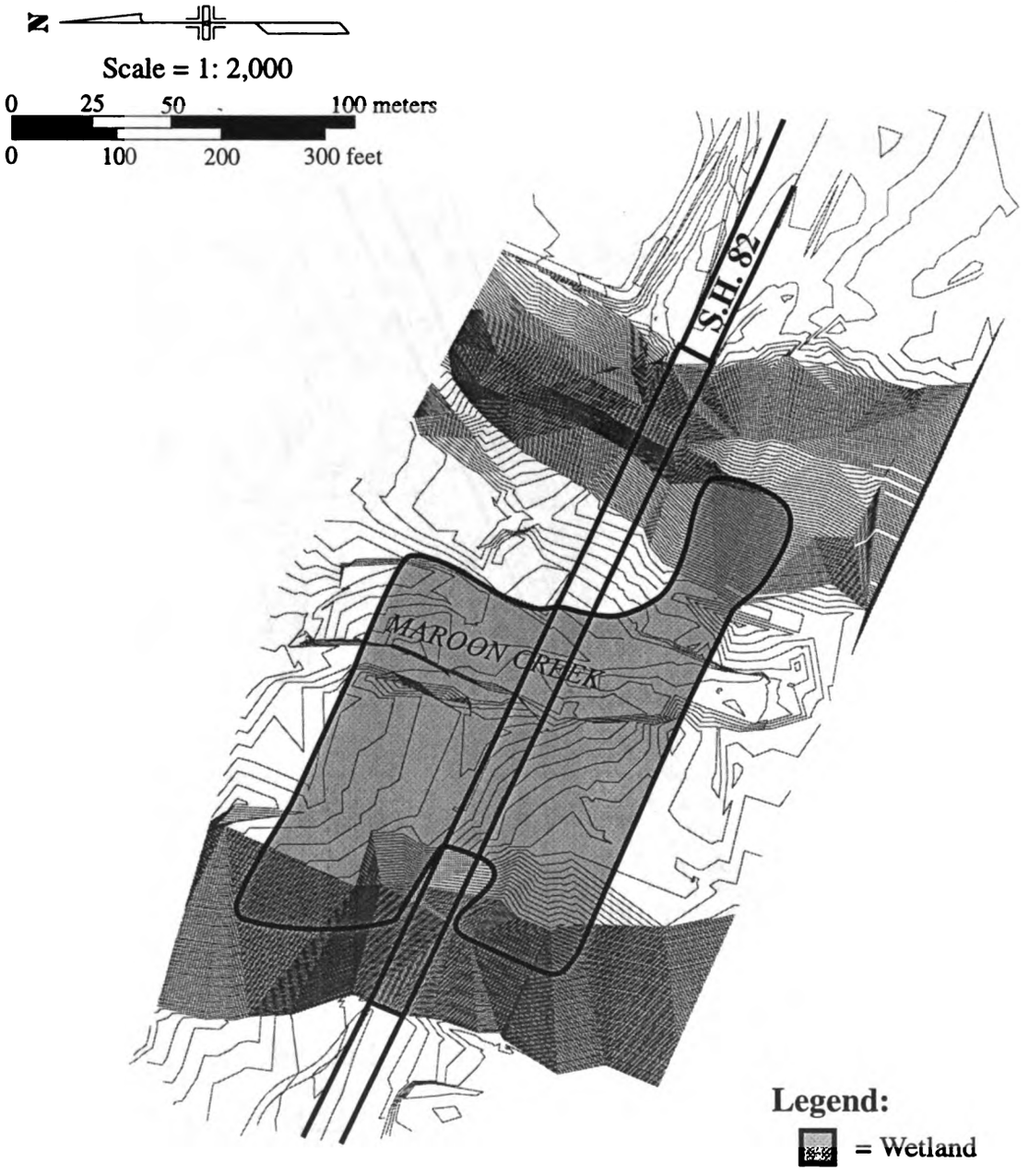

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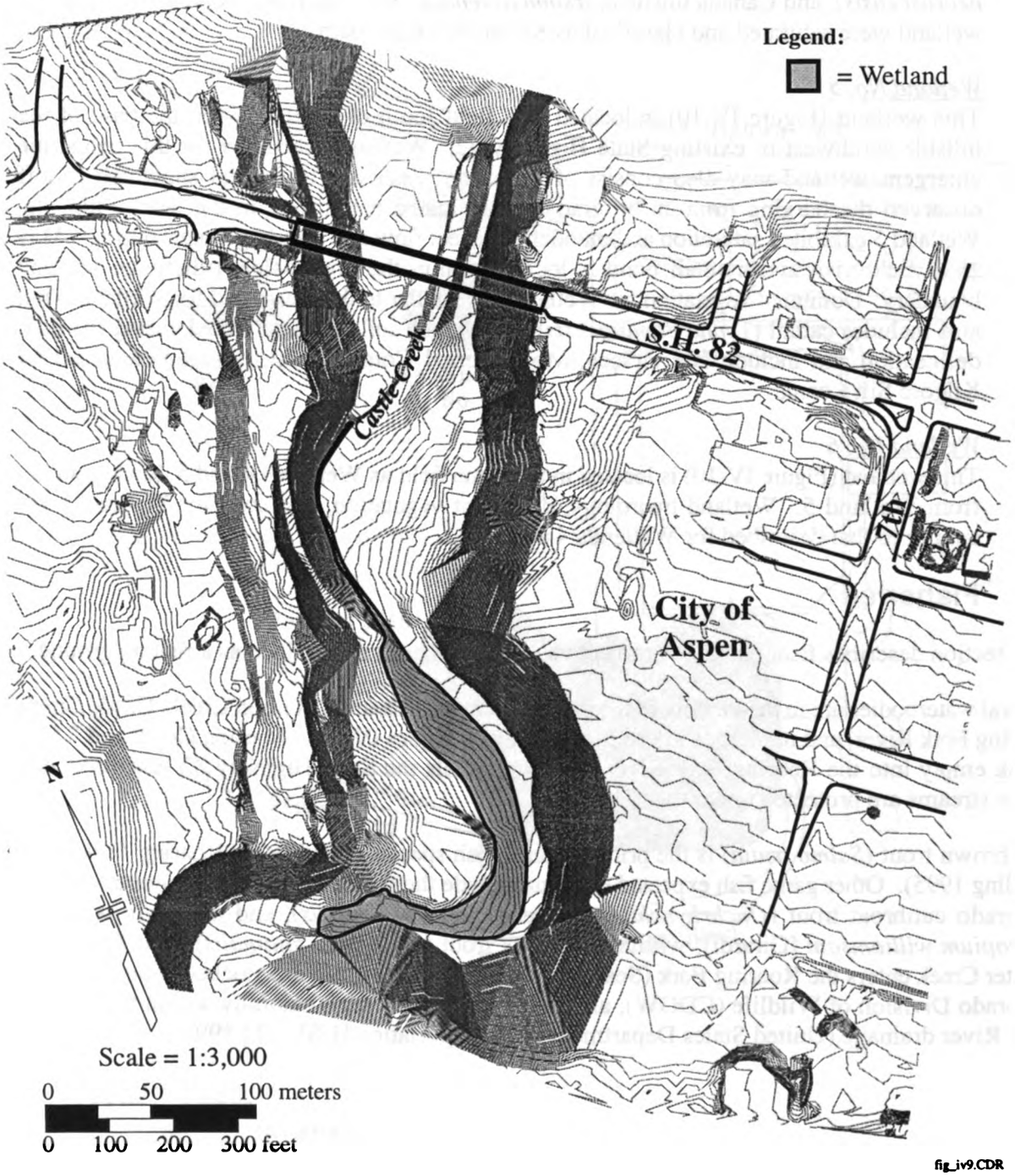
Figure IV-9
State Highway 82 Entrance to Aspen FEIS
Wetland Site No. 3



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Wetland 4

This wetland (Figure IV-10) is located in a field on the south side of existing State Highway 82 and west of the existing Buttermilk Ski Area. Wetland hydrology for this palustrine emergent wetland may consist of irrigation water and/or natural snowmelt runoff observed discharging from an up gradient corrugated metal pipe. Dominant vegetation for Wetland 4 includes arctic rush (*Juncus articus*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), scratchgrass (*Muhlenbergia asperifolia*), smooth brome (*Bromus inerme*), beaked sedge (*Carex rostrata*), dandelion (*Taraxacum officinale*), Nebraska sedge (*Carex nebrascensis*), and Canada thistle (*Cirsium arvense*). Soils for this potential jurisdictional wetland were saturated and classified as Kobar silty clay loam.

Wetland No. 5

This wetland (Figure IV-10) is located in a field south of Wetland 4 on the base of the hillside southwest of existing State Highway 82. Wetland hydrology for this palustrine emergent wetland may also consist of irrigation water and/or natural snowmelt runoff observed discharging from an up gradient corrugated metal pipe in the nearby hillside. Wetland 5 exhibited saturation and inundation (sheet flow and standing water) during a May 1996 field visit and a small pond is located within the potential jurisdictional wetland boundary. Dominant vegetation for Wetland 5 is similar to that described for Wetland 4 but also includes cattail (*Typha domingensis*). Wetland 5 soils were saturated during the field delineation and include 108 Uracca, Moist-mergel Complex, 85 Morval Loam, and 69 Kilgore Silt Loam.

Wetland No. 6

This wetland (Figure IV-10) is located in the same field as Wetlands 4 and 5 down gradient from Wetland 5. Wetland hydrology, dominant vegetation, and soils for Wetland 6 are similar to that described for Wetlands 4 and 5.

5. Fisheries

This section describes fisheries in the project vicinity. Fisheries are defined as a fishing ground.

Several waterbodies are in the vicinity of the project area: the perennial Maroon Creek, Castle Creek, Roaring Fork River, and numerous intermittent streams (Figure IV-6b). Maroon Creek and Castle Creek empty into the Roaring Fork River, which parallels the State Highway 82 study corridor. These streams are protected under the CWA.

The brown trout (*Salmo trutta*) is the primary game fish species found in the Roaring Fork River (Sealing 1995). Other game fish expected to occur include the rainbow trout (*Salmo gairdneri*), the Colorado cutthroat trout (*Onchrhynchus (=Salmo) clarki pleuriticus)*, and mountain whitefish (*Posopium williamsoni* [Girardi]) with a few brook trout (*Salvelinus fontinalis*) occurring where Hunter Creek enters the Roaring Fork (Sealing 1995)[3]. Rainbow trout are stocked annually by the Colorado Division of Wildlife (CDOW); all other species reproduce naturally within the Roaring Fork River drainage (United States Department of Transportation [USDOT] 1993).

[3] Clark, B. 1995. Senior Aquatic Biologist, Colorado Division of Wildlife, Grand Junction, Colorado. Personal Communication with C. Riebe, SAIC, May 19, 1995.

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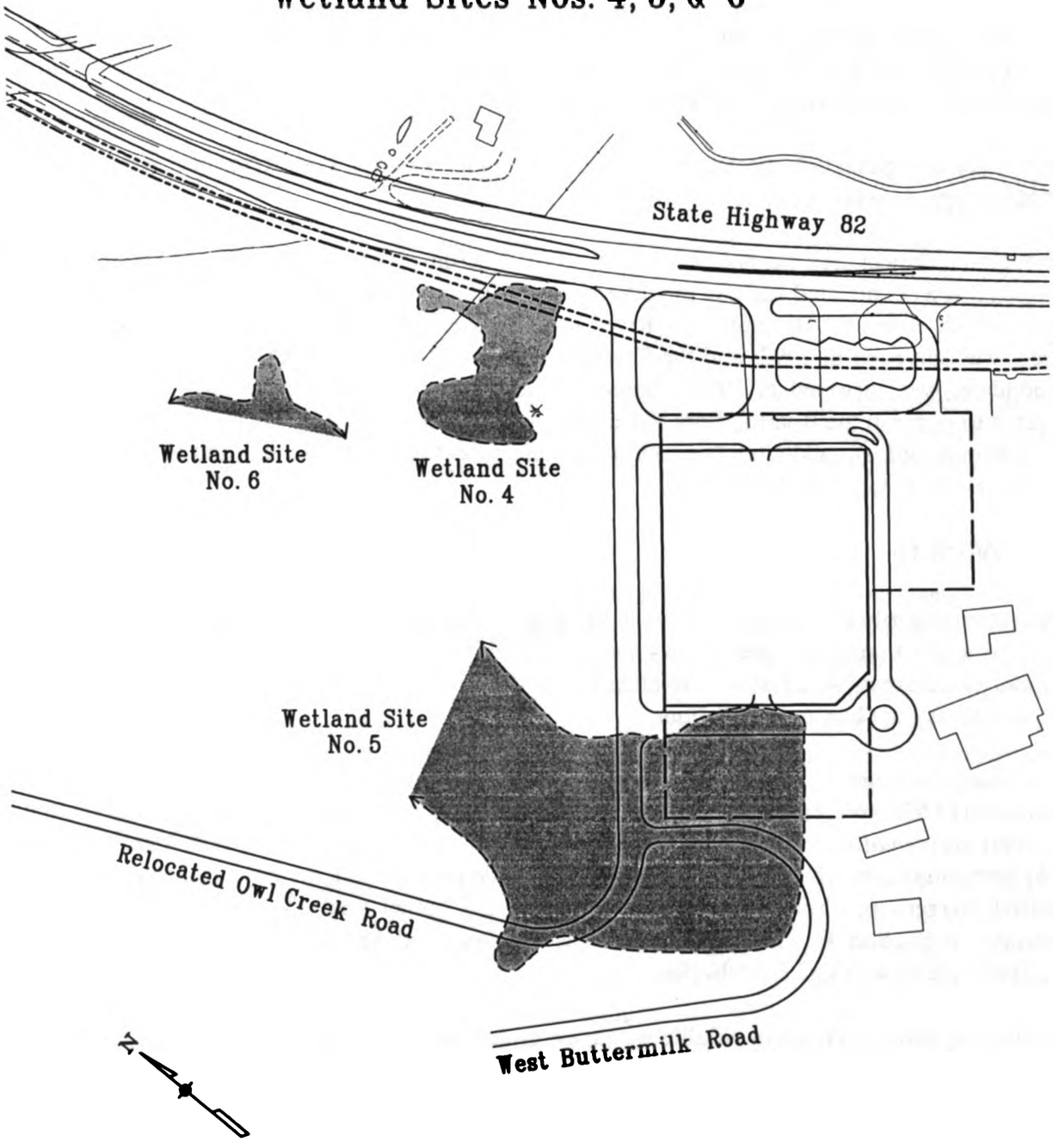
Figure IV-10
State Highway 82 Entrance to Aspen FEIS
Wetland Sites Nos. 4, 5, & 6



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According to CDOW - Grand Junction, the portion of the Roaring Fork River between Carbondale and Glenwood Springs has been designated a "Gold Medal" fishery (Toolen 1994). The highest quality aquatic habitat in the state is designated by CDOW as Gold Medal. Only 254 of the more than 12,000 kilometers (7,457 miles) of trout stream in Colorado are designated as Gold Medal (USDOT 1993). A Gold Medal trout stream may be stocked by CDOW and may yield trophy sized trout (Toolen 1994). The portion of the Roaring Fork River from McFarlane Creek (approximately 4 kilometers [2.5 miles] upstream of Aspen) to Upper Woody Creek Bridge (approximately 8 kilometers [5 miles] downstream from Aspen) is designated as "Wild Trout Waters." This designation is given to waters supporting naturally reproducing trout populations.

The primary non-game fish species expected to occur in the Roaring Fork River near Aspen is the mottled sculpin (*Cottus bairdi*) (Sealing 1995).

Although the project area has not been surveyed for macroinvertebrates, the United States Forest Service (USFS) conducted surveys in waterbodies upstream and downstream of Aspen. Lincoln Creek, which enters the Roaring Fork River 11 to 16 kilometers (6.8 to 9.9 miles) upstream of Aspen, was surveyed in 1992; and the Crystal River, which enters the Roaring Fork River near Carbondale, was surveyed in 1993. Based on these surveys, some of the macroinvertebrates expected to occur in the Roaring Fork River near Aspen include mayflies (e.g., *Baetis*), stoneflies (e.g., *Chloroperlidae*), caddisflies (e.g., *Rhyacophilidae*), beetles (e.g., *Elmidae*), and blackflies (e.g., *Chironomidae*) (Mangum 1992, 1993).

6. Wildlife

This section describes wildlife resources in the project vicinity. Wildlife and wildlife habitats are protected under numerous federal laws such as the Federal Land Policy and Management Act, Migratory Bird Treaty Act, Fish and Wildlife Coordination Act, and National Environmental Policy Act, as well as state hunting regulations.

Wildlife resources are defined as all terrestrial life in and around the project area. Threatened and endangered (T&E) species such as the bald eagle (*Haliaeetus leucocephalus*) and Mexican spotted owl (*Strix occidentalis lucida*) and other species of special concern such as the North American lynx (*Felis lynx canadensis*), North American wolverine (*Gulo gulo luscus*), northern goshawk (*Accipter gentilis*), loggerhead shrike (*Lanius ludovicianus*), and boreal toad (*Bufo boreas boreas*) are discussed in **Section IV.C.9. Threatened and Endangered Species**. Aquatic resources are described in **Section IV.C.5. Fisheries**.

The diversity and abundance of wildlife within the project area is dependent, in part, on the quantity and quality of existing habitat. Wildlife habitat consists of all environmental attributes required by an animal species to survive and reproduce in the area. The three environmental attributes essential for wildlife habitat are food, water, and cover. Although each animal species has specific habitat requirements for these attributes, the geographical distribution and number of individuals for a given species are dependent on the quality, quantity, and distribution of available habitat. Impact assessment for wildlife populations is, therefore, often based on an assessment of habitat types and area impacted.

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Habitat for the project area is discussed as plant communities in **Section IV.C.3. Upland and Floodplain Vegetation**. In general, habitat types in the project area are classified as terrestrial and wetland. Terrestrial habitat consists of sagebrush shrublands, irrigated pastures, and managed landscapes. Wetland habitats include riparian and wetland plant communities identified in **Section IV.C.4. Wetlands**.

Wildlife groups identified for the current project area include mammals, birds, reptiles, and amphibians. Discussions of wildlife diversity, abundance, and distribution for the current project area are based on literature review, agency consultation, and field surveys.

Literature review for wildlife studies was designed to acquire baseline data and identify data gaps for wildlife species of concern in the project area. Literature review included examination of reports, Colorado Natural Heritage database, maps, and aerial photography. Resource agencies were consulted to identify species and issues of concerns and acquire baseline data. Field reconnaissance surveys for wildlife were conducted August 23rd to 25th, 1994. Field surveys consisted of habitat identification and verification, and incidental observations of wildlife.

The Colorado Wildlife Species database indicates that approximately 160 different species use the habitats found within the Roaring Fork Valley (USDOT 1993). Some of these species are not expected to occur in the project area because they tend to occur in more isolated areas, further from human activity.

6a. Mammals

Big game species such as mule deer (*Odocoileus hemionus*) and elk (*Cervus canadensis*) are known to occur in and near the project area. Mule deer scat was observed during the site visit. The Roaring Fork Valley and surrounding hillsides and drainages are important winter and summer habitat for resident populations of deer, elk, and other species. The project area is not located in an elk or mule deer migration corridor, winter concentration area, winter range, or critical habitat (Coté 1994). According to Wildlife Resource Information System mapping, a State Highway 82 elk crossing location occurs adjacent to the north end of the Sardy Field runway (USDOT 1989).

Several other mammalian game species occur in the area. Excellent black bear (*Ursus americanus*) habitat exists in the Aspen area with an abundant population of black bears present throughout the year (Byrne 1994). The red fox (*Vulpes vulpes*) population is on the increase, and this species is common in the project area. Other mammalian game species potentially occurring in the project area include the white-tailed jackrabbit (*Lepus townsendii*), mink (*Mustela vison*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), bobcat (*Felis rufus*), mountain cottontail (*Sylvilagus nuttalli*), beaver (*Castor canadensis*), and possibly a few mountain lions (*Felis concolor*) (Byrne 1994). Raccoon and beaver sign were observed during the site visit.

Small mammals likely to occur include rodents such as the Colorado chipmunk (*Eutamias quadrivittatus australis*), deer mouse (*Peromyscus maniculatus*), least chipmunk (*Eutamias minimus*), and meadow vole (*Microtus pennsylvanicus*) (USDOT 1993).

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6b. Birds

Eagles, hawks, falcons, vultures, and owls, known collectively as raptors, could occur in the project area as seasonal or year-round residents. Several year-round residents include the sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), prairie falcon (*Falco mexicanus*), great horned owl (*Bubo virginianus*), and turkey vulture (*Cathartes aura*). Ospreys (*Pandion haliaetus*) have been observed migrating through the Roaring Fork Valley (Campbell 1995). The rough-legged hawk (*Buteo lagopus*) is a winter resident (Andrews and Righter 1992), and the Swainson's hawk (*Buteo swainsoni*) may fly through the area during fall migration (Byrne 1994). The red-tailed hawk was the only raptor observed during the site visit.

Numerous waterfowl and upland gamebird species could occur in and near the project area. Waterfowl occurring primarily during the summer and migration (both spring and fall) include the Canada goose (*Branta canadensis*), common mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), northern shoveler (*Anas clypeata*), American wigeon (*Anas americana*), lesser scaup (*Aythya affinis*), and common merganser (*Mergus merganser*). According to CDOW (Byrne 1994), and fairly abundant numbers of blue grouse (*Dendragapus obscurus*) are in the area. Mourning doves (*Zenaida macroura*) also nest in the project area.

Many other bird species could occur around Aspen. Species observed during the site visit include the black-billed magpie (*Pica*), American robin (*Turdus migratorius*), Canada goose (*Branta canadensis*), mountain chickadee (*Parus gambeli*), common raven (*Corvus corax*), and northern flicker (*Colaptes auratus*). In addition to the waterfowl species already mentioned, species that potentially occur along the nearby Roaring Fork River include the belted kingfisher (*Ceryle alcyon*), great blue heron (*Ardea herodias*), spotted sandpiper (*Actitis macularia*), and American dipper (*Cinclus mexicanus*). In addition to the pine siskin (*Carduelis pinus*) and house finch (*Carpodacus mexicanus*), which are very abundant in the Aspen area, a variety of other non-game birds (e.g., swallows, warblers, woodpeckers) are expected to occur as well (Byrne 1994).

6c. Reptiles and Amphibians

Relatively few reptiles and amphibians occur in this mountainous region. Some of the species that may inhabit the project area include the tiger salamander (*Ambystoma tigrinum*), northern leopard frog (*Rana pipiens*), and western terrestrial garter snake (*Thamnophis elegans*) (Byrne 1994; Hammerson 1986). A shedded snakeskin (species unknown) was found during the site visit. The boreal toad is discussed in **Section IV.C.9. Threatened and Endangered Species.**

7. Wild and Scenic Rivers

Verbal communication with and a letter from the National Park Service dated October 17, 1994, established that there has been no effort to date to designate the Roaring Fork as a Wild and Scenic River and that no plans exist for such an effort in the future.

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8. Floodplains

Executive Order (EO) 11988, Floodplain Management, requires federal agencies to avoid direct or indirect support of floodplain development whenever a practicable alternative exists. All federal agencies must evaluate the potential effects of any actions on floodplains. As defined in EO 11988, floodplains in their natural or relatively undisturbed state provide values including:

- Water resources, including natural moderation of floods, water quality maintenance, and groundwater recharge.
- Living resources, including fish, wildlife, and plant resources.
- Cultural resources, including, open space, recreation, outdoor education, scientific study and aesthetic value.
- Cultivated resources, including agriculture, aquaculture, and forestry.

Floodplains within the project area are limited to those associated with the Roaring Fork River, Maroon Creek, and Castle Creek. The extent of the channels associated with the proposed bridge locations was assessed based on an examination of aerial photography, topographic maps, and a review of the Federal Emergency Management Agency (FEMA) Floodplain Insurance Study, Pitkin County and incorporated areas. These conditions were verified during a field visit conducted in August 1994.

The floodplain under the existing State Highway 82 bridge at Maroon Creek has a low erosion potential. The floodplain is not constricted in the vicinity of the bridge; the streambed consists of cobbles, and the banks are covered with well established herbaceous and woody vegetation.

The existing 135 meter (445.5 feet) State Highway 82 bridge over Castle Creek is located out of the designated floodplain. Castle Creek flows unconstricted within a valley through the project area. The creek's erosion potential is low because of the extensive vegetative cover within the floodplain and the vegetative cover revisions that form the stream bed.

9. Threatened and Endangered Species

To comply with Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884; Public Law 93-205), as amended, federal agencies must ensure that their actions are not likely to jeopardize the continued existence of listed species or modify their critical habitat. Section 7c of the ESA requires federal agencies to inquire of the USFWS whether any listed or proposed to be listed species occur in the area of the proposed action. Documentation of the species list request and response for the current project are provided in **Volume 2: Comments and Coordination** of the FEIS.

Three groups of species are considered in this section on Threatened and Endangered Species: 1) Federal and State Listed Threatened and Endangered Species, 2) Candidate Species, and 3) Special

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Concern Species. Due to changes in USFWS classification of candidate species and changes in the status of individual species since publication of the DSEIS and DEIS, a description of each category and individual species are discussed below.

Federal and State Listed Threatened and Endangered Species - The USFWS maintains a list of threatened and endangered species that are protected by the ESA. In addition to protecting individual plant and animal species, the ESA also protects any critical habitat designated by the USFWS. In this section, individual plant or animal species that are listed by the USFWS as threatened and endangered are referred to as federal-threatened or federal-endangered, respectively.

CDOW maintains a list of threatened and endangered species that are protected from harassment, taking, and possession (CDOW Regulations: Section on Protected Species in Article No. 1 of Chapter 10 - Nongame Wildlife). Individual plant or animal species designated by CDOW as threatened or endangered are referred to as state-threatened or state-endangered, respectively. Designation of threatened or endangered status by CDOW does not afford protection under the ESA.

Candidate Species - Candidate species are those plant and animal species for which the USFWS has not listed but has sufficient information to propose them as threatened and endangered in accordance with the ESA. While candidate species are not afforded statutory protection under the ESA, the USFWS encourages federal agencies to consider these species in their planning process since they may warrant future listing.

The USFWS issued a *Notice of Review* published in the February 28, 1996 ***Federal Register*** for plant and animal species that are candidates for listing as threatened and endangered in accordance with the ESA. This candidate list has been significantly revised since publication of the DEIS and DSEIS, and replaces the old system of Category 1 (C1), Category 2 (C2), and Category 3 (C3). Of the Category 2 species identified in the DEIS (e.g., North American lynx, North American wolverine, northern goshawk, loggerhead shrike, boreal toad, and Colorado cutthroat trout), only the boreal toad is currently listed as a candidate species. The remaining species are no longer considered candidate species.

Special Concern Species - Special concern species designation does not afford legal protection under the ESA; however, this group includes those individual plant and animal species that are identified for conservation by agencies and/or state Natural Heritage Programs. Although it is possible for special concern species to also be listed by the USFWS or CDOW as threatened or endangered, their status as special concern species generally reflects a more regional concern (e.g. state, agency, or regional boundaries). For the current project, special concern species include only the Colorado cutthroat trout.

The following agencies were contacted for information pertaining to threatened and endangered candidate and special concern species: USFWS - Grand Junction, Golden, and Salt Lake City; CDOW - Aspen, Glenwood Springs, and Grand Junction; and the Colorado Natural Heritage Program (CNHP). A list of threatened, endangered, candidate, or special concern species identified by these agencies as potentially occurring in the project area is provided in Table IV-26.

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Table IV-26
Threatened, Endangered, and Rare Species
Potentially Occurring in the Proposed Project Area

Common Name	*Scientific Name*	*Status*
Bald Eagle	Haliaeetus leucocephalus	FT/ST
Mexican Spotted Owl	Strix occidentalis lucida	FT/ST
North American Lynx	Felis lynx canadensis	None/SE
North American Wolverine	Gulo gulo luscus	None/SE
Northern Goshawk	Accipter gentilis	None/Nongame
Loggerhead Shrike	Lanius ludovicianus	None/Nongame
Boreal Toad	Bufo Boreas	C/SE
Colorado Cutthroat Trout	Salmo clarki pleuriticus	None/SSC

FT Federal-threatened (USFWS)
SE State-endangered (CDOW)
ST State-threatened (CDOW)
SSC State special concern (CDOW)
C Federal candidate species (USFS)

No federal listed endangered plants or animals were identified as occurring within the project area (USFWS 1994). Although the bald eagle was identified as potentially occurring in the project area and was identified in the DEIS as federal-endangered, it has recently been downgraded to federal-threatened. In addition, the federal-endangered black-footed ferret potentially occurs in Pitkin County; however, there are no prarie dog colonies (potential ferret habitat) in the project area and it was, therefore, not identified by agencies as a species to consider. None of the specieis identified in Table IV-26 were observed during numerous site visits and field surveys of the project area. Following is a description and known status of each species in Table IV-26.

Bald Eagle

The bald eagle has been protected in the United States since passage of the Bald Eagle Protection Act of 1940. The bald eagle is listed as a federally-threatened species in all 48 conterminous states and is listed as state-endangered in Colorado. This species has been downgraded from federal-endangered to federal-threatened since publication of the DEIS.

The bald eagle's range extends from Alaska and Canada to the southern United States (National Audobon Society 1983). Major threats to this species include habitat loss, disturbance by humans, biocide contamination, and illegal shooting. As of the early 1990s, populations in many areas had rebounded from the low levels that occurred before pesticide dichloro-diphenyl-trichloroethane (DDT) use was banned in the United States (Idaho Natural Heritage Program 1989). Bald eagles are active mostly during the daylight and twilight periods, often roosting communally at night in trees.

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The bald eagle is known to occur in the Roaring Fork Valley (Rose 1994). According to the CDOW, there is an active nesting pair of bald eagles between Glenwood Springs and Carbondale, more than 40 kilometers (25 miles) north of the project area. Bald eagles are known to winter in the Roaring Fork Valley. No bald eagles or nests were observed within the project area during site visits and surveys.

Mexican Spotted Owl

As identified in the DEIS, the Mexican spotted owl is still listed as federal-threatened and state-threatened. This species is found at scattered locations in canyons and mountains of Arizona, New Mexico, southern Colorado, and Utah. The Mexican spotted owl occupies two distinct habitats in Colorado: large, steep canyons with exposed cliffs and dense old-growth mixed forest of Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and ponderosa pine (*Pinus ponderosa*), and canyons in pinyon-juniper areas with small and widely scattered patches of old Douglas-firs. Threats to the Mexican spotted owl include small population size, apparently declining populations, competition with the newly sympatric barred owl (*Strix varia*), restricted range, and fragmentation of old-growth forests.

There are historical sightings (early 1900s) of the Mexican spotted owl in Pitkin County. The project area would be the northernmost edge of the range for this species. This species is not expected to exist within the corridor due to lack of appropriate habitat.

North American Lynx

The North American lynx formerly occurred throughout Alaska, Canada, and the northern half of the United States; however, its southern primordial range has been reduced because of hunting, predator control, and loss of wilderness. A few northern and Rocky Mountain states still have remnant lynx populations. The lynx exists in large, interior tracts of subalpine, coniferous forest. It prefers areas with dense trees, intermittent bogs, rocky outcrops, small clearings, brushy undergrowth, and deep snow. This species' abundance, reproduction, survival, and demography are highly dependent on the availability of its main prey, the snowshoe hare (*Lepus americanus*). This solitary animal has home ranges varying in size from 10 to 240 square kilometers (4 to 93 square miles), depending on prey availability. Lynx populations have declined due to a number of factors including overtrapping, habitat loss, and the lynx's dependence on a principal prey source.

Although the lynx has always been rare in Colorado, this species historically occurred in the Fryingpan River and Marble areas. A general record from 1969 indicates the presence of lynx in the vicinity of State Highway 82 and the Roaring Fork River. According to CDOW, the last lynx was collected in Colorado in 1974. Although there are periodically reports of lynx tracks in Colorado, the remaining lynx in the state most likely occur in rugged, remote country above 2,755 meters (9,040 feet).

North American Wolverine

The wolverine once occupied most of North America. Today, this species is no longer abundant in any portion of its range and is considered state-endangered by CDOW. Wolverines occur in a wide range of habitats including alpine, riparian, swamp, and tundra habitat. The primary requirement for wolverine habitat is isolation from people, making this a true wilderness species. Loss of such isolated habitat may be a primary reason this species

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had declined in numbers. A female wolverine maintains a territory of 50 to 350 square kilometers (20 to 135 square miles); male territories range from 600 to 1,000 square kilometers (230 to 390 square miles).

This species was never common in Colorado, and no scientific evidence documents a viable population of wolverines in the state. In 1979, two wolverines were released near the headwaters of Castle Creek (in the Montezuma Basin area), their fate is unknown. Due to the existing developed nature of the project area, wolverines are not expected to occur within the project area.

Northern Goshawk

Formerly a Category 2 species (see DEIS), the northern goshawk is no longer a candidate species, but is considered a nongame species by the CDOW. In western North America, the goshawk inhabits montane stands of coniferous, deciduous, and mixed trees, preferring tall, old-growth forests during the breeding season. This species prefers to nest within 400 meters (1,320 feet) of water in forest blocks greater than 80 hectares (200 acres) in size containing small openings. Nesting birds are intolerant of human disturbance and defend large areas around nest trees. During the 1960s, pesticide contamination was found to cause eggshell thinning in many raptors, including the goshawk. More recently, habitat loss is believed to be responsible for declining numbers in some states. Breeding bird surveys showed the goshawk population in the U.S. to have declined significantly between 1980 and 1989, but the western population appeared to be stable. The northern goshawk has a large home range, with nesting areas of 12 hectares (30 acres) and post-fledgling rearing habitat areas of nearly 170 hectares (420 acres) (USFS 1994).

The northern goshawk occurs in Colorado as a resident in the foothills and mountains and occasionally during migration and winter at lower elevations. At least three active goshawk nests were found during 1993 surveys of the Burnt Mountain Ski Area, several kilometers southwest of the project area. A nesting survey was conducted of the study area in May 1996. The nesting survey utilized a tape broadcast of goshawk alarm calls, as described by Kennedy and Stahlecker, at 26 stations in potential goshawk habitat within 0.8 km (0.5 miles) of State Highway 82. Although potential habitat does exist in the study area, no goshawks were observed or heard during the 3-day survey. Potential goshawk habitat in the study area is small in size, isolated from larger habitat tracts, and subject to noise and other disturbance from local construction and other human activities.

Loggerhead Shrike

Identified as a Category 2 species in the DEIS, this species is no longer considered a candidate species. The loggerhead shrike is considered a nongame species by CDOW and is an uncommon summer resident of the western, central, and southeastern U.S. Primary habitat throughout its range consists of open country interspersed with improved pastures, grasslands, and hayfields. Breeding bird surveys from 1966 to 1987 indicate sharp population declines in loggerhead shrikes throughout much of North America. These declines are attributed to contamination in the prey base (large insects and small mammals), the loss of nesting sites, and the loss of feeding habitat.

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In Colorado, the loggerhead shrike occupies open riparian areas, agricultural areas, grasslands, and shrublands (especially semidesert shrublands). This species is an uncommon migrant through the project area. No loggerhead shrikes were observed within the study area during site visits.

Colorado Cutthroat Trout

Identified as a Category 2 species in the DEIS, the Colorado cutthroat trout is no longer considered a candidate species. The Colorado cutthroat trout once occurred in portions of Colorado, Utah, New Mexico, and Arizona and the CDOW recognizes this species as special concern. Although historically occurring in a wide range of habitats, this trout is better suited to small streams, beaver ponds, and lakes, than to large rivers. Most remaining populations occur in small headwater streams. Declines of native Colorado cutthroat trout populations are primarily attributed to introduction of non-native trout species, stocked since the 1800s, and habitat alteration. Habitat alterations include impacts to riparian vegetation and stream channel stability, water development with flow depletions during critical time periods, and water quality degradation caused by extensive watershed damage. An increase in the angling pressure on this highly susceptible trout also resulted in decreased populations.

Most remaining populations of Colorado cutthroat trout occur in small headwater streams. The limiting factor in many suitable habitats is lack of overwintering habitat. No populations of the Colorado cutthroat trout are in or near the project area. The closest population is on Express Creek, more than 3 kilometers (1.9 miles) upstream from the project area. No populations are in Castle Creek, Maroon Creek, or this part of the Roaring Fork River.

Boreal Toad

Identified as a Category 2 in the DEIS, this species has been retained as a candidate species and is considered state-endangered by the CDOW. The boreal toad occurs throughout much of western North America, except in the arid southwest. West of the Rocky Mountains, this species occurs in grasslands and dry habitats to sea level. Population declines may be attributed to disturbance or loss of wetland habitats, conversion of small ponds into larger reservoirs by damming, and introduction of trout that prey on toad larvae.

In Colorado, the boreal toad inhabits marshes, wet meadows, and the margins of streams, beaver ponds, springs, lakes, and ponds in foothill woodlands, mountain meadows, and moist subalpine forest. This species is most common at elevations from 2,600 to 3,200 meters (8,580 to 10,560 feet), rarely occurring as low as 2,130 meters (7,030 feet). Although records from 1952 indicate the presence of this species in the Aspen area, this species is not expected to occur in the project area because of lack of suitable habitat. The historical record for 1952 was not within the current project area and habitat throughout this area has changed significantly since this record.

The CDOW will be conducting surveys for the boreal toad in Pitkin County during the summer of 1997 [4]. Although no suitable boreal toad habitat or known individuals have

[4] Horstman, G. 1997. Personal communication on April 25, 1997 between Greg Horstman, Biologist - Boreal Toad Survey for CDOW, and Robert J. Henke, Biologist - SAIC.

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recently been documented in the project area, as an extra precaution, a representative from the CDOW survey team will visit the project area during summer 1997 surveys.

10. Historic Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, applies to the historic properties listed on or eligible for listing on the National Register of Historic Places that may be impacted by this project. Additionally, locally designated historic properties located within the project area are also considered in the EIS (see Figure IV-11). Historic preservation analysis for this project consisted of a records search at the Colorado Historical Society/Office of Archaeology and Historic Preservation, and the Aspen Planning Department. The original field survey for this project was conducted in July, 1988. The survey was updated in September, 1988, October, 1991, May, 1992, and June, 1995. The following historic resources are located within the project area:

Maroon Creek Bridge

The historic Maroon Creek Bridge is located on State Highway 82, approximately 1.6 kilometers (1 mile) northwest of the center of Aspen. The bridge, built in 1888 by the Colorado Midland Railroad, was converted to automobile use in 1929. It is listed on the National Register of Historic Places as one of the last remaining metal multiple-span high railroad trestles in Colorado.

Holden Smelting and Milling Complex

The historic Holden Smelting and Milling Complex is located on approximately 3.2 hectares (8 acres) on what is now called the Marolt-Thomas property, open space owned by the City of Aspen. Although most of the buildings have been torn down, there are significant remains of the mill structure on the east end of the site: the salt warehouse has been cut in half, but is still in its original location; the sampling works building (barn) has been altered in the interior, but still retains most of its original appearance; and the office building, now known as the Marolt House, was significantly remodeled by the Marolts but is still in its original location. This complex was constructed in 1891 and purchased by the Marolts in the 1930's. The site is listed on the National Register for its association with the mining history in Aspen, as one of the few remaining structures from the industrial aspects of Aspen's mining history, and because the site is likely to yield archaeological information about the smelting and mining industry in Aspen.

Colorado Midland Railroad

The Colorado Midland Railroad arrived in Aspen in 1887, a month after the Denver and Rio Grande. Very little of the railroad grade remains in Pitkin County, as the majority was obliterated by the construction of State Highway 82. One short segment remains intact from the junction of Maroon Creek Road and State Highway 82 to the Aspen city limits, crossing through approximately 1.6 hectares (4 acres) of the Marolt-Thomas property. The line is eligible for the National Register as the first standard gauge railroad to penetrate the Rockies, and for its association with Jerome Wheeler and the early railroad history in Colorado.

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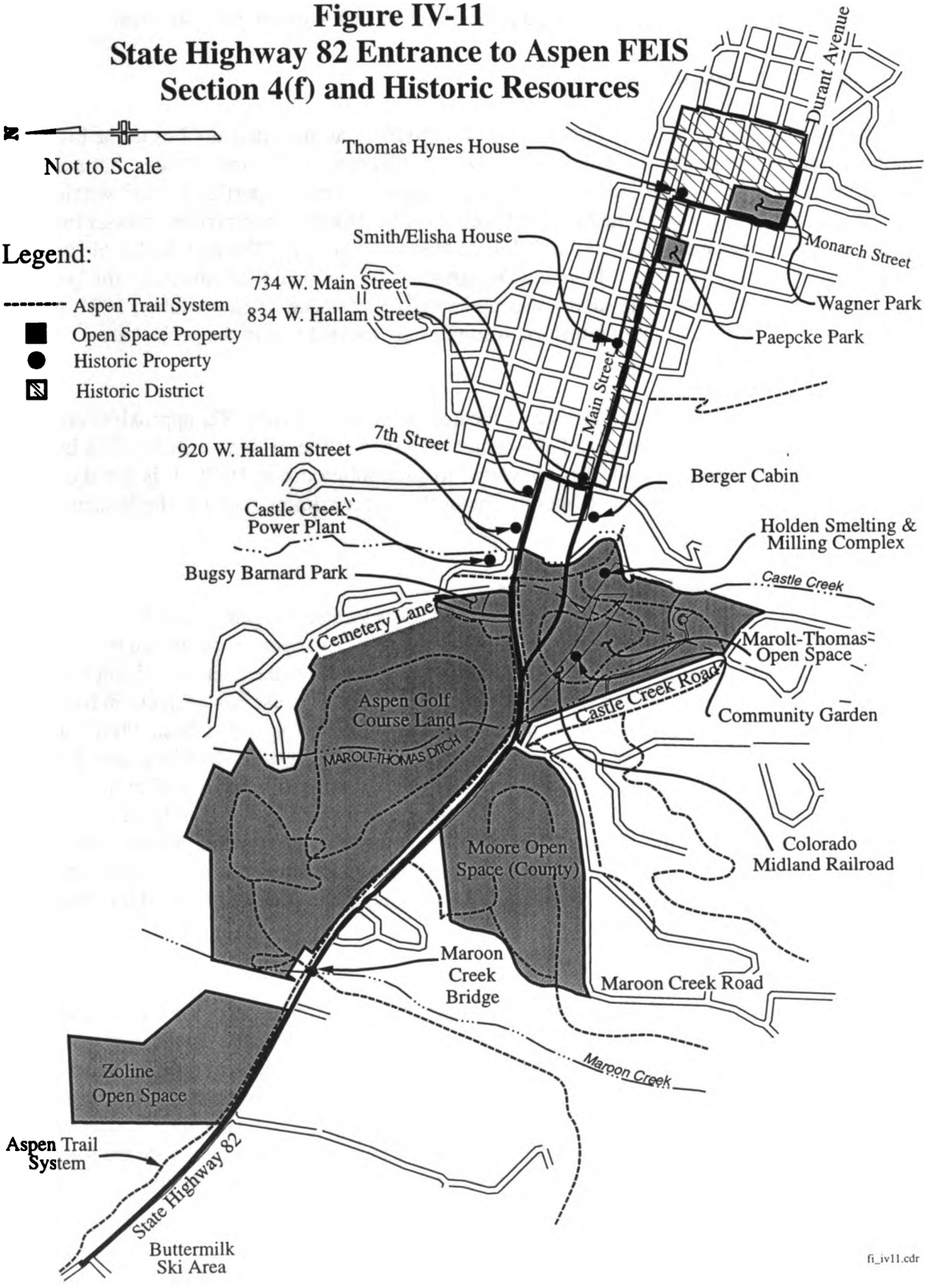
Figure IV-11
State Highway 82 Entrance to Aspen FEIS
Section 4(f) and Historic Resources



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Castle Creek Power Plant

The Castle Creek Power Plant is located in Castle Creek Canyon on approximately 0.6 hectares (1.5 acres) of land, just below the existing State Highway 82 Castle Creek Bridge. Known originally as the Roaring Fork Electric Light and Power Plant Number 2, the building is a two story, brick warehouse type building with a gabled roof and is now publicly owned. It is eligible to the National Register for its association with three of Aspen's most significant individuals (H.P. Cowenhoven, D.R.C. Brown, and James H. Deveraux) and as only the second commercially run hydroelectric plant in the country. It was constructed in 1893.

920 West Hallam

This historic privately owned house is located on the north side of existing State Highway 82 on approximately 0.1 hectares (0.2 acres) of land just east of the Castle Creek Bridge within the Aspen city limits. The small, one story, wood house, built about 1888, is eligible for the National Register as an unaltered example of the typical late 19th century miner's cottage.

834 West Hallam

This 1889 Victorian residence is located on the north side of existing State Highway 82 on approximately 0.08 hectares (0.2 acres) of land just east of the Castle Creek Bridge within the Aspen city limits. It is currently used as a restaurant. The one and a half story frame house is not eligible for the National or State Registers of Historic Places due to significant alterations and lack of significant associations, but has been designated as a local landmark.

734 West Main Street

This two story Victorian residence is located on the north side of existing State Highway 82 at the intersection of 7th Street and West Main Street. Sitting on approximately 0.06 hectares (0.14 acres) of land, it is currently used as a Christian Science Center. It is not eligible for the National or State Registers of Historic Places due to a lack of significant architectural or historical associations, but has been designated as a local landmark.

Smith/Elisha House

The Smith/Elisha House, built around 1890, is significant as one of Aspen's best Queen Anne Style residences built during the height of Aspen's silver mining period. Original owner Eben Smith was one of the most prominent mining men in Colorado. Second owner, Laurence Mansor Elisha, assumed management of the Jerome Hotel in 1935 after the death of his father Mansor Elisha. This structure is listed on the National Register of Historic Places.

Thomas Hynes House

Built in 1885, this structure is one of the few remaining single-family residences still used as a single family residence currently and during the mining days within the commercial core area of Aspen. It is an excellent example of a typical Aspen Victorian Miner's Cottage. Little is known about the original owner miner Thomas Hynes. This structure is listed on the National Register of Historic Places.

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Berger Cabin

Built in 1947, the Berger Cabin is one of the first buildings built in Aspen by longtime resident and architect Fritz Benedict. The building is Wrightian Style which represents a style of Aspen architecture that is largely unrecognized. Although there are other Benedict buildings in Aspen, this is one of the first buildings he built in the town and represents the beginnings of the new Aspen that came into being after World War II. The Berger Cabin has been determined to be eligible for the National Register.

Historic Districts

The City of Aspen has two local historic districts located within the project corridor. The Main Street Historic District follows Main Street from 7th Street to Monarch Street, extending one-half block north and south. Paepcke Park is not included in this overlay. The Main Street Historic District was created in 1974 (Ordinance #60). The Commercial Core Historic District extends from one-half block north of Main Street to Durant Avenue; between Monarch Street and Hunter Street. It was created in 1974 (Ordinance #49). Both of these districts are local historic districts which have been determined by FHWA not to be covered by Section 4(f).

11. Archaeological Resources

Archaeological analysis for this project consisted of a review of the archaeological report (Martin 1975) for the 1981 Carbondale-East EIS, a records search at the Colorado Office of Archaeology and Historic Preservation, and on-the-ground reconnaissance in 1988 and 1996. It was determined that the areas evaluated during this study effort are the same as those discussed in the 1981 EIS, with the addition of the area affected by the proposed realignment of Owl Creek Road. From west of the Buttermilk Ski Area to the Aspen study area, a 14.8 hectare (35.8 acre) portion of the 1987 DEIS railroad alignment was inventoried by CDOT staff archaeologists in June 1988. No cultural materials were located from the Buttermilk Ski Area to Aspen during the field inventories.

A review of the files at the Office of Archaeology and Historic Preservation indicated that no archaeological sites have been recorded in the project corridor since the Carbondale-East 1981 survey.

12. Paleontological Resources

On-the-ground reconnaissance for paleontological resources within the study corridor was conducted by CDOT paleontologists in June and August 1988 and May 1990.

According to the best available published geologic maps of the area, deposits within the study corridor are the Paleozoic and Mesozoic rocks of the Maroon, State Bridge and Chinle formations, and the upper shale member of the Mancos Shale. Quaternary alluvial (stream), colluvial (slopewash), and glacial outwash deposits are recorded. All of these deposits have the potential to yield fossils and have produced fossil remains elsewhere in central and southwest Colorado.

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The Mancos Shale, which crops out immediately east of Brush Creek Road, has produced many fossils in western Colorado, including numerous invertebrate fossil localities west of State Highway 82 in the Shale Bluffs area. This area is west of the Entrance to Aspen study corridor.

No exposures meriting on-the-ground reconnaissance were seen along State Highway 82 from Pitkin County Airport to Aspen. The detailed paleontological survey report for the study corridor from Basalt to Aspen, including lists of Mancos Shale vertebrate fauna and invertebrate fossils, is available for review. See **Chapter VIII. Availability of Technical Reports** for report locations.

13. Section 4(f) Resources

Section 4(f) resources are lands from publicly owned parks or recreation areas, wildlife or waterfowl refuges, or historic sites listed on or eligible for the National Register of Historic Places. Impacts to these resources are covered by Section 4(f) of the Department of Transportation Act of 1966, Public Law 89-670, 80 Stat. 934, which was amended in 1983 and 1987, and is now codified at 49 U.S.C. 303. In the Entrance to Aspen corridor, seventeen section 4(f) resources may be impacted by the alternatives under consideration. These resources include one golf course, one trail system, three open space/park land (greenbelt) areas, three publicly owned parks, and nine National Register listed or eligible historic sites. These lands are fully described in **Appendix A. Section 4(f) Resources Evaluation.**

14. Farmlands

The Farmland Protection Policy Act of 1981 (7 U.S.C. 4201 et. seq.) was enacted to ensure that federal programs minimize irreversible conversion of farmland to nonagricultural uses and to ensure that federal programs are compatible, to the extent practicable, with state and local policies to protect farmlands.

The act refers to farmland in the following four categories:

- Prime farmland.
- Unique farmland.
- Farmland other than prime or unique that is of statewide importance.
- Farmland other than prime or unique that is of local importance.

The Important Farmland Inventory, Colorado, prepared by the Soil Conservation Service (SCS) (now the National Resources Conservation Service [NRCS]), U.S. Department of Agriculture, October 1982, identifies the various farmland types within the state. According to the SCS Inventory, no soils in Pitkin County are identified as Prime Farmland because of cold temperatures and the short growing season. Irrigated hay meadows within these counties are in the category "Irrigated Lands Not Prime" and have been identified as being Farmlands of Statewide Importance.

When farmland is included in right-of-way acquisition, a Farmland Conversion Impact Rating (Form AD 1006) must be submitted to the NRCS. This form provides a determination whether the project contains prime, unique, statewide, or locally important farmland.

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In an effort to protect the State Highway 82 corridor from extensive development, to enhance the open appearance of this gateway to Aspen, and to protect a scenic corridor, Pitkin County has designated historically irrigated land as "Valued Agricultural Land." These lands, as described and identified by the Property Management office staff of Pitkin County, fit into the Farmland Protection Policy Act category of "farmland other than prime or unique that is of local importance." Because soil types in Pitkin County generally are not productive enough to merit prime farmland classification, the irrigation criterion was used.

None of the agricultural lands between the Pitkin County Airport and Aspen have been classified by Pitkin County as valued agricultural land nor do they meet the criteria of the Farmland Protection Policy Act.

15. Noise and Vibration

Noise

Based on land use, the FHWA and CDOT have established guidelines defining Noise Abatement Criteria (NAC) for maximum acceptable traffic noise levels (Table IV-27). These levels represent a balance between a desirable noise level and an achievable noise level. Noise levels are measured in dBA, which represents the average noise energy level of noise level fluctuation over an hour. An impact is noted when the predicted noise level exceeds the acceptable NAC for that land use--67 dBA for residences and 72 dBA for businesses--or when there is an increase of 10 or more dBA from roadway improvements. Colorado regulations further define an impact at an "Approaching" level of 1.0 dBA below the NAC. An increase of 10 dBA is perceived as a doubling of the noise level, whereas a doubling of traffic will generally cause a 3.0 dBA increase in noise. **Section V.B.4o. Noise and Vibration** describes existing and year 2015 noise levels within the study corridor.

Vibration

Based on land use, the Federal Transit Administration (FTA) has established guidelines defining vibration abatement criteria for maximum vibration level (Table IV-28). Vibration levels are measured as average vibration level of vibration level fluctuation over an hour. An impact is noted when the predicted vibration level exceeds the acceptable criteria of 72 VdB for residences and 75 VdB for businesses.

16. Visual Character

The State Highway 82 Entrance to Aspen corridor lies within the Roaring Fork River Valley. The existing highway in the project corridor passes through areas dominated by cultivated pasture land and open space, golf course land, and moderate rural residential development. The highway also passes over two riparian creek valleys. Figure IV-12 shows the visual landscape units surrounding the project corridor.

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Table IV-27
Noise Abatement Criteria

Activity Category	*Acceptable Levels (dBA)*	*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	N/A	Undeveloped lands
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Federal Register, Volume 47, No. 131, July 8,1982, Rules and Regulations

Table IV-28
Vibration Abatement Criteria

Land Use Category		*Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec)*
Category 1:	Buildings where low ambient vibration is essential for interior operations.	65 VdB
Category 2:	Residences and buildings where people normally sleep.	72 VdB
Category 3:	Institutional land uses with primarily daytime use.	75 VdB

Source: Transit Noise and Vibration Impact Assessment, April 1995

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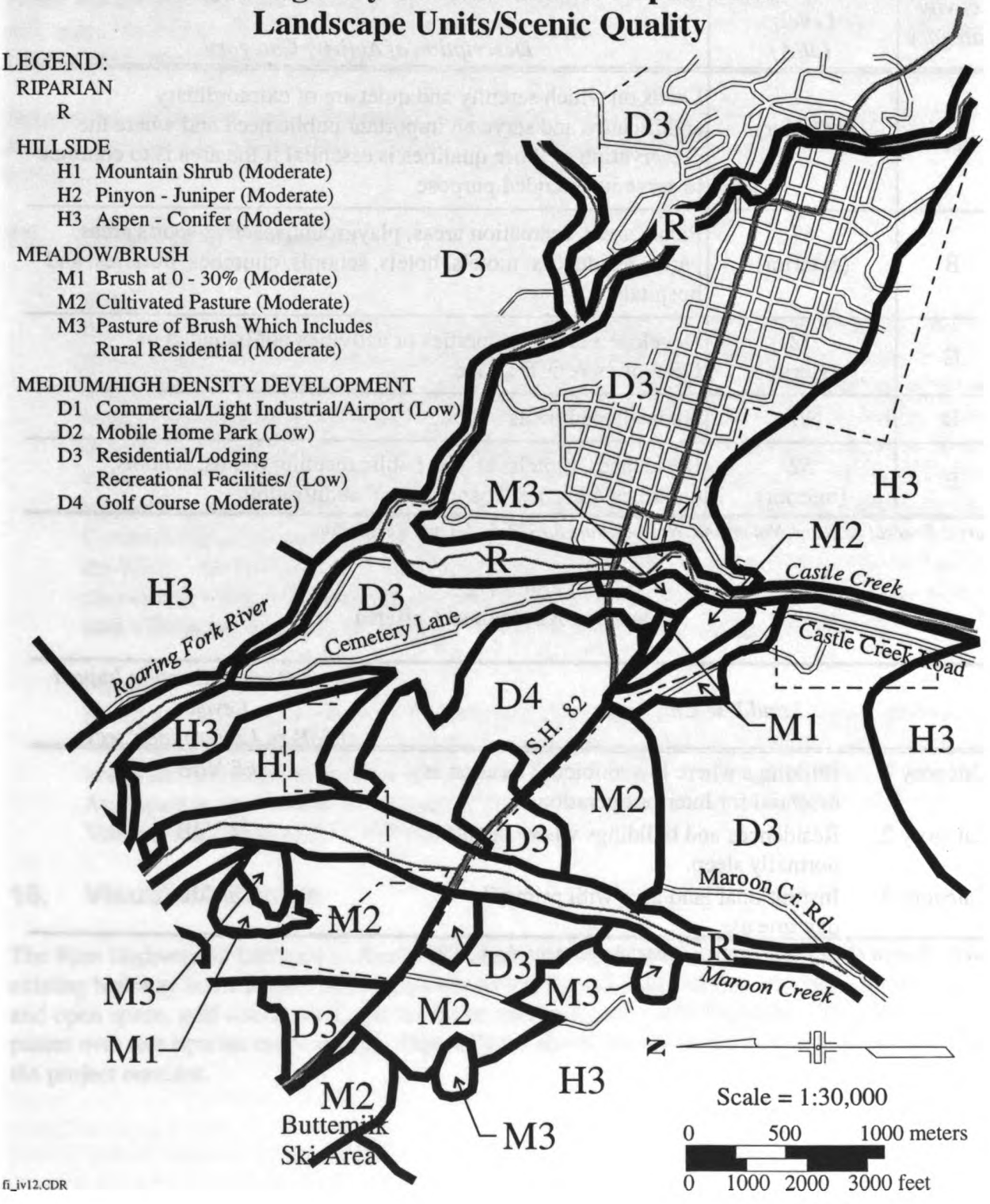
Figure IV-12
State Highway 82 Entrance to Aspen FEIS
Landscape Units/Scenic Quality



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The viewshed for the existing highway extends beyond the limit of the project corridor to distant hillsides, mountain peaks, and creek valleys. These views enhance the visual character of the valley by providing a scenic contrast to the short-grass pastureland and open space adjacent to the highway. In general, the valley possesses many of the qualities inherent in landscapes considered to be high in scenic quality. Although the residents of the City maintain that visual quality is important to their community, there is no clear consensus on what constitutes good visual quality.

The scenic views within the project corridor are readily visible from the existing roadway and are enjoyed by travelers to and from Aspen. Some travelers come to the valley just to drive the highway and experience the views. The residents of the Aspen area also enjoy the high quality of views of the valley as they contribute to the unique character of the area. The visual character of Main Street in Aspen is defined by the Victorian style mountain cottages and other historic structures adjacent to the roadway. The western-most portion of Main Street consists of a viewshed defined by a tree canopy at the entrance to the city. These scenic views within the city are limited by buildings and vegetation on either side of Main Street, however, the scene is not restricted when viewed along the length of Main Street.

17. Potential Hazardous Waste Sites

The methods used to identify potential hazardous waste sites along State Highway 82 - Entrance to Aspen corridor include:

- Communication with representatives of Pitkin County Department of Environmental Health and the city of Aspen.
- Consultation with EPA regional staff and review of the EPA's Superfund National Priorities List and Comprehensive Environmental Response, Compensation, and Liability Information System List (CERCLIS).
- Review of the Resource Conservation and Recovery Act (RCRA) list for Colorado.
- Consultation with the Colorado Department of Public Health and Environment landfill specialist and review of the Department's list of underground storage tanks.
- Review of aerial photographs of the study corridor.
- Conducted an Initial Site Assessment (ISA).
- Conducted a Preliminary Site Investigation (PSI).

Seven potential hazardous waste sites have been identified along the State Highway 82 Entrance to Aspen corridor during an ISA conducted in 1989 (Table IV-29). Their locations are shown in Figure IV-13.

The Aspen City Shop is located on the old Castle Creek Power Plant near milepoint 40.4. Dooger Diggings is located on Power Plant Road. The U.S. Forest Service Ranger Station is located at 806 West Hallam Street (MP 40.6). All three of these sites contain underground storage tanks (UST). The Preferred Alternative is not within the vicinity of these potential hazardous waste sites, therefore, further investigation was not conducted.

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Figure IV-13a
Potential Hazardous Waste Sites
State Highway 82 Entrance to Aspen FEIS

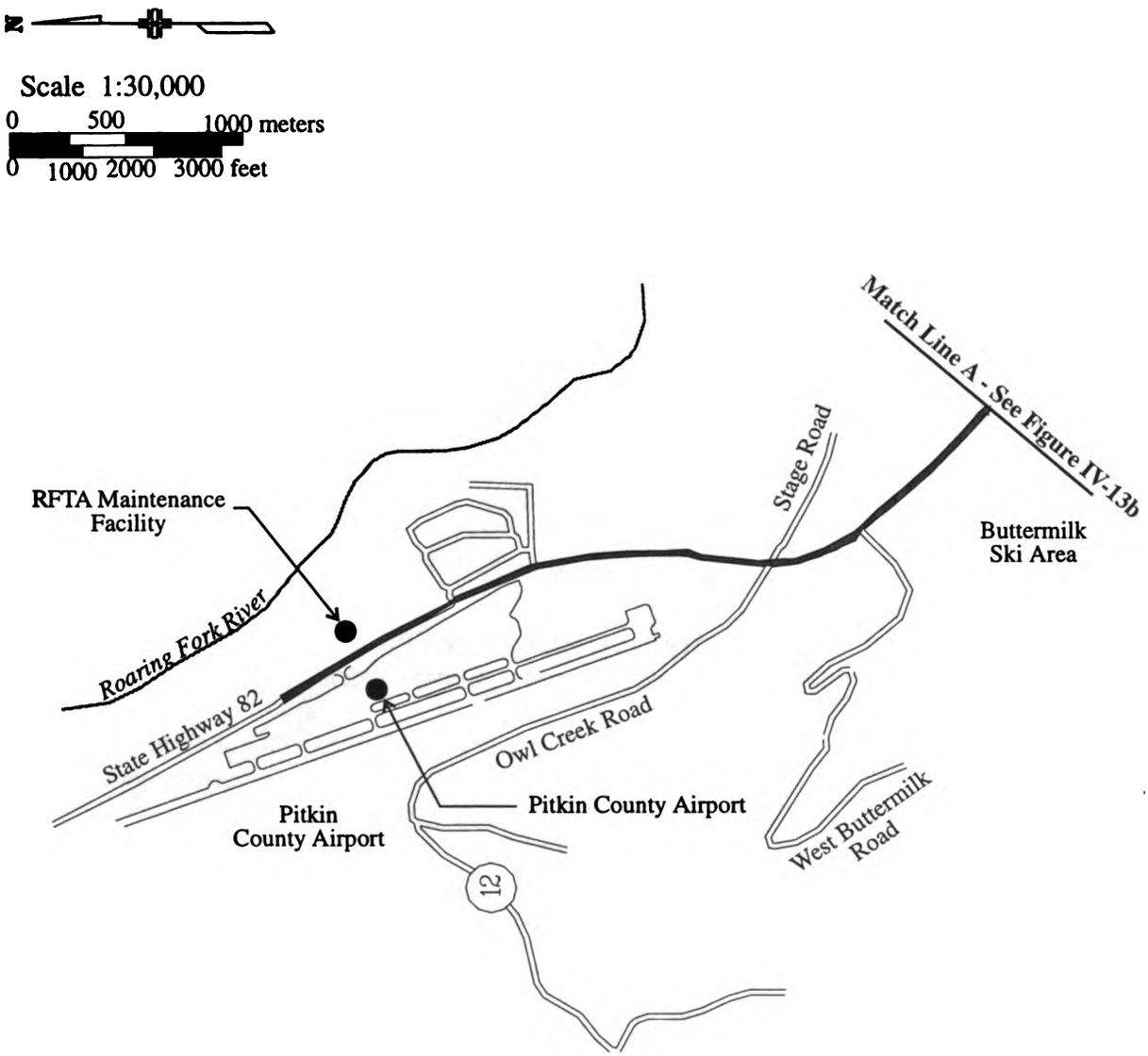

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Figure IV-13b
Potential Hazardous Waste Sites
State Highway 82 Entrance to Aspen FEIS

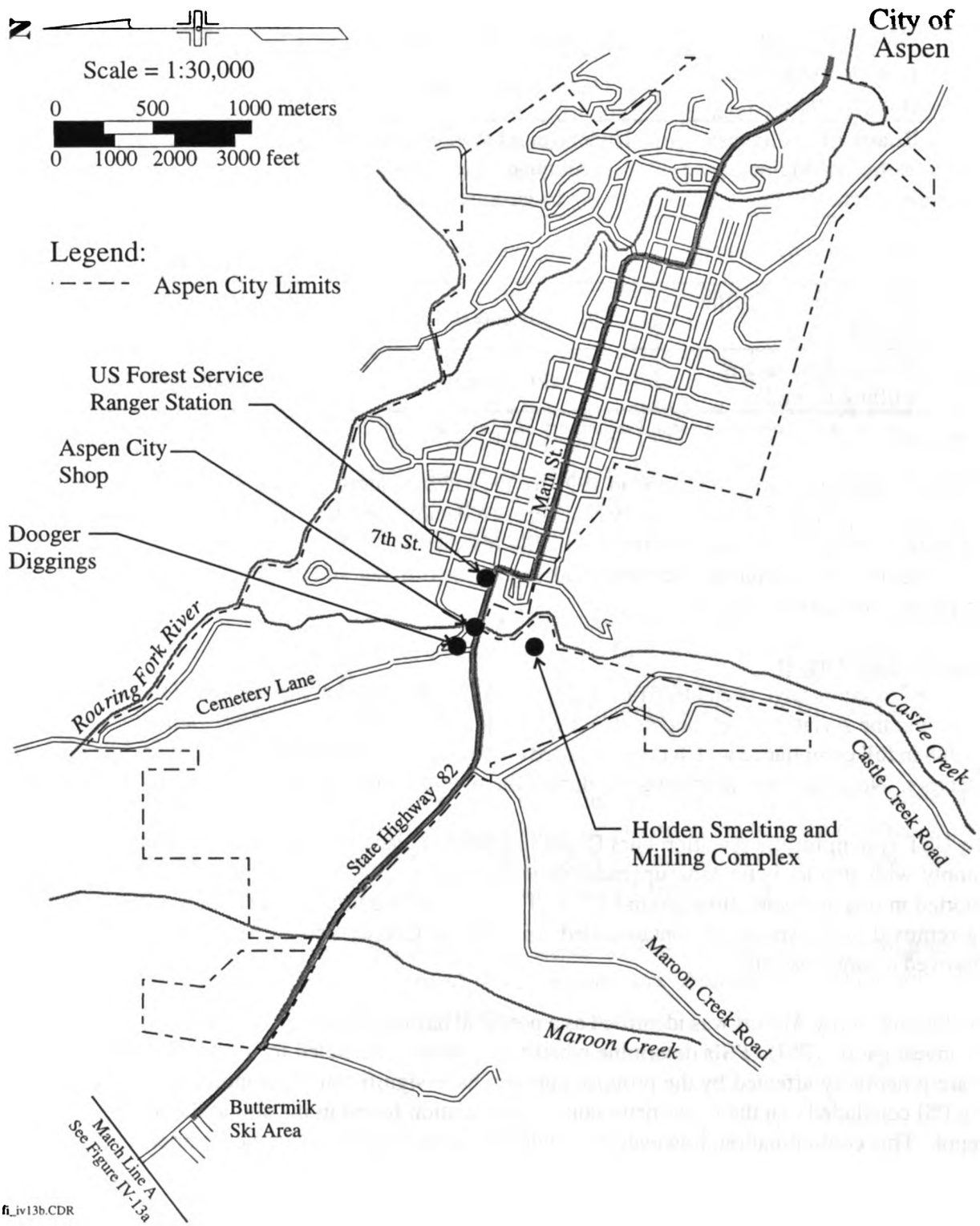

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Table IV-29
Potential Hazardous Waste Sites

Site Identification	*Reason for Listing*	*Milepost (Approx.)*
Aspen City Shop	Underground storage tank	North of 40.4
Dooger Diggings	Underground storage tank	40.4
U.S. Forest Service Ranger Station	Underground storage tank	40.6
Roaring Fork Transit Authority Maintenance Facility	Underground storage tank and small quantity generator of hazardous waste	37.5
Pitkin County Airport	Underground storage tank	between 36.5 and 38.0
Aspen Airport Business Center	Underground storage tank	38
Holden Smelting & Milling Complex	Industrial Site	South of 40.4

*Source: Walsh and Associates, **Preliminary Site Investigation Highway 82: Basalt to Aspen.***

A site reconnaissance was conducted in 1991 for the Pitkin County Airport, Aspen Airport Business Center, Roaring Fork Transit Authority Maintenance Facility, and the Holden Smelting and Milling Complex. The reconnaissance consisted of file reviews at the EPA and state, county, and local health departments; telephone interviews with regulatory officials and property owners; and previous site reports and history reviews.

Pitkin County Airport

Two UST systems have been identified at the Pitkin County Airport, including the Rental Car Fuel Depot and the Aviation Fuel Depot. The UST system for the Rental Car Fuel Depot was installed in 1988 in full compliance with federal standards for upgraded UST system, including automatic leak detectors. No leaks have been reported during the operating history of this facility.

The UST system for the Aviation Fuel Depot has been in place for a number of years and may not comply with standards for tank upgrades or leak detection. A surface spill of aviation fuel was reported in this area sometime around 1984. The accident required a remediation effort involving the removal and disposal of contaminated soil. Pitkin County and EPA officials reviewed and approved cleanup efforts.

The Pitkin County Airport was identified as a potential hazardous waste site, requiring a preliminary site investigation (PSI). PSIs determine whether properties scheduled for right-of-way acquisition or are potentially affected by the proposed project have significant environmental contamination. The PSI concluded that there was petroleum contamination found in the soil at the Rental Car Fuel Depot. This contamination, however, was detected at an insignificant concentration.

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Aspen Airport Business Center

Two UST systems have been identified at the Aspen Airport Business Center, including the Boise Cascade and former CDOT Maintenance Facilities. Site observations indicate that USTs are still in place from the former CDOT facility now occupied by Grizzly Landscaping at the south end of the business center. A potential for soil or ground-water contamination exists. The Preferred Alternative does not include acquisition of these properties, however, if revisions to alignment result in future plans to acquire this property, additional investigation will be necessary.

Roaring Fork Transit Authority Maintenance Facility

The maintenance facility located at this property is a small quantity generator (SQG) of hazardous waste and a UST site with a reported petroleum release and an identified ground-water contaminated plume. The Preferred Alternative does not include acquisition of this property, however, if revisions to alignment result in future plans to acquire this property, additional investigation will be necessary.

Holden Smelting and Milling Complex

The Holden Smelting and Milling Complex, also known as the Holden/Marolt Property, was a silver processing plant located on the west bank of Castle Creek (south of MP 40.4). The plant was constructed in 1891 and reduced silver ore using the lixiviation (leaching) process. The ores were roasted with salt, producing silver chloride, which was then dissolved with sodium or calcium hyposulfate. An alkaline sulfide was added to precipitate silver (National Park Service 1988). The plant operated for only three years before the silver crash of 1893 forced it to close. Scattered remains of the plant foundation are visible above the banks of the creek. The property was owned by the Marolt family and operated as a ranch before conversion to its present use as a museum. A barn on the property has been restored for use as a mining and ranching museum, now operated at the site by the Aspen Historical Society.

Activities associated with the lixiviation leaching plant may have resulted in soil or groundwater contamination. A previous investigation conducted for the City of Aspen at the site investigated heavy metals concentrations in the soils below and surrounding the lixiviation works. This investigation detected elevated concentrations of metals including cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), and selenium (Se).

The Holden Smelting and Milling Complex was identified as a potential hazardous waste site, requiring a PSI. The PSI concluded that there was elevated concentrations of arsenic (AS), Pb, and Cd at the site. These concentrations found in soil samples did not fail the toxicity characteristic leaching procedure (TCLP) and therefore are not classified as hazardous waste.

All information concerning potential hazardous waste in this section and in **Chapter V: Environmental Consequences**, is derived from Walsh and Associates, ***Preliminary Site Investigation State Highway 82: Basalt to Aspen.***

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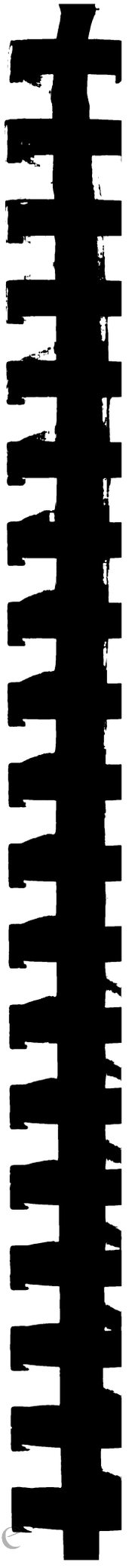

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V. Environmental Consequences

The evaluation of the impacts for the various alternatives to the State Highway 82 Entrance to Aspen was based on guidelines issued by the Federal Highway Administration (FHWA) (Technical Advisory T6640.8A, 1987). The following impact categories were considered during the preparation of this Final Environmental Impact Statement (FEIS):

- Permits and Approvals
- Neighborhoods
- Relocation and Right-of-Way
- Recreational Resources
- Travel Patterns and Accessibility
- Public Safety
- Land Use
- Local Economy
- Air Quality
- Water Quality
- Upland and Floodplain Vegetation
- Wetlands
- Fisheries
- Wildlife
- Wild and Scenic Rivers
- Floodplains
- Threatened or Endangered Species
- Historic Resources
- Archaeological Resources
- Paleontological Resources
- Section 4(f) Resources
- Farmland
- Noise and Vibration
- Visual Resources
- Hazardous Waste Sites
- Energy
- Construction
- The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity
- Any Irreversible and Irretrievable Commitments of Resources Which Would Be Involved in the Proposed Action
- Additional permits and approvals may be required from the Colorado Public Utilities Commission.

In this chapter, the No-Action (No-Build or Do-Nothing) Alternative is evaluated first, followed by an analysis of the build alternatives.

If a particular impact category is not described for a given alternative, it means that no impact was identified.

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V. Environmental Consequences

A tabular summary of quantifiable impacts identified in Table V-11 follows the impacts analyses at the end of this chapter.

A. NO-ACTION ALTERNATIVE IMPACTS

Adoption of a policy of No-Action for the Entrance to Aspen State Highway 82 corridor would have no impacts on many of the environmental issues discussed in this chapter. No direct land use impacts would occur and no open space would be taken for right-of-way. No relocations would be required. No sedimentation or potential spills related to construction would affect the Roaring Fork River. No wetlands or fisheries would be disturbed, and no additional impacts on wildlife would result. Floodplain hydraulics would not be altered, and no historic resources would be affected.

The No-Action Alternative would, however, result in several other impacts. Without additional corridor and transit improvements, further deterioration of existing levels of service (LOS) on State Highway 82 would occur with the increase in traffic volumes. The congestion and delays currently experienced during peak traffic periods would become much worse and extend through more hours of the day. An increase in the number of minor traffic accidents (fender bender) would be expected with the projected increased traffic volumes. The local economy would also experience impacts and the consumption of energy would increase.

The No-Action Alternative would not alleviate existing traffic conflicts between bicyclists/pedestrians and motorists, as currently, the travel lanes are narrow with no paved shoulders. Increase in traffic volumes with no additional improvements to the roadway would create additional conflicts.

Without additional improvements for efficient operation of traffic, it would be impossible to promote increased ridership on Roaring Fork Transit Agency buses by commuters because the buses would be stopped in State Highway 82 traffic congestion with the other highway traffic. Buses, along with all other vehicles on an increasingly congested two-lane highway, would experience longer delays as the peak period congestion extends over more hours during the day. Air quality would also deteriorate due to lack of incentives for getting commuters to convert to transit.

The No-Action Alternative would not be responsive to planning efforts of the community. The No-Action Alternative would not address the local need for a second access across Castle Creek for emergency response.

All highway users would experience delays; however, the local Aspen Community would incur the greatest loss of personal time by further deterioration of traffic operations since they make up 3 of 4 trips entering Aspen.

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B. BUILD ALTERNATIVE IMPACTS

1. Permits and Approvals Required

Construction of transportation improvements on State Highway 82 will require the following actions:

- Issuance of a Clean Water Act Section 404 dredge and fill permit by the Army Corps of Engineers (ACOE). (The 404 permit application for the entire 6.9 kilometer (4.3 mile) corridor will be prepared after the FEIS, when an alternative has been recommended for construction and sufficient design detail is available. This information will be required for construction).

- The Colorado Department of Health 402 Permit (point source discharge). It will be used as necessary according to the requirements of the permit.

- Review of impacts to fisheries by the Colorado Division of Wildlife (CDOW) as regulated by Senate Bill 40 (S.B. 40).

- National Pollutant Discharge Elimination System (NPDES) Stormwater Permit from the Colorado Department of Public Health and Environment.

- Concurrence with the air quality conformity finding for the Preferred Alternative by the Colorado Department of Public Health and Environment.

- Contact and project coordination with the ACOE, including identification and description of wetland areas.

- Colorado Public Utilities Commission may need to issue additional permits and approvals.

- Construction of bridges over Maroon Creek and Castle Creek for all build alternatives will be included in the Section 404 permit for State Highway 82 improvements.

- Potential impacts to park/recreational lands - Section 4(f) Resources are included in **Appendix A. Section 4(f) Resources Evaluation.**

- Impacts to the Historic - Section 4(f) Resources are included in **Appendix A. Section 4(f) Resources Evaluation.**

- The need for an antidegredation review for addition of significant new pollutant sources will be determined by the Water Quality Control Division of the Colorado Department of Health 401 certification should be required for construction of highway improvements.

- Any type of work within a state right-of-way may require additional permits such as access, landscape, survey, etc. depending on the various tasks.

Refer to Figures V-1 through V-5 for easy identification of each build alternative alignment.

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Figure V-1
State Highway 82 Entrance to Aspen FEIS
Existing Alignment - Alternative B

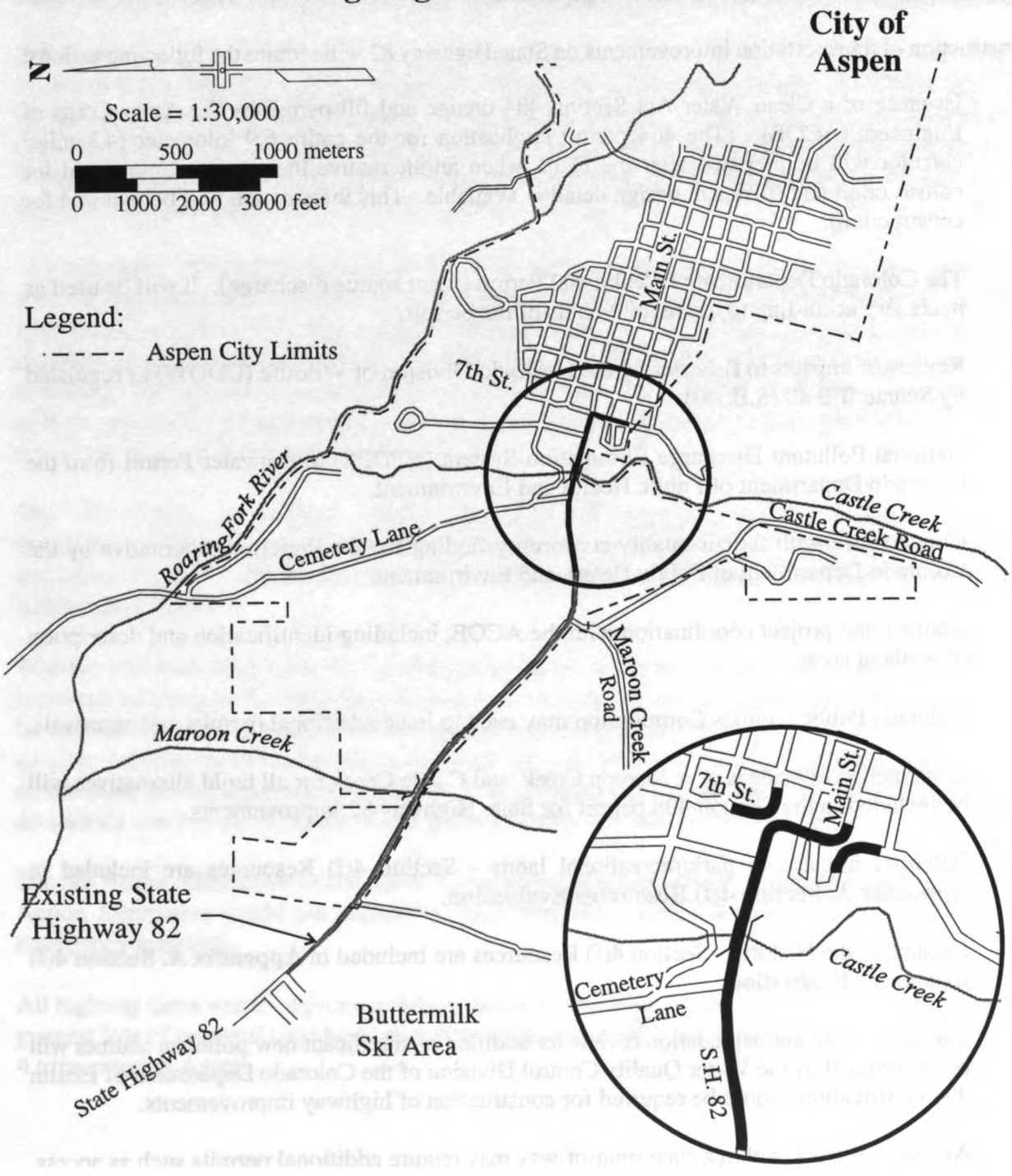

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Figure V-2
State Highway 82 Entrance to Aspen FEIS
Alternatives C, D, E, F, Modified Direct, Phased Modified Direct

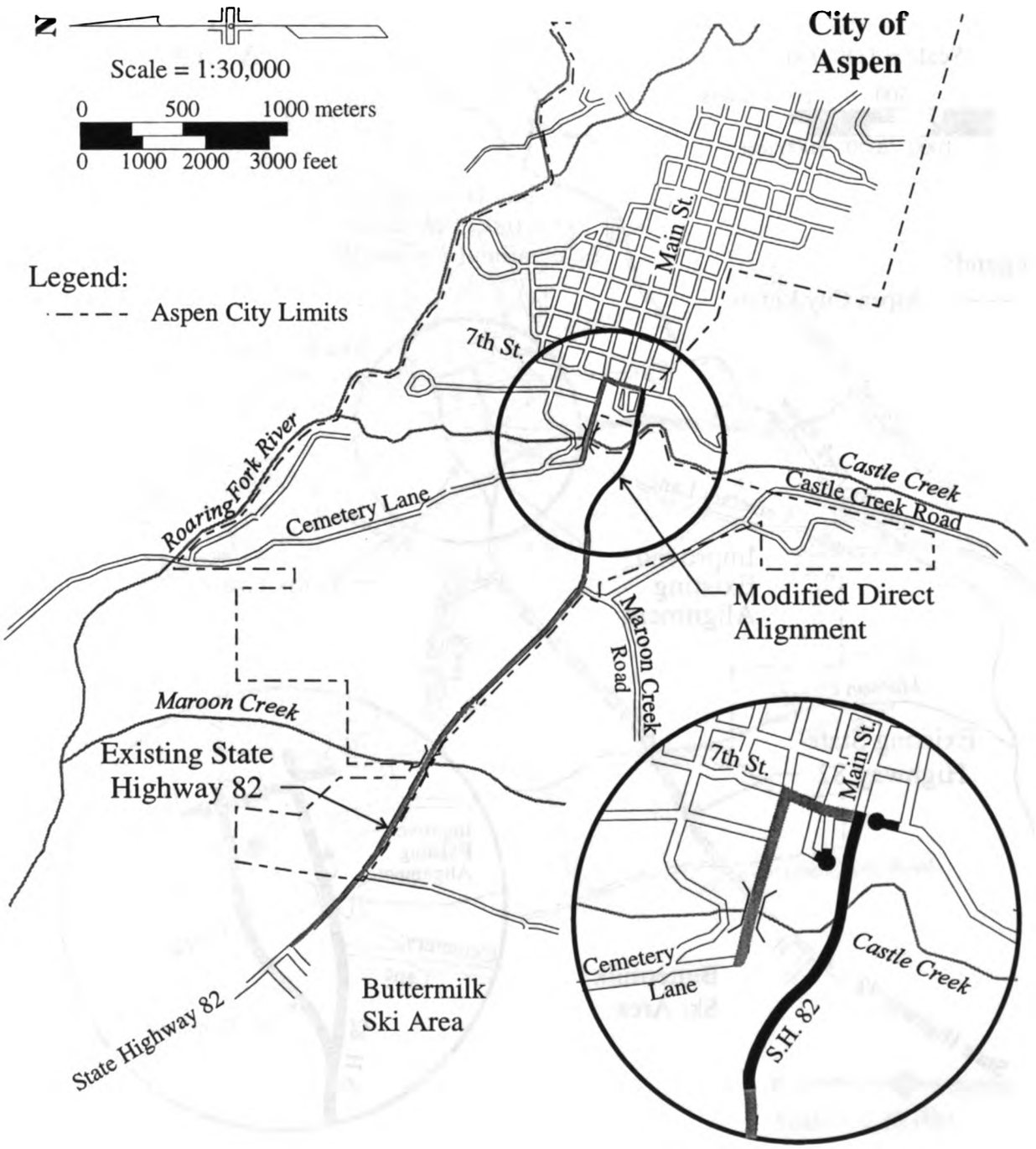

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Figure V-3
State Highway 82 Entrance to Aspen FEIS
Improved Existing Alignment and Transitway across Marolt-Thomas Property - Alternative G

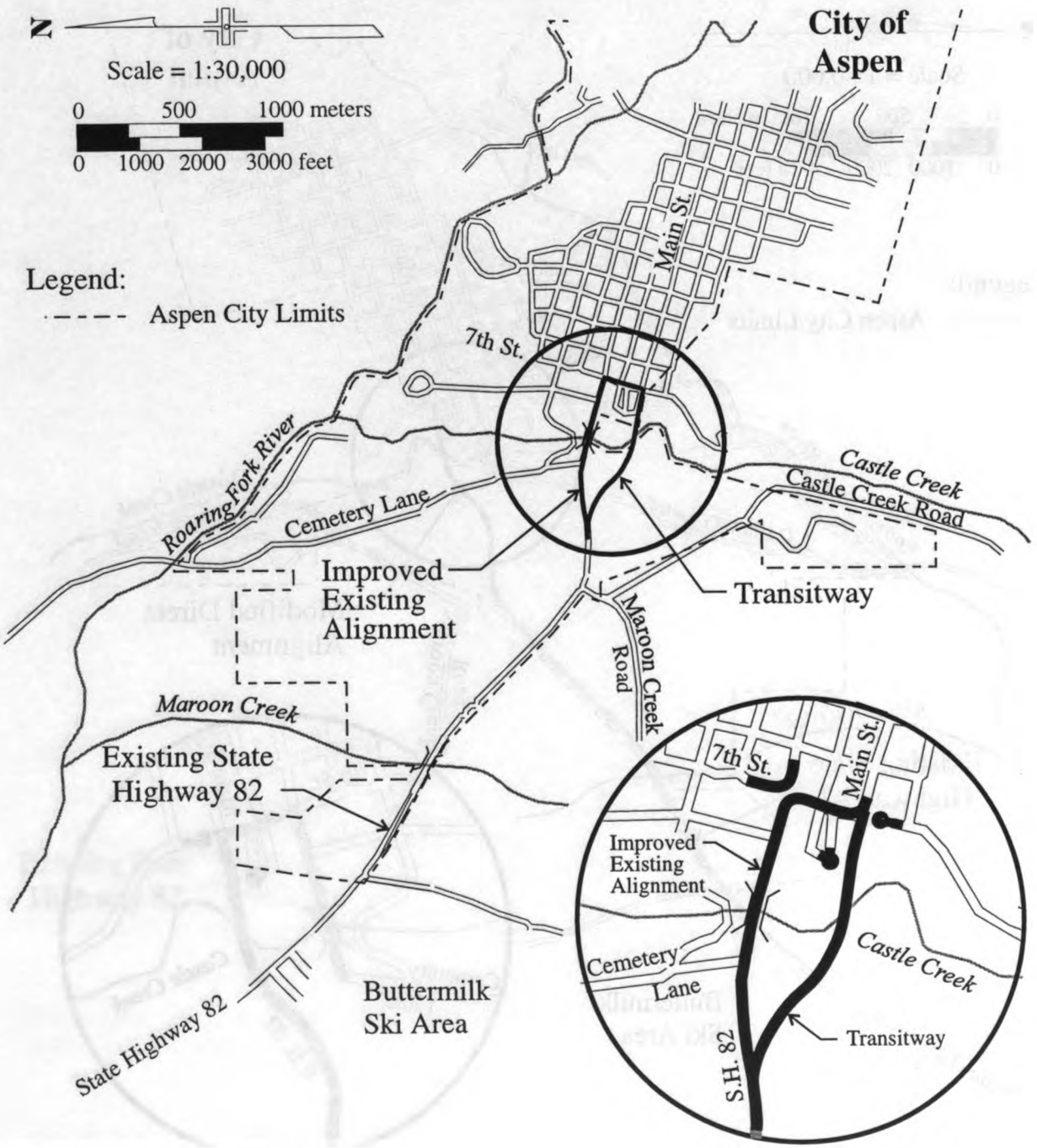

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Figure V-4a
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment

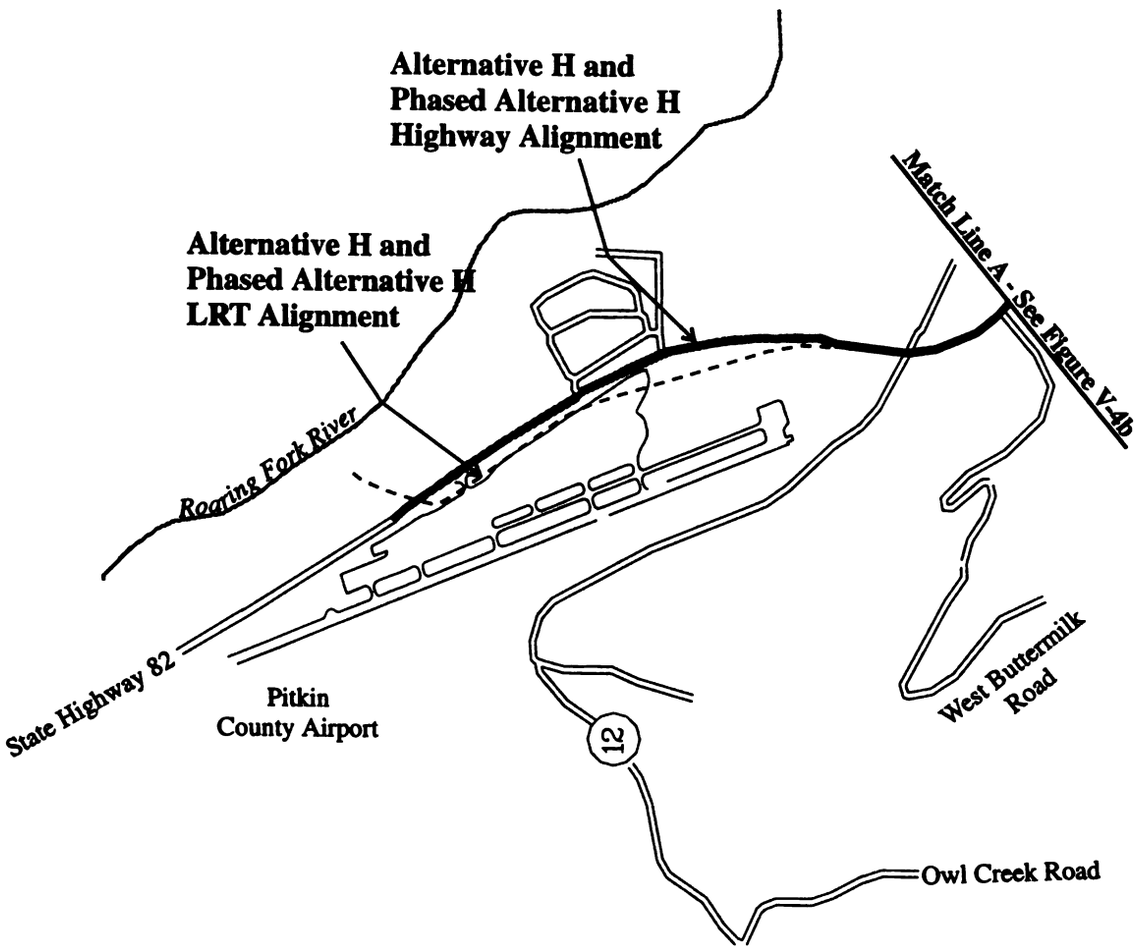

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Figure V-4b
State Highway 82 Entrance to Aspen FEIS
Alternative H and Phased Alternative H Alignments

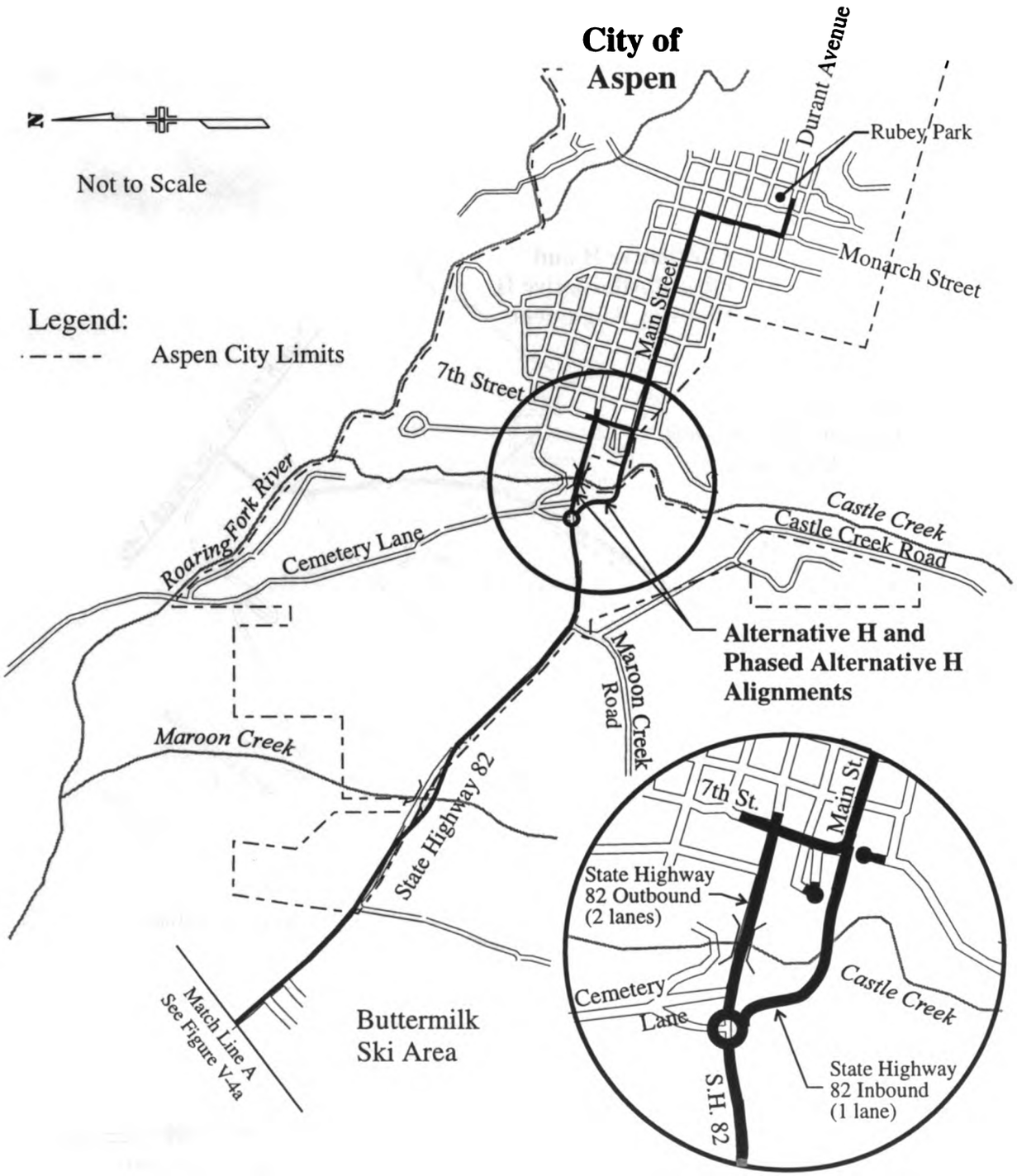

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Figure V-5a
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment

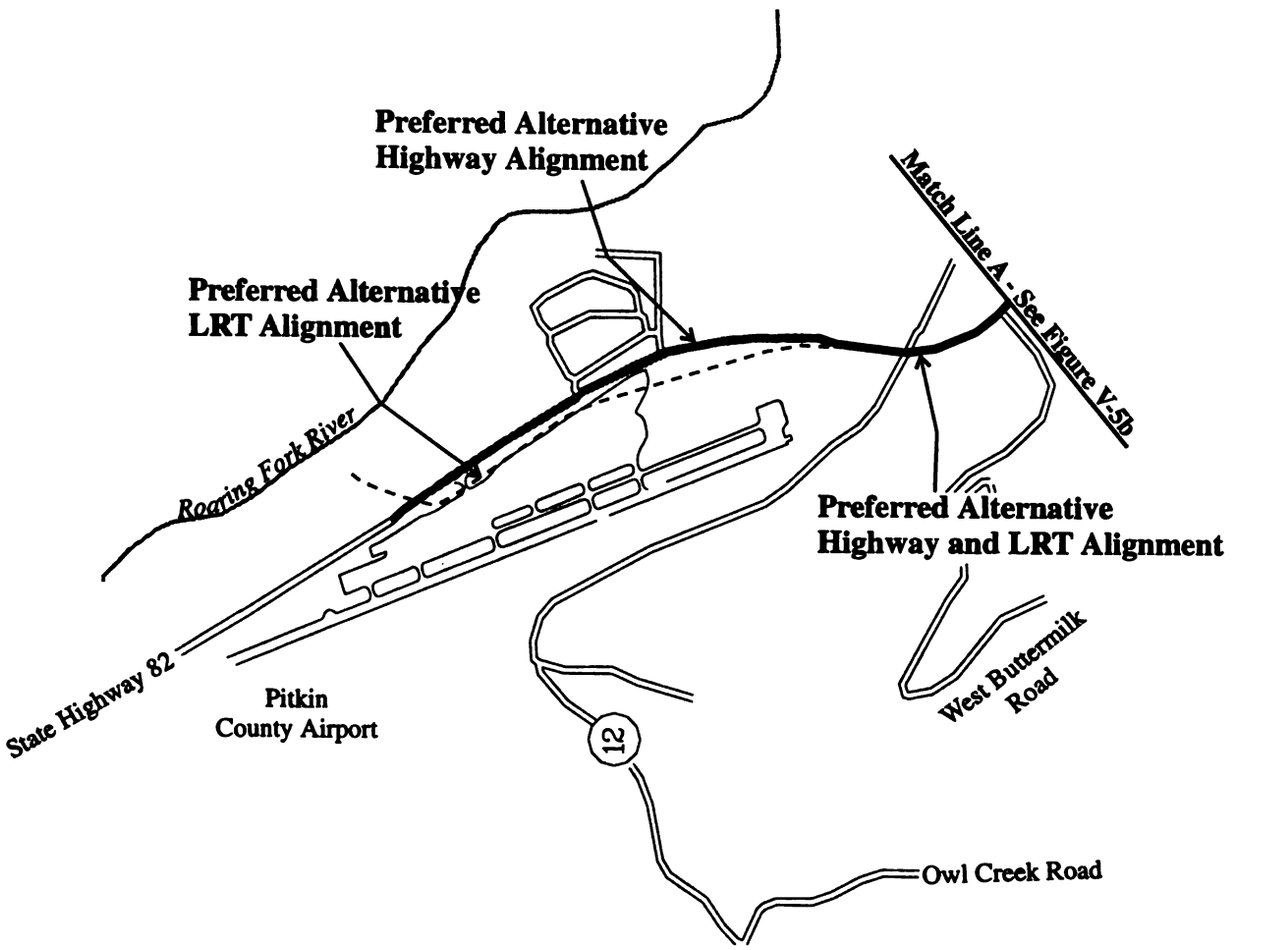

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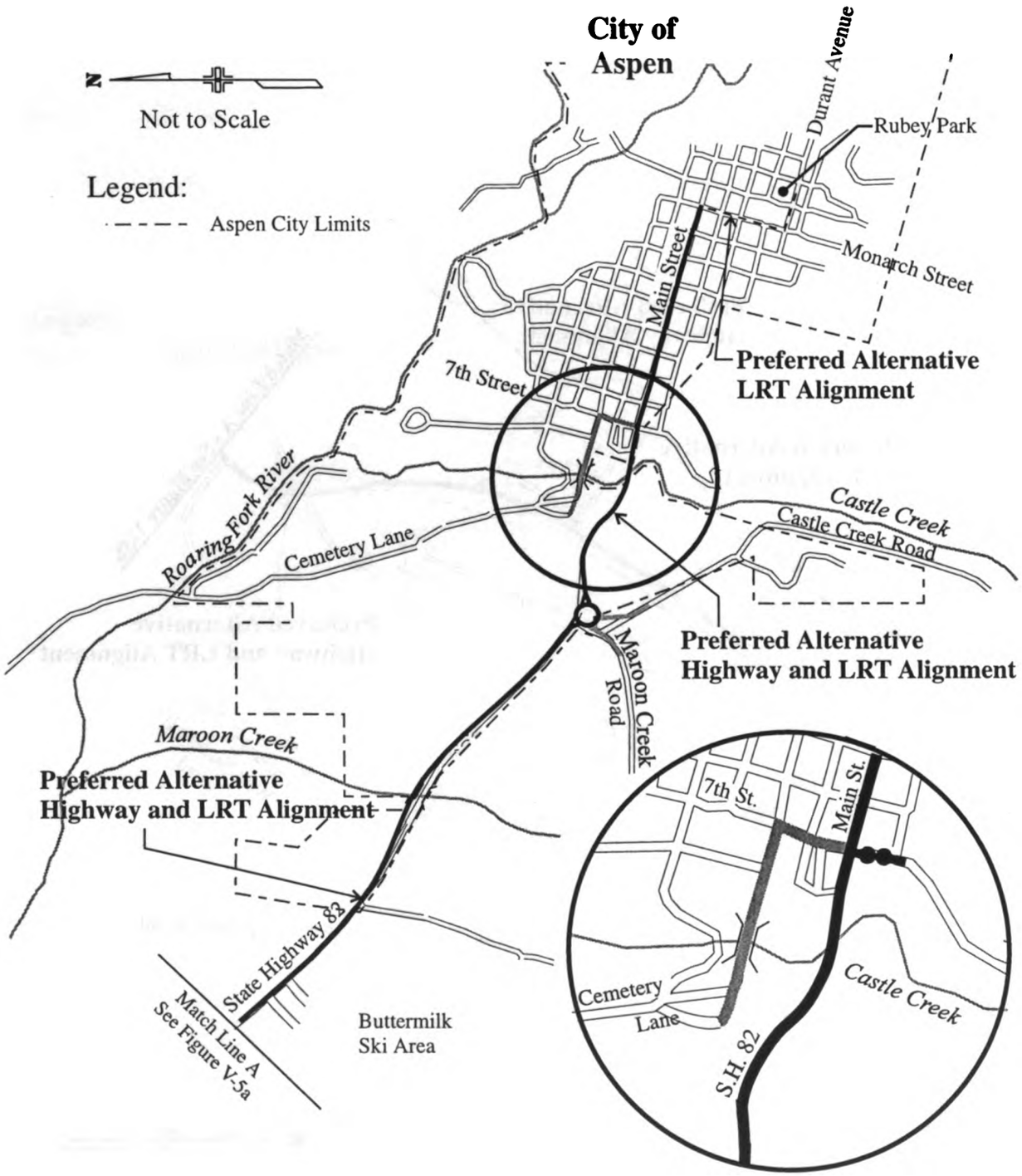
Figure V-5b
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment



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2. Social Impacts

2a. Neighborhood impacts

Changes in neighborhood or community cohesion may include isolation of portions of neighborhoods, generation of new development, changing property values, and the separation of residents from community facilities. Table V-1 contains a summary of the neighborhood impacts for each of the alternatives evaluated throughout the FEIS process.

Table V-1
Neighborhood Impacts

Alternative	*Households within 30 meters (100 feet) of State Highway 82*
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) ALTERNATIVES	
Buttermilk Ski Area to Maroon Creek Road	
Alternative 1	0
Alternative 2	0
Alternative 3	0
Maroon Creek Road to 7th Street and Main Street	
Alternative A	67
Alternative B	66
Alternative C	9
Alternative D	8
Alternative E	9
Alternative F	8
Alternative G	61
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DSEIS) ALTERNATIVES	
Alternative H	90
Modified Direct	32
Phased Alternative H	90
Phased Modified Direct	32
PREFERRED ALTERNATIVE	32

Note: For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative.

The Preferred Alternative follows the existing alignment between the Buttermilk Ski Area and Maroon Creek Road. The only exception is the section (approximately one-half mile)

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near Maroon Creek Bridge, which is aligned north of the existing bridge. There are no neighborhood impacts between the Buttermilk Ski Area and Castle Creek Bridge. Currently, two households on Main Street between 7th Street and Castle Creek are within 30 meters (100 feet) of State Highway 82. Under the modified direct alignment, nine households in this same area will be within 30 meters (100 feet) of the new alignment. Following the alignment between the intersection of 7th Street and Main Street to Rubey Park, there are currently 23 households within 30 meters (100 feet) of the new alignment. These households will remain within 30 meters (100 feet) of the new alignment. The modified direct alignment will also change the character of the Main Street neighborhood between 7th Street and 8th Street from a residential area to a transportation corridor. The highway alignment in this area has been located so as to minimize impacts on surrounding areas to the extent possible.

2b. Relocation and Right-of-Way Impacts

Table V-2 summarizes residential and business relocations for each alternative. In addition, general structure takes are also listed in the table. The right-of-way acquisition for each property ownership affected by the alternatives, are summarized by corridor section in Table V-3a and Table V-3b.

Table V-2
Relocation Impacts

Alternative	*Residential Single Family*	*Residential Multi-Family*	*Business*	*Structure*	*TOTAL*
DEIS Alternatives					
Buttermilk Ski Area to Maroon Creek Rd.					
Alternative 1	0	0	0	0	0
Alternative 2	2	0	0	0	2
Alternative 3	2	0	0	0	2
Maroon Creek Road to 7th St. and Main St.					
Alternative A	0	0	0	0	0
Alternative B	1	1*	3	0	5
Alternative C	1	0	0	1	2
Alternative D	2	0	0	1	3
Alternative E	1	0	0	1	2
Alternative F	2	0	0	1	3
Alternative G	1	0	1	1	3
DSEIS Alternatives					
Alternative H	2	0	0	1	3
Modified Direct	2	0	0	1	3
Phased Alternative H	2	0	0	1	3
Phased Modified Direct	2	0	0	1	3
Preferred Alternative	0	0	0	1	1

* *This multi-family unit consists of six households*

Note: For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative.

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Table V-3a
Right-of-Way Acquisition Impacts*for the DEIS Alternatives
Hectares (Acres)

Property Ownership	*Project Corridor Segment*							
	Buttermilk to Maroon Creek Road		*Maroon Creek Road to 7th and Main Street*					
	Alternative							
	2	*3*	*B*	*C*	*D*	*E*	*F*	*G*
Zoline Open Space	1.2 (3.0)	1.4 (3.5)						
Moore Open Space	0.6 (1.6)	0.9 (2.4)						
- *Easement*	*0.5 (1.3)*	*0.8 (2.0)*						
- *Non-Easement*	*0.1 (0.2)*	*0.1 (0.4)*						
Golf Course	1.2 (3.0)	1.4 (3.5)						
- *Improved (Fields)*	*0.4 (0.9)*	*0.5 (1.1)*						
- *Unimproved (M.C.)*	*0.8 (2.1)*	*0.9 (2.4)*						
General ROW	2.1 (5.3)	3.0 (7.6)	0.2 (0.6)	0.3 (0.8)	0.4 (1.0)	0.3 (0.8)	0.4 (1.0)	0.2 (0.4)
Marolt-Thomas			1.2 (3.0)	2.6 (6.5)	2.9 (7.3)	1.8 (4.5)	2.0 (5.1)	2.0 (4.9)
- *Old Midland*			*0.1 (0.3)*	*0.1 (0.3)*	*0.2 (0.4)*	*0.1 (0.3)*	*0.1(0.4)*	*0.1 (0.3)*
- *Thomas Only*			*0.7 (1.7)*	*1.2 (3.0)*	*1.4 (3.5)*	*1.1 (2.7)*	*1.3 (3.2)*	*1.0 (2.5)*
- *Road Plats*			*0.1 (0.2)*	*1.0 (2.4)*	*1.0 (2.5)*	*0.4 (0.7)*	*0.4 (1.0)*	*0.7 (1.7)*
- *Marolt Only*			*0.3 (0.8)*	*0.3 (0.8)*	*0.4 (1.0)*	*0.2 (0.5)*	*0.2 (0.6)*	*0.2 (0.4)*
Bugsy Barnard Park			0	0	0	0	0	0
Historic Properties			0	0.04 (0.1)	0.04 (0.1)	0.04 (0.1)	0.04 (0.1)	0.02 (0.05)
- *920 Hallam Street*				*0*	*0*	*0*	*0*	*0*
- *834 Hallam Street*				*0*	*0*	*0*	*0*	*0*
- *Berger Cabin*				*0.04 (0.1)*	*0.04 (0.1)*	*0.04 (0.1)*	*0.04 (0.1)*	*0.02 (0.05)*
Returned SH 82 ROW			0	0.4 (1.1)	0.4 (1.1)	0.4 (1.1)	0.4 (1.1)	0
Structure Acquisition	2	2	5	2	3	2	3	3
Relocations: Household (H); Business (B)	2 (H)	2 (H)	7(H) 3(B)	1 (H)	2 (H)	1 (H)	2 (H)	1(H) 1 (B)
TOTAL ROW	5.1 (12.9)	6.7(17.0)	1.4 (3.6)	2.9 (7.4)	3.3 (8.4)	2.1 (5.4)	2.5 (6.2)	2.2 (5.4)

* *Does not include space required for multimodal facilities.*

Note: For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative.

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Table V-3b
Right-of-Way Acquisition Impacts for the DSEIS Alternatives and Preferred Alternative
(Not including the Light Rail Service [LRT] Stations)
Hectares (Acres)

Property Ownership	*Alternative H No Phasing*	*Modified Direct No Phasing*	*Phased Alternative H*	*Phased Modified Direct*	*Preferred Alternative*
General Right-of-Way (ROW) LRT Maintenance Facility to Castle Creek	7.4 (18.2)	7.4 (18.4)	7.4 (18.2)	7.4 (18.4)	4.6 (11.4)
General ROW for Owl Creek Road Relocation	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	2.3 (5.7)
Zoline Open Space	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.6 (1.5)
Moore Open Space	1.5 (3.7)	1.5 (3.7)	1.5 (3.7)	1.5 (3.7)	0.0 (0.0)
Golf Course *-Improve (fields)* *-Unimproved (M.C.)*	0.1 (0.2) *0.0 (0.0)* *0.1 (0.2)*	0.0 (0.0)	0.1 (0.2) *0.0 (0.0)* *0.1 (0.2)*	0.0 (0.0)	0.7 (1.7) 0.5 (1.2) 0.2 (0.5)
Marolt-Thomas *-Old Midland* *-Thomas Only* *-Road Plats* *-Marolt Only*	2.0 (5.1) *0.1 (0.3)* *0.7 (1.8)* *0.5 (1.2)* *0.7 (1.8)*	1.9 (4.7) *0.1 (0.3)* *1.2 (3.0)* *0.4 (1.0)* *0.2 (0.5)*	2.0 (5.1) *0.1 (0.3)* *0.7 (1.8)* *0.5 (1.2)* *0.7 (1.8)*	1.9 (4.7) *0.1 (0.3)* *1.2 (3.0)* *0.4 (1.0)* *0.2 (0.5)*	2.1 (5.2) 0.2 (0.6) 0.9 (2.3) 0.6 (1.5) 0.3 (0.8)
Bugsy Barnard Park	0.1 (0.2)	0.0 (0.0)	0.1 (0.2)	0.0 (0.0)	0.0 (0.0)
Structure Acquisition	3	3	3	3	1
Relocations: Household (H); Business (B)	2 (H)	2 (H)	2 (H)	2 (H)	0
Total ROW	11.1 (27.4)	10.8 (26.7)	11.1 (27.4)	10.8 (26.7)	10.3 (25.5)

Note: For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative.

Relocations described in this document are only those in which a structure is actually being taken by road construction. Some residences or businesses may be negatively affected due to their proximity to the widened or realigned State Highway 82. In some cases, right-of-way

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acquisitions may decrease the value of residences without actually taking them. Impacts are minimized or mitigated to the extent possible using walls, berming, etc. Acquisitions can also result in parcel remainders that are unusable due to size or shape. This level of impact will be defined in more detail as design plans are finalized for the selected alternative through the Environmental Impact Statement EIS process. In some cases, the highway alignment may be shifted to avoid or minimize impacts.

It is customary to include family characteristics in relocation studies of this type; however, when there are few displaces, information on race, ethnicity and income levels are not included to protect the privacy of those affected. Their locations are quite easily identified by alternative and no data will be published about the specific characteristics of individuals potentially affected. There is no indication that disproportionately high and adverse human health or environmental effects on minority or low-income populations will result from any of the alternatives under consideration.

The Colorado Department of Transportation (CDOT) will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (1989). The purpose of this act is to provide for uniform and equitable treatment of all persons displaced from their homes, businesses or farms. All relocates are given a minimum of 90 days in which to find replacement housing or business locations. All qualified relocates receive monetary payments, which may include payments for moving expenses, business in lieu of payments, rent supplements, down payments, and increased interest payments.

No person shall be displaced by a federal-aid project unless and until adequate replacement housing has been offered to all affected persons regardless of race, color, religion, sex or national origin.

In addition to full compliance with the Uniform Relocation Assistance Act of 1970, as amended, CDOT will provide assistance to any eligible owner or tenant in relocating their business or residence at the time of displacement. Benefits under the Act, to which each eligible owner or tenant may be entitled, will be determined on an individual basis and explained to them in detail in addition to information regarding their financial options.

Pitkin County Housing - Before proceeding with a discussion of potential relocations by corridor section, a summary of the housing situation in Pitkin County follows. Three types of residential relocations may occur: single family residences, apartment units, and mobile homes.

In general, Pitkin County has a housing shortage. Not only is there a shortage of housing units of all types, but there is also a shortage of immediately developable land. While a large number of housing units have been planned for development in Aspen and areas downvalley, there is limited affordable housing available at this time.

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Currently, the Aspen area housing market is in a state of flux. There are a number of potential sites for development in the project corridor, but at this time none are available. Development of these sites is dependent upon the interest and cooperation of the land owners and the support of the community.

Last resort housing can be provided as a part of the State Highway 82 project itself. Where the standard relocation reimbursements are insufficient or where there is an absence of available housing, last resort housing funds can be provided or the construction of replacement housing can be included within the budget of this highway project; however, there has to be a place to locate such housing. Considering the housing shortage and average cost of a home in Aspen (over $1 million), relocations ranked very high among the factors for consideration in the alternative selection process. Pitkin County has expressed its willingness to work with the State on this very sensitive problem.

The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and all other applicable laws and regulations. Relocation resources will be available to all residential and business relocates without discrimination.

The Preferred Alternative will not relocate any resident or business throughout the corridor. A structure located on the Marolt-Thomas Property, (currently used for storage) will, however, be relocated. The exact location will be determined during the design phase.

In addition to the alignment right-of-way acquisitions, there are right-of-way acquisitions for the LRT stations. These takes are the same regardless of the alternative. Table V-4 shows the right-of-way acquisition for each of the LRT stations.

Table V-4
ROW Acquisition for the Preferred Alternative LRT Stations
Hectares (Acres)

LRT Station	ROW Acquisition
Buttermilk Ski Area Station (includes footprint)	
General ROW	1.9 (4.7)
TOTAL ROW	1.9 (4.7)
Moore Station (includes footprint)	
General ROW	<0.1 (0.1)
4(f) Resource (Moore Property) ROW	0.6 (1.4)
TOTAL ROW	0.6 (1.5)

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2c. Recreational impacts

The Colorado Department of Transportation will replace all pedestrian and/or bicycle paths that are impacted by State Highway 82 improvements. Relocation and replacement of existing trails are required for all build alternatives at the west end of the City Golf Course property.

The Preferred Alternative includes the replacement of several trails. The alternative impacts approximately 1,430 meters (4,690 feet) of the Airport Business Center Trail, 295 meters (970 feet) of the High School Bike Path, 10 meters (30 feet) of the Golf Course Nordic Trail, 6 meters (20 feet) of the Moore Nordic Trail, 30 meters (100 feet) of the Maroon Creek Nordic Trail, 30 meters (110 feet) of the Marolt Trail, and 140 meters (460 feet) of the Marolt Nordic Trail. The total length of impacted trails is 1,945 meters (6,380 feet). All of the trails will be replaced.

Table V-5
Summary of Trail Impacts
Meters (Feet)

Alternative	Total Length of Trails Impacted
DEIS ALTERNATIVES	
Buttermilk Ski Area to Maroon Creek Road	
Alternative 2	831 (2,723)
Alternative 3	837 (2,743)
Maroon Creek Road to 7th Street and Main Street	
Alternative B	611 (2,005)
Alternative C	565 (1,855)
Alternative D	610 (2,005)
Alternative E	565 (1,855)
Alternative F	610 (2,005)
Alternative G	404 (1,325)
DSEIS ALTERNATIVES	
Alternative H	683 (2,279)
Modified Direct	729 (2,392)
Phased Alternative H	683 (2,279)
Phased Modified Direct	729 (2,392)
Preferred Alternative	1,945 (6,380)

Note: For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative. Subsequent to the release of the DSEIS, it was determined that the Maroon Creek Bridge south side alignment was not prudent due to unacceptable social impacts.

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2d. Impacts on Travel Patterns and Access

The Preferred Alternative changes travel patterns and access throughout the entire corridor due to the combination of a side running LRT system, a grass median, the relocation of roadways, and the modified direct alignment.

Vehicles

The travel patterns on State Highway 82 will be improved near Owl Creek Road and the Buttermilk Ski Area by the relocation of West Buttermilk Road and Owl Creek Road. The existing Owl Creek Road intersection will be eliminated, and a new signalized intersection created at a location approximately 300 meters (1000 feet) east of the existing intersection. The existing West Buttermilk Road will be relocated from the Buttermilk Ski Area parking lot and combined with the new Owl Creek Road alignment. These relocations will improve State Highway 82 access to and from Owl Creek Road and West Buttermilk Road.

The FEIS Preferred Alternative includes a roundabout at the intersection of State Highway 82 and Maroon Creek Road. Castle Creek Road will also be connected to the roundabout, providing direct access to and from State Highway 82.

The portion of State Highway 82 between Maroon Creek Road and Cemetery Lane will be removed and the right-of-way converted to open space (still remaining traversible by emergency vehicles). Cemetery Lane will no longer connect to State Highway 82. State Highway inbound traffic heading to Cemetery Lane or the Aspen Meadows will be required to continue to travel across the Marolt-Thomas Property on the new alignment and turn north at 7th Street. The existing S-curves will remain as a local street.

Signals will be added on Main Street at the 7th Street, 5th Street, 3rd Street, and Garmisch Street intersections. The existing signals at the intersections of Aspen Street and Main Street and Monarch Street and Main Street will remain. The signals will allow access to and from each leg of the intersection. Median breaks along Main Street will not be provided at the intersections of 6th Street, 4th Street, 2nd Street, and 1st Street. Side Street access at these locations is right in, right out only. Vehicles wishing to turn left at these intersections are required to drive one block over to a signalized intersection. The westbound right traffic lane becomes a right-turn only at the intersection of 7th Street and Main Street. Westbound through traffic on Main Street must use the left lane at 7th Street. With proper advance signing warning drivers that the right lane must turn right, the merging traffic should not create a problem.

Currently, the intersection of 8th Street and Main Street generally provides access to local residences and businesses. Under the Preferred Alternative alignment, State Highway 82 runs past this intersection. A median opening at this intersection provides access to both 8th Street and the Berger Cabin.

The LRT alignment in the Preferred Alternative runs on the east side of Monarch Street. To do this the LRT must cross the majority of Monarch Street. For operational and safety

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reasons, Monarch Street and Aspen Street are converted into a one-way pair between Main Street and Durant Avenue. This may create access impacts to the businesses and parks located along these streets.

LRT

The FEIS Preferred Alternative includes an LRT system from the Pitkin County Airport to Rubey Park in downtown Aspen. This LRT will create new travel patterns throughout the corridor. People will be able to access the Pitkin County Airport, Buttermilk Ski Area, downtown Aspen, and numerous other locations without driving.

2e. Parking impacts

Under the Preferred Alternative, the LRT alignment extends along the center of Main Street from 7th Street to Monarch Street, it proceeds south on the east side of Monarch Street to Durant Avenue, and continues east on the north side of Durant Avenue to Rubey Park. Currently along this route an estimate of 301 public parking spaces exist. Of the 301 parking spaces, 198 spaces will be removed. This includes 115 along Main Street (both sides), 53 along Monarch Street (east side), and 30 along Durant Avenue (south side). Within the commercial core of downtown Aspen, an estimated 796 public spaces are available. With the removal of 70 spaces along Monarch and Durant, 726 spaces public spaces remain in the commercial core of downtown Aspen. Where feasible, mitigation will be considered to replace impacted parking spaces.

The LRT could also feasibly be placed on the south side of Main Street, with additional mitigation measures. The south side alignment requires removal of 54 more parking spaces than the center-running alignment. In addition, the south-side alignment requires closing four private accesses on the south side of Main Street, and relocation of a transit stop.

Some businesses along the downtown alignment will have a significant negative impact by the removal of on-street parking. These businesses include:

- Retailers that sell bulky products that must be picked-up by automobile.
- Restaurants that primarily serve customers who arrive by car.
- Insurance agents who manage vehicle claims at their Main Street place of business.
- Lodging operators whose guests park on the street.

Businesses with a marginally negative impact include real estate brokers and professional service providers. Businesses with minimal or no negative impact either provide their own parking, do not meet clients at their place of business, or serve customers who primarily arrive by bike/foot.

The south-side alignment also impacts several businesses on Main Street by closing off several side streets on the south, which restricts access to these businesses. For more information on parking impacts, please see the technical reports ***Parking Impacts of Light Rail in Downtown Aspen,*** and ***Parking Impacts of Light Rail in Downtown Aspen - Update to Previous Report.***

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2f. Public Safety impacts

All users of State Highway 82 will benefit from the improved safety of a new, modernized facility. The FEIS Preferred Alternative improves traffic safety through the addition of shoulders, flatter slopes, wide medians, intersection turn lanes, and better curve geometry.

The FEIS Preferred Alternative includes a roundabout at the intersection of State Highway 82, Maroon Creek Road, and Castle Creek Road. Studies have shown that roundabouts which operate efficiently are generally a safer intersection than signalized or signed intersections.

Signals have been placed along Main Street at 7th Street, 5th Street, 3rd Street, and Garmisch Street. This improves the safety of drivers along Main Street. In addition to improving the safety of the drivers, the signals provide a safer crossing for pedestrians.

The existing S-curves on Hallam Street, 7th Street, and Main Street at the entrance to Aspen currently have a high accident rate. By eliminating these curves from the State Highway 82 alignment (Preferred Alternative) and providing a more direct route into Aspen, the safety of the highway improves. The Preferred Alternative also provides a second emergency access across Castle Creek.

2g. Land Use impacts

The FEIS Preferred Alternative does not create significant land use changes within the project corridor. The Pitkin County Growth Management Plan, the Aspen Plan, the people of Aspen, and market forces based on Aspen's worldwide popularity will determine the future development of land in the Entrance to Aspen corridor and Pitkin County. Between the airport and Maroon Creek Road the alignment deviates north from the existing alignment for approximately 1.6 kilometers (0.5 miles). This infringes on Park (P) with Planned Urban Development (PUD) allowed. The alignment also deviates southeast, across the Marolt Thomas Property. This infringes on Open Space with Moderate Density Residential (R-15) zoning. The land use and zoning districts are shown on Figure V-6a and Figure V-6b.

3. Economic Impacts

Acquisition of private property for State Highway 82 right-of-way will reduce county tax revenues. Highway improvements, however, directly create construction jobs. An improved transportation corridor will also support increases in retail sales, sales tax revenue, and service employment in Pitkin County's resort economy, and also improve access to employment within Aspen. Additionally, because the majority of Aspen's consumer goods are delivered by trucks, an improved transportation corridor may reduce the pollution and lower consumer costs by expediting the deliver of their goods.

The businesses located within walking distance of the LRT alignment may benefit from increase of clients and/or patrons by providing convenient access. This includes restaurants, hotels/resorts, or any type of commercial services. The Preferred Alternative may have a negative impact on certain

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types of Main Street businesses where parking spaces are taken. The businesses that are most negatively impacted are retailers that sell or rent bulky products that must be picked-up by automobile, insurance agents that settle automobile claims, and lodging operators which are accustomed to having their guests park on the street. A future possible valley wide connection to the Interstate 70 corridor would have a positive impact on the area.

4. Physical Impacts

4a. Air Quality Impacts

The 1990 Clean Air Act Amendments (CAAA) require that transportation projects within a nonattainment area will not: (1) cause or contribute to a violation of federal air quality standards; (2) increase the frequency or severity of any existing violations of any standards; and, (3) delay attainment of any standard. The 1993 Air Quality Conformity Final Rule (published 11/24/93 in Federal Register Notice 58FR62188) provides the criteria for establishing a conformity finding. The Preferred Alternative must demonstrate air quality conformity.

The air quality analysis includes:

- An evaluation of particulate matter 10 microns or smaller (PM_{10}) emissions for 1997 conditions with all State Implementation Plan (SIP) control measures (except the bus-priority and the no-drive day) updated using the most recent Environmental Protection Agency (EPA) emission model. This model is the adjusted SIP emission budget.

- An evaluation of PM_{10} emissions for year 2015 traffic and emissions levels for the following alternatives:

  1. The No-Action Alternative

  2. Four general purpose lanes without transportation management (TM) programs (for comparative purposes only, not an alternative).

  3. Two general purpose lanes plus two dedicated high occupancy vehicle (HOV)/transit lanes without TM programs (similar to the DEIS alternatives).

  4. Two general purpose lanes plus dedicated LRT/transit lanes with TM programs sufficient to maintain 1994 traffic levels (DSEIS LRT alternatives, Preferred Alternative).

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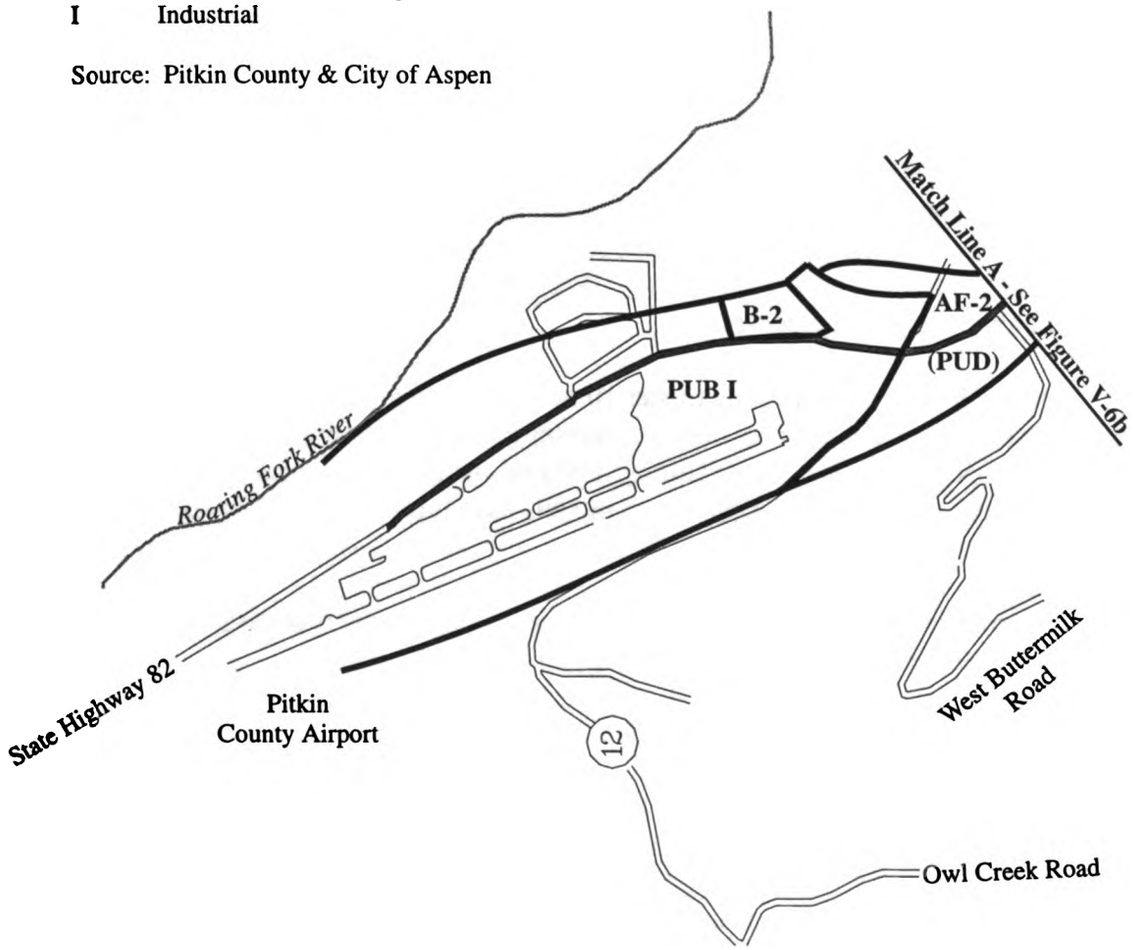
Figure V-6a
State Highway 82 Entrance to Aspen FEIS
Land Use

Legend:

AF-2	Agricultural & Forestry Districts
B-2	Business District
PUB	Public
PUD	Planned Urban Development
I	Industrial

Source: Pitkin County & City of Aspen



Scale = 1:30,000

0 500 1000 meters

0 1000 2000 3000 feet

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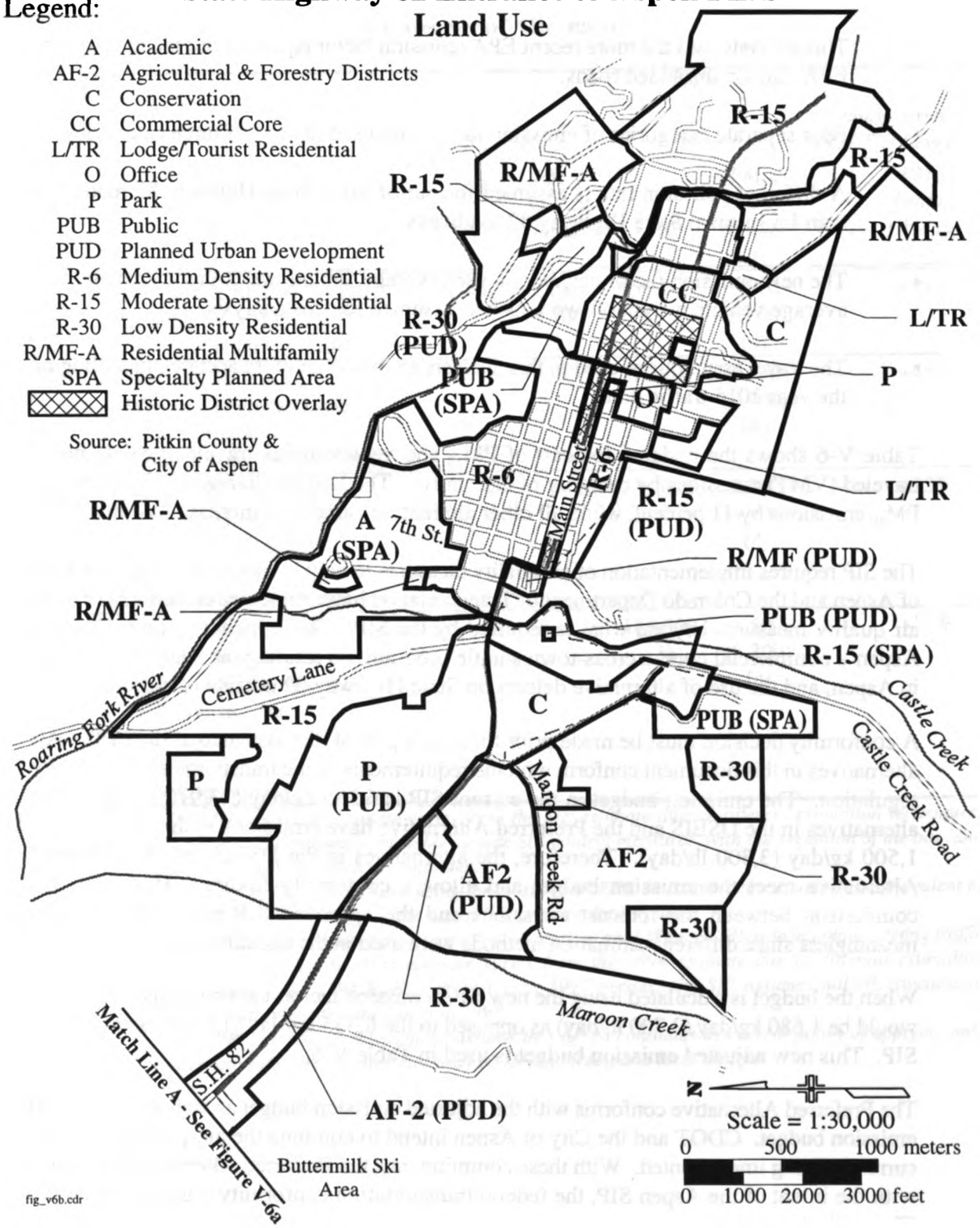
Figure V-6b
State Highway 82 Entrance to Aspen FEIS



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Assumptions used are consistent with those used in the State Implementation Plan and the DEIS Air Quality Analysis, with the following exceptions:

- This analysis uses the more recent EPA emission factor equation and the most recent EPA data on unsanded roads.
- Four separate categories of emission factors are used instead of three categories.
- A different emission rate is assumed for out-of-town State Highway 82 roadways than for in-town State Highway 82 roadways.
- The new emission factor calculation uses average vehicle weight as a variable. An average vehicle weight of two tons was assumed for this analysis.
- The travel assumptions used in this analysis are based on more accurate modeling of the year 2015 traffic data.

Table V-6 shows the updated forecast of PM_{10} and vehicle miles traveled vehicle miles traveled (VMT) emissions by category of alternative. The DSEIS alternatives decrease the PM_{10} emissions by 11 percent, while all other alternative categories increase the emissions.

The SIP requires implementation of air quality measures to help reduce emissions. The City of Aspen and the Colorado Department of Transportation have implemented some beneficial air quality measures beyond what is required by the SIP. These include paid parking in Aspen's commercial core, a cross-town shuttle program, no sanding on State Highway 82 in Aspen, and the use of alternative deicers on State Highway 82 outside of Aspen.

A conformity decision must be made prior to, or as a part of, the issuance of the FEIS. All alternatives in this document conform with the requirements of the transportation conformity regulation. The emission budget in the current SIP is 6,335 kg/day (13,970 lb/day). The alternatives in the DSEIS and the Preferred Alternative have emissions in the year 2015 of 1,500 kg/day (3,300 lb/day). Therefore, the alternatives in the DSEIS and the Preferred Alternative meet the emission budget and allow a conformity finding. However, this comparison between the forecast emissions and the approved SIP emission budget is meaningless since different estimation methods were used in the situations being compared.

When the budget is calculated using the new EPA emission factor, the new emission budget would be 1,680 kg/day (3,700 lb/day) as opposed to the 6,335 kg/day (13,970 lb/day) in the SIP. This new adjusted emission budget is used in Table V-6.

The Preferred Alternative conforms with the adjusted emission budget as well as the original emission budget. CDOT and the City of Aspen intend to continue the air quality measures currently being implemented. With these commitments, the Preferred Alternative conforms with the intent of the Aspen SIP, the federal transportation conformity regulation, and the Clean Air Act.

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Table V-6
Updated Forecast of PM_{10} and VMT Emissions
by Category of Alternative

	Year					
	1997 SIP (1)		*2015*		*Change from 1997 SIP Levels*	
Alternative	*VMT*	*PM_{10} kg/day (lb/day)*	*VMT*	*PM_{10} kg/day (lb/day)*	*VMT*	*PM_{10} kg/day (lb/day)*
NO-ACTION ALTERNATIVE -- Existing State Highway 82 -- 2 General Highway Lanes	162,400	1,680 (3,700) (2)	256,600	2,310 (5,100) (4)	—	+37%
4-LANE HIGHWAY -- 4 General Highway Lanes -- No TM Programs (Comparison Purposes Only)	—	—	270,900	2,590 (5,700) (4)	—	+45%
DEIS ALTERNATIVES -- 2 General Highway Lanes -- 2 HOV/Transit Lanes -- No TM Programs (Average of DEIS Alternatives)	—	—	248,000	2,220 (4,900) (4)	—	+33%
DSEIS Alternatives and Preferred Alternative -- 2 General Highway Lanes -- LRT/Transit Lanes -- TM Programs (Average of DSEIS Alternatives)	—	—	166,300 (3)	1,500 (3,300) (4)	—	-11%

Notes:

1. *The 1997 emission estimate varies from the SIP estimate due to different estimation techniques. However, all estimates in this table include SIP control measures, with the exception of the bus lane in town, which has been discontinued.*
2. *This level of PM_{10}, calculated using the most recent EPA emission factor equation, is equivalent to a new emissions budget for the Aspen PM_{10} nonattainment area.*
3. *This VMT is the estimated traffic for 1994. A primary goal of the DSEIS is to maintain existing traffic levels in year 2015. This estimate varies from the 1994 estimate due to different estimation techniques. The 1994 level is greater than 1997 because the SIP assumes full effectiveness of transportation control measures in 1997.*
4. *2015 PM_{10} emissions calculations assume that Aspen continues its current policy of applying only alternative deicers on State Highway 82 (Main Street) and local streets.*

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4b. Water Quality Impacts

Potential water quality impacts are associated with bridges over Maroon Creek and Castle Creek. Operation and maintenance activities may also result in water quality impacts, however, the exposure of surface water to these sources is limited.

Construction related impacts to surface water quality result from erosion by surface runoff or stream flows; spills, oils, solvents and other pollutants; discharges from dewatering systems; and application of fertilizers, pesticides, and herbicides during construction. Operation and maintenance impacts result from buildup of pollutants on the highway surface from atmospheric and traffic deposition and from maintenance activities such as spraying chemicals to control vegetation or spreading sand and salt to control ice and snow. Long-term impacts would occur during surface runoff or snowmelt periods when a mechanism is available to transport the pollutants to adjacent water bodies.

Construction Impacts - The Preferred Alternative involves the construction associated with bridges over Maroon Creek and Castle Creek. During construction of footings, especially within areas bordering the streams, sediment discharges may slightly increase both the suspended solids and turbidity downstream from the discharge. Sediment discharge impacts include loss of beauty because the stream becomes turbid, deposition of sediment in the stream bed which is unsightly and may adversely affect trout spawning areas, and an increase in soluble constituents that may be attached to the sediment. CDOT will use current best management practices (BMP) to reduce erosion and sedimentation within the construction area and as required with the NPDES stormwater permits for the project.

Spills could involve many different undesirable materials, however, construction-related spills would most likely involve gasoline, diesel fuel, engine oils, and form oil. Usually, construction-related spills are small, but even small spills in or adjacent to a stream can have an adverse impact on water quality. At a minimum, such spills would create a surface sheen on the water and coat vegetation and rocks on the shoreline. A large spill could cause substantial wildlife mortality.

The Colorado State Patrol is the Designated Emergency Response Authority (DERA) for hazardous substance incidents for all federal, state, and county highways in Colorado. The State Patrol has a network of 36 people throughout the state who are trained to respond to hazardous waste emergencies. It is the contractor's responsibility to clean up and remediate spills to the satisfaction of the DERA, local health agencies, and CDOT. The State Patrol will respond to any spills of hazardous waste that could not be controlled by contractors during construction of State Highway 82 improvements.

Operation and Maintenance Impacts - The Federal Highway Administration (Federal Highway Administration, 1984) has catalogued the following expected highway runoff constituents:

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- Particulates (suspended solids)*
- Nutrients (nitrogen and phosphorus compounds)
- Lead*
- Zinc*
- Iron*
- Copper*
- Cadmium*
- Chromium
- Nickel
- Manganese
- Bromide
- Cyanide (anticake chemical in salt)*
- Sodium and Calcium Chloride
- Chloride
- Sulfate
- Petroleum Compounds*
- Polychlorinated biphenyls (PCBs)
- Pesticides*
- Organic Priority Pollutants
- Pathogens
- Rubber*

* *Pollutants of primary concern for State Highway 82 improvements*

Nutrient buildup is not considered a primary problem because the nearest water impoundment is several hundred kilometers downstream of the study corridor. The chromium, nickel, manganese, bromide, chloride, sulfate, pathogens, and sodium and calcium chloride salts are not expected to create water quality problems because the ambient levels of those parameters are substantially below the applicable standards. The PCBs and organic priority pollutants are not likely to be problems resulting from normal use and maintenance, but they are possible runoff constituents resulting from a hazardous waste spill. In general, the comparatively small amount of pollutants collected on highway surfaces compared to the runoff and flow volume within the Castle Creek and Maroon Creek drainages limit the likelihood that the constituents of snowmelt and precipitation runoff could result in water quality impacts within the project area.

Winter Runoff Constituents - The water quality impacts associated with applying sand and salt to provide traction and to control snow and ice on the highway during the winter is difficult to assess. Since the amount of sand and salt applied is a function of the road surface area, and the Preferred Alternative generally has the same surface area (slightly more with the roundabout and added turn lanes, slightly less with the shorter alignment), the sand and salt applied each winter should remain approximately at existing levels. Most of the sand and salt would remain on the roadway surface or in snow windrows on each side of the travelled lanes until warmer temperatures cause snowmelt runoff. Since snowmelt velocities are usually low, the sand would generally remain in the windrow area. Salt, however, is

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highly soluble and would be carried by the runoff into the creeks and ultimately into the Roaring Fork River. The sodium, calcium, chloride, and salinity levels in the Roaring Fork River and its tributaries within the study corridor are very low, so there is little likelihood of violating standards. CDOT currently sands State Highway 82 in the study corridor with an alternative de-icer. Continuation of this practice would help minimize potential salt impacts. Furthermore, since the paved surface of the widened highway under study is such a small portion of the drainage basin and since the highway snowmelt runoff would occur when large portions of the basin are also experiencing snowmelt, it is very improbable that the impacts of highway runoff would be significant.

Comparison of Alternatives - In general, the Preferred Alternative will have less of an impact on the area's water quality than the DEIS alternatives and most of the DSEIS alternatives. The water quality impacts will be approximately the same as the Modified Direct Alternative. The DEIS alternatives and the majority of the DSEIS alternatives double the road surface area which in return doubles the sand and salt application. The Modified Direct Alternative has approximately the same surface area as the Preferred Alternative. A temporary increase in sediment is likely during construction activities. However, the extent of the increase in sediment should not be significant with the implementation of BMPs currently in use by CDOT. Significant impacts from operation and maintenance activities are not anticipated because of the relatively high flow volumes within the creeks during times when pollutants of concern would be expected to be constituents of highway runoff.

4c. Impacts on Upland and Floodplain Vegetation

The Preferred Alternative permanently replaces existing vegetated areas with pavement. Additional areas within the highway right-of-way would be disturbed during construction. This would predominantly result in the disturbance of grasses and irrigated pasture currently established along the highway right-of-way. Riparian vegetation would be affected for the long-term only in the immediate vicinity of any bridge footings that would need to be installed; these impacts are discussed in detail under **Section V.4d. Wetland Impacts.**

All build alternatives create an impact on upland and floodplain vegetation. The alternatives with the modified direct alignment would result in the disturbance of irrigated pasture through the construction phase. The alternatives with an at-grade profile along the Marolt-Thomas Property would result in the permanent loss of pasture. The alternatives with a cut-and-cover profile would result in the partial re-establishment of some type of vegetation, depending on the ultimate land use of the area following construction. The alternatives that widens the existing S-curves, would result in the disturbance of right-of-way vegetation.

Mitigation measures for the Preferred Alternative would include revegetation of disturbed upland areas with dryland shrubs and grasses similar to the species removed during construction. In riparian zones and wetlands, special seed mixes would be used which have been developed for riparian and wetland areas. Displaced trees and shrubs will be replaced, preferably with stock from other disturbed areas.

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4d. Wetland Impacts

All wetlands identified in the State Highway 82 study corridor primarily perform the water purification and primary production functions described in **Section IV.C.4. Wetlands.** Primary and secondary impacts to wetlands would occur from construction-related activities. The extent of primary impacts (direct loss) was estimated from field observations in August, 1994 (DEIS alternatives) and May, 1996 (extended corridor). Estimates of primary impacts are based on the likely limits of roadway construction. Wetland locations are indicated in Figure V-7a and Figure V-7b.

Secondary impacts resulting from highway construction may include:

- Temporary or permanent influx of pollutants into wetlands resulting from unfiltered highway runoff.
- Temporary or permanent sediment influx resulting from denuded cut slopes or newly constructed fill slopes.
- Temporary damage to wetland vegetation resulting from heavy equipment use during construction.
- Permanent loss of sunlight resulting from shading by structures, high fills, or retaining walls.
- Permanent changes in wetland type.

These specific secondary impacts have general consequences for wetland plant communities and for wildlife dependent on wetlands. Wetland water balance is critical to overall wetland function because it influences vegetation composition and the extent to which nutrients flow efficiently through wetland systems. It is not possible to make accurate estimates of secondary impacts and resulting wetland losses until final design plans have been prepared.

There will be continued coordination during the design phase with a CDOT staff biologist to minimize secondary impacts and develop mitigation plans for unavoidable losses.

Riparian wetlands (Wetlands 2 and 3) depend largely on water from a swiftly flowing source (Maroon Creek and Castle Creek) and from spring runoff. The alluvial soils which characterize these wetlands have low water-holding capacity and, as a result, drainage is rapid. Wet meadows such as Wetland 1 are formed in areas of much-reduced water velocity. Deeper soils often develop from the accumulation of organic matter. Jurisdictional wetlands (Wetlands 4, 5, and 6) are wetlands created by a complex nature of site hydrology (irrigation water and natural snowmelt).

Alteration of drainage patterns from changes in flow volume or direction may cause significant changes in wetland vegetation, including die-off of many species unable to adjust to changed water regimes.

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Figure V-7a
State Highway 82 Entrance to Aspen EIS
Wetland Locations

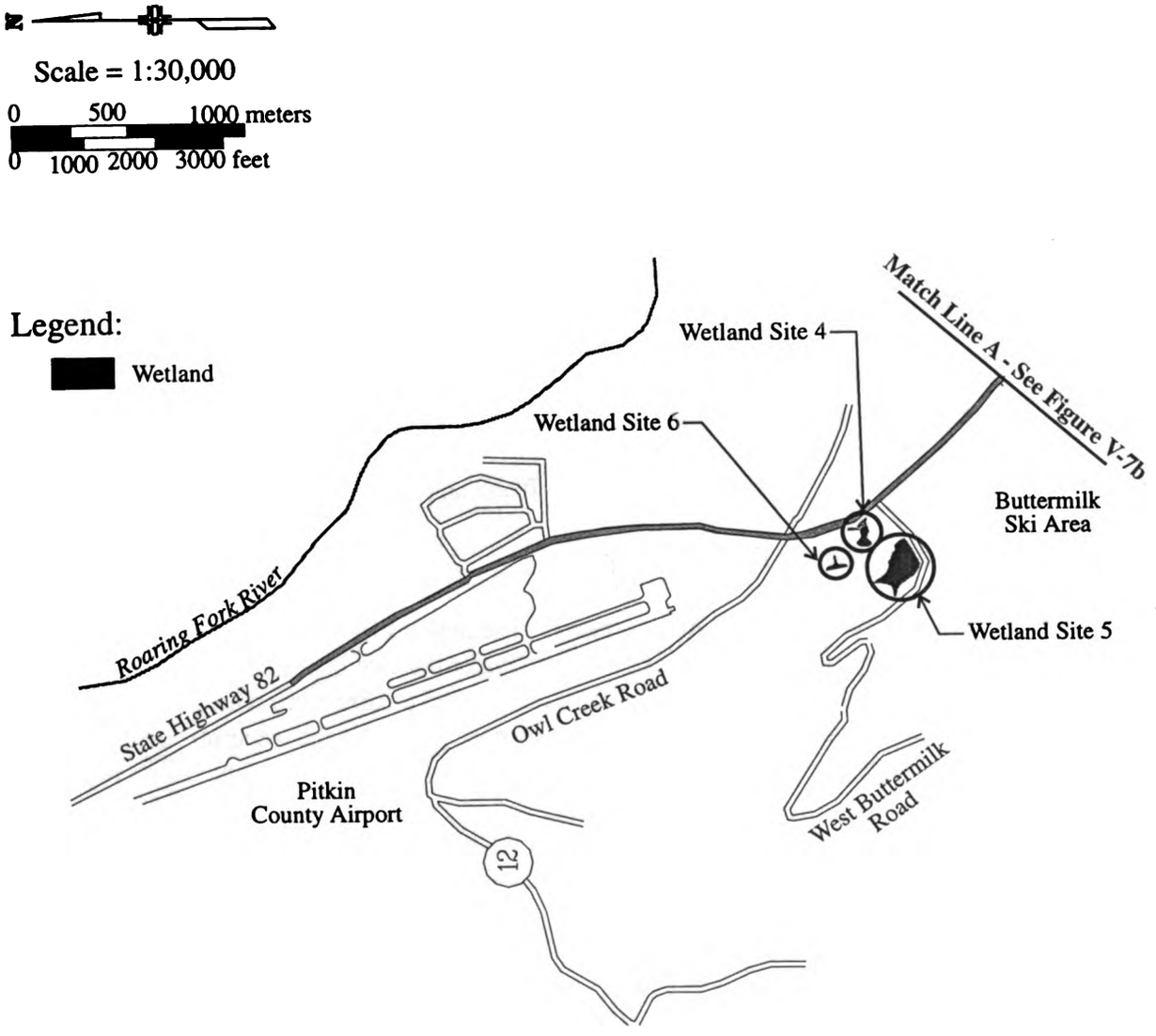

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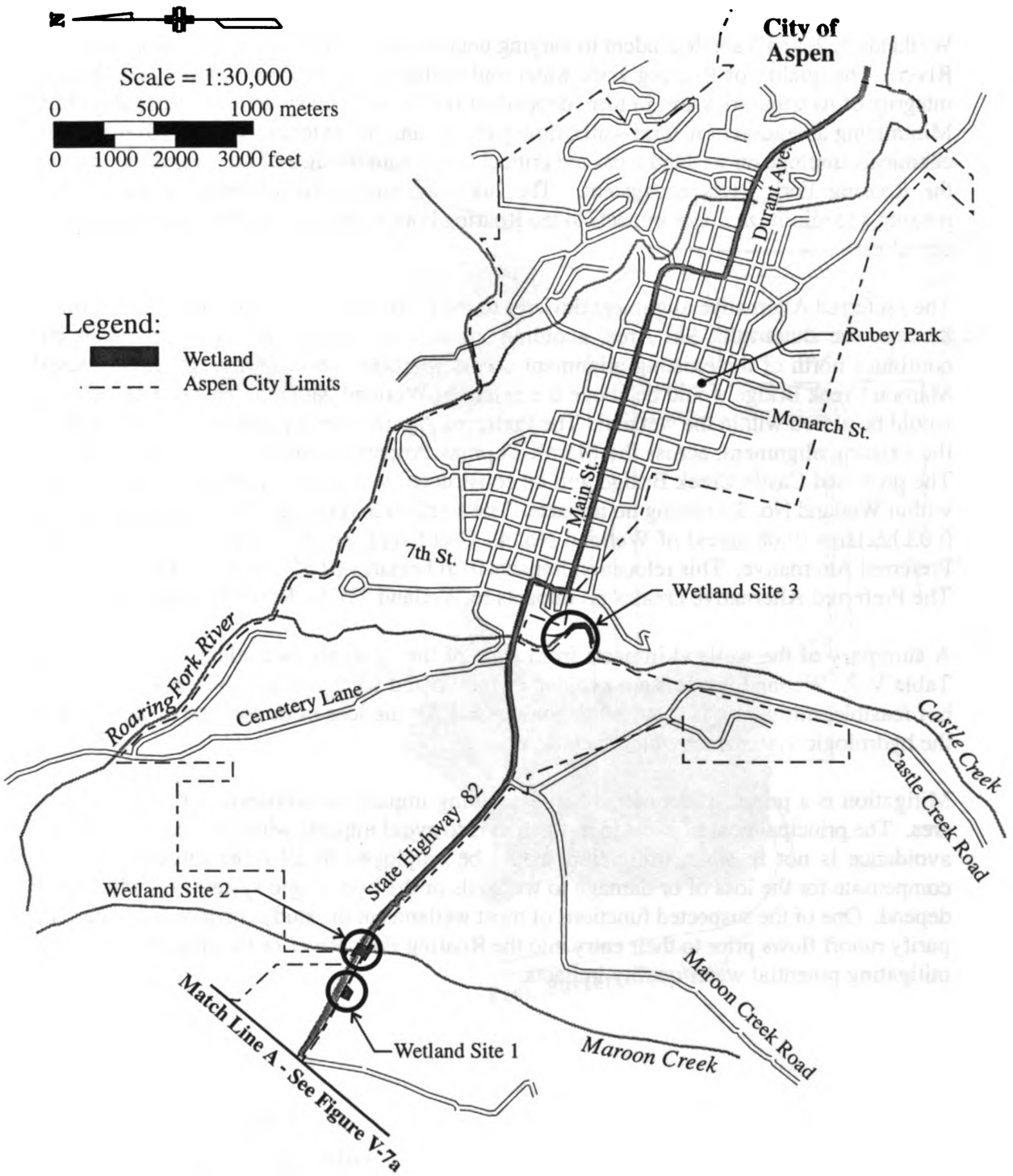
Figure V-7b
State Highway 82 Entrance to Aspen FEIS
Wetland Locations



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Increases in chemical and sediment levels (resulting, in part, from unbuffered highway runoff and unchecked erosion) may result in increased water turbidity and decreased oxygen levels, which could smother some wetland plants. Injury to wetland organisms has consequences for all wildlife species dependent on the wetland ecosystems for food and cover.

Wetlands 1, 2, and 3 are dependent to varying degrees on water flowing to the Roaring Fork River. The quality of Roaring Fork water and maintenance of flow volume and channel integrity of its tributaries are, in turn, dependent on the wetland systems associated with it. Minimizing alteration of natural water flow patterns and the extent to which sediments and chemicals impinge on wetland areas are critical to the maintenance of the overall balance of the Roaring Fork River ecosystem. The highway improvements under study include measures to minimize major impacts to the Roaring Fork River and its tributaries in the study corridor.

The Preferred Alternative alignment deviates to the north side of the existing State Highway 82 near the Buttermilk Ski Area, avoiding impacts to Wetland No. 1. The alignment continues north of the existing alignment across Maroon Creek. Although the proposed Maroon Creek Bridge would be above the extent of Wetland No. 2, at least one bridge pier would be placed within the wetland. The Preferred Alternative alignment deviates south of the existing alignment, across the Marolt-Thomas Property, connecting with Main Street. The proposed Castle Creek Bridge will be constructed to avoid placement of a bridge pier within Wetland No. 3, creating no impacts. The south-side running LRT creates impacts to 0.03 hectares (0.08 acres) of Wetland No. 4. Owl Creek Road is relocated as part of the Preferred Alternative. This relocation impacts 0.26 hectares (0.65 acres) of Wetland No. 5. The Preferred Alternative creates no impacts to Wetland No. 6. Refer to Figure V-8.

A summary of the wetland impacts from each of the alternatives evaluated are shown in Table V-7. Wetland impacts are avoided or minimized wherever feasible. If avoidance is not feasible, mitigation is required to compensate for the loss of or damage to wetlands or the hydrologic systems on which they depend.

Mitigation is a principal concern when evaluating impacts to wetlands within the project area. The principal goal of wetland mitigation is to avoid impacts wherever feasible. Where avoidance is not feasible, mitigation would be employed in all other circumstances to compensate for the loss of or damage to wetlands or the hydrologic systems on which they depend. One of the suspected functions of most wetlands in the study corridor is to filter and purify runoff flows prior to their entry into the Roaring Fork River or its tributaries, thereby mitigating potential water quality impacts.

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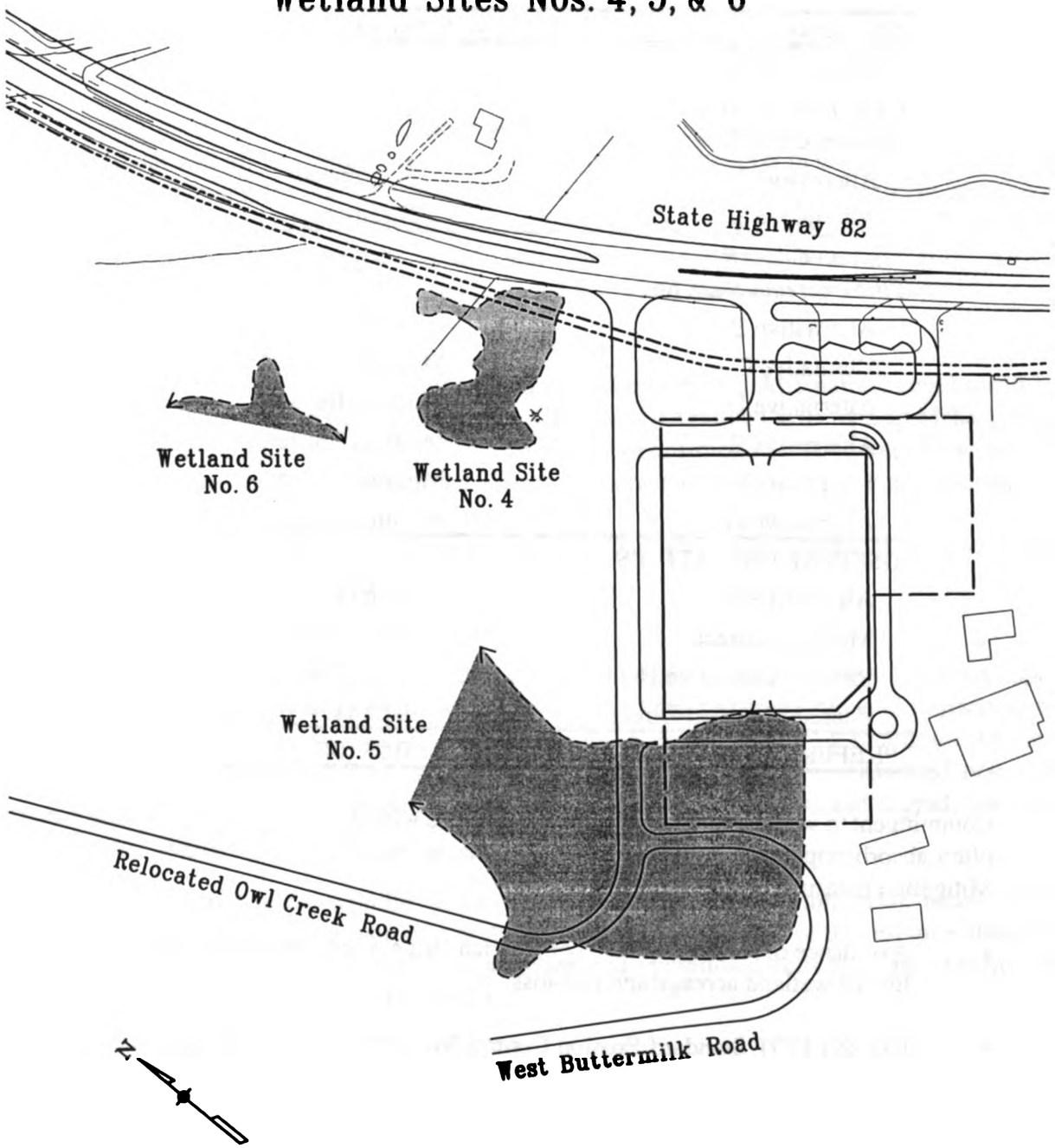
Figure V-8
State Highway 82 Entrance to Aspen FEIS
Wetland Sites Nos. 4, 5, & 6



Scale - 1:3,000

0 50 100 meters

0 100 200 300 feet

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Table V-7
Summary of Wetland Impacts
Hectares (Acres)

Alternative	Total Wetland Impacts
DEIS ALTERNATIVES	
Buttermilk Ski Area to Maroon Creek Road	
Alternative 2	No Impacts
Alternative 3	No Impacts
Maroon Creek Road to 7th Street and Main Street	
Alternative B	No Impacts
Alternative C	Minimal Impacts
Alternative D	Minimal Impacts
Alternative E	Minimal Impacts
Alternative F	Minimal Impacts
Alternative G	Minimal Impacts
DSEIS ALTERNATIVES	
Alternative H	0.56 (1.38)
Modified Direct	0.56 (1.38)
Phased Alternative H	0.58 (1.44)
Phased Modified Direct	0.58 (1.44)
PREFERRED ALTERNATIVE	0.29 (0.73)

Commitment to wetland mitigation measures is made with the realization that wetlands must often absorb impacts to and from other systems, on which they sometimes also depend. Mitigation measures would include:

- Avoidance of wetland systems or riparian strips wherever possible and minimizing loss of wetland acreage and tree loss.

- Use of CDOT Standard Erosion Control Measures to slow sediment and pollutant influx into wetlands including placing erosion hay bales near the foot of fill slopes, mulching fill slopes until revegetation can be achieved, placing erosion bales or rock check dams in ditches and gullies, and setting plastic sheets or mats over wetland vegetation to minimize damage from heavy equipment. Also, the addition of silt fences and geotextile fabric (with a layer of straw and a layer of dirt for protective covering) placed in work areas and detours in wetland. Trees and shrubs in these areas will be cut to ground line but not completely removed.

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- Temporary fencing to protect adjacent wetlands from accidental construction equipment encroachment.
- Storage of equipment and construction materials away from wetland areas.
- No stockpiling of material or staging of equipment or supplies will occur in wetland or riparian areas.
- Wetland mitigation for unavoidable loss.

During the final design phase, there will be continued coordination with a CDOT staff biologist and all reviewing agencies. Individualized mitigation plans will be developed (including quantification of impacts and selection and design of replacement areas) for primary and secondary impacts for each wetland site. During construction, CDOT staff will review primary and secondary wetland and riparian area impacts to assure that temporary disturbances have been repaired and permanent wetland losses have been mitigated.

4e. Fisheries Impacts

Construction of all build alternatives, including the Preferred Alternative, could result in erosion and sedimentation of area streams. CDOT has committed to using Best Management Practices to minimize these potential impacts. Any construction-related impacts would be short-term and localized, and are not expected to adversely impact fishery populations.

Normal day-to-day traffic operations would not adversely affect fisheries in or near the project area.

4f. Wildlife Impacts

Potential impacts to wildlife could occur through direct and indirect impacts of construction, operation, and maintenance of State Highway 82. Potential environmental impacts were analyzed by identifying wildlife resources in the project area and by noting the species' sensitivity to proposed disturbances. Impact analysis for wildlife considered potential positive and negative short- and long-term impacts from habitat loss and degradation, and noise from construction.

Impact magnitude for wildlife was evaluated based on legal, commercial, recreational, ecological, or scientific importance of the resource; the proportion of the resource affected; the sensitivity of the resource to construction and operational activities; and duration or ecological consequences of the impact.

Construction of the Preferred Alternative or any of the build alternatives would affect wildlife through permanent habitat loss or alteration and through temporary disturbance from noise and human presence. Construction of the existing alignment alternative would adversely affect less wildlife habitat than the modified direct alignment alternatives (Preferred Alternative), whereas, the couplet alignment will affect the most wildlife. However, due to the already disturbed nature of the project area, impacts from all alternatives would be minimal. Noise and ground-clearing activities would temporarily displace wildlife from the habitat in the immediate vicinity of construction, with some wildlife possibly returning to nearby habitat after construction is completed. Smaller, less mobile species and those seeking refuge in burrows

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could inadvertently be killed during construction activities; however, adverse impacts to populations are expected to be negligible.

Since the proposed project would be located close to the present highway right-of-way, operation activities from the Preferred Alternative would result in similar impacts to wildlife as do the current conditions. Negative impacts are not expected to result in more than minimal affects on wildlife populations.

4g. Impacts on Wild and Scenic Rivers

After consulting with the United States Forest Service Aspen District Ranger office, it has been determined that the Roaring Fork River is not designated as a Wild and Scenic River and no plans exist for this designation in the future. Therefore, there are no impacts to Wild and Scenic Rivers.

4h. Floodplain Impacts

The proposed Maroon Creek Bridge is located approximately 180 meters (55 feet) (centerline to centerline) north of the existing Maroon Creek Bridge, which is outside of the designated floodplain. The proposed Castle Creek Bridges would be constructed over the Castle Creek floodplain.

Both bridges under consideration would provide adequate separation between the bottom of the bridge structure and the 100-year water surface. The existing crossings in the study corridor span the 100-year floodplain due to natural topography. The 100-year flood frequency was considered when selecting the proposed bridge locations -- even though design for the 50-year storm is the minimum requirement for rural highways -- to avoid encroachment on natural and beneficial floodplain values. The design of all major and minor structures will adhere to local and CDOT drainage criteria. The location of piers within the 100-year floodplain for the Maroon Creek crossing is expected to have only a minor impact on the 100-year water surface. Buried riprap will be provided as protection for the bridge piers. Bridge piers for the Castle Creek Bridge will be placed above and outside the 100-year floodplain, and riprap protection will not be necessary.

Significant encroachments on channels have been avoided for the two crossings within the study corridor. The design of bridges and roadway embankments has sought to minimize impacts to floodplains in compliance with FHWA requirements and Executive Order (EO) 11988. The bridges under consideration for the Preferred Alternative span the low water river channel and have abutments outside of the 100-year floodplain. Impacts to floodplains are expected to be minor, as the bridge impacts are limited to the portion of the floodplain directly adjacent to the stream crossing. Temporary impacts are expected to occur during construction of bridges, especially in the placement of buried riprap. All disturbed areas of riprap would be revegetated with native vegetation.

4i. Impacts on Threatened and Endangered Species

In compliance with the Endangered Species Act (ESA) of 1973, the impacts to species that are considered rare, threatened, or endangered in the proposed project area are evaluated.

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Bald Eagle - Removal of any large cottonwoods within the project area may reduce the number of potential roosting sites for the bald eagles. Since roost trees are not known to exist in the project area, impacts to wintering bald eagles are not expected to occur. Due to the distance between the active but unsuccessful eagle nest more than 40 kilometers (24.9 miles) north of the project area, nesting eagles are not expected to be adversely affected by the Preferred Alternative.

Mexican Spotted Owl - Due to the lack of appropriate Mexican spotted owl habitat in the project area, this species is not expected to be adversely affected by the Preferred Alternative. The United States Fish and Wildlife Service (USFWS) issued a December 16, 1993 letter to CDOT allowing for expansion of State Highway 82 without conducting owl surveys.

North American Lynx - Due to the lack of appropriate lynx habitat in the project area, this species is not expected to be adversely affected by the Preferred Alternative.

North American Wolverine - Due to the lack of appropriate wolverine habitat in the project area, this species is not expected to occur within the project area, or be adversely affected by the Preferred Alternative.

Northern Goshawk - It is not known whether any goshawk nests occur in the project area. Considering that this species is intolerant of human disturbance near the nest, however, it is unlikely that goshawks are nesting in the already disturbed project area. Although appropriate habitat exists in the project area, no goshawks were observed or heard during the 3-day survey. Potential goshawk habitat in the study area is small in size, isolated from larger habitat tracts, and subject to noise and other disturbance from local construction and other human activities. This species is therefore, not expected to be adversely affected by the Preferred Alternative.

Loggerhead Shrike - Since the loggerhead shrike is an uncommon migrant through the project area, this species is not expected to be adversely affected by the Preferred Alternative.

Colorado Cutthroat Trout - Since there are no populations of Colorado cutthroat trout in Castle Creek, Maroon Creek, or this part of the Roaring Fork River, this species is not expected to be adversely affected by the Preferred Alternative.

Boreal Toad - Due to the lack of appropriate boreal toad habitat in the project area, this species is not expected to be adversely affected by the Preferred Alternative.

Communities of Special Concern - The one subject of concern noted by the Colorado Natural Heritage Program was the montane riparian forest at State Highway 82 and Brush Creek Road. It, however, is located outside of the area of disturbance; therefore, no adverse impacts are expected to occur from the Preferred Alternative.

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4j. Impacts on Historic Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, applies to the historic properties listed on or eligible for listing on the National Register of Historic Places that may be impacted by this project. Additionally, locally designated historic properties located within the project are also considered in the EIS. The Aspen Historic Preservation Commission has provided comments for this project and the impacts to historic resources at the request of the State Preservation Historic Officer (SHPO). Copies of these comments are included in **Volume 2: Comments and Coordination** of the FEIS. Figure V-9 shows the locations of the historic resources within the project corridor.

The following impacts to historic resources located within the project area are described below.

Maroon Creek Bridge: Under Alternative 1 (No-Action) there would be no direct impact to the historic Maroon Creek Bridge. Under the DEIS build alternatives crossing Maroon Creek Bridge, the bridge would stay in place and a new bridge would be built to the north of the existing. For the DSEIS alternatives, a new bridge would be built to the south of the existing. For the Preferred Alternative, a new bridge would be constructed 15 meters (55 feet) (centerline to centerline) to the north of the existing bridge. At its closest point, the edge of the new bridge is 4.6 meters (15 feet) from the edge of the modified bridge. The new bridge would be 210 meters (680 feet) in length and would curve toward the historic bridge on the east side. The centerline on the existing bridge will be removed, and the LRT will travel on the historic bridge.

The SHPO has determined that there would be no adverse effect to the historic bridge under the Preferred Alternative because the historic bridge will remain in place. Adaptive reuse as a pedestrian or transit crossing of Maroon Creek does not constitute a significant impact because neither of these uses would substantially impair the integrity of the historic resource.

Holden Smelting and Milling Complex: Alternative A (No-Action) and B, (Existing Alignment) would have no direct impacts to the historic Holden Smelting and Milling Complex. Alternatives C, D, E, F, G, and all DSEIS alternatives would traverse the property and have a direct impact on the historic resource. Under the request of SHPO, the Preferred Alternative alignment has been shifted to the north as far as feasible. In addition to the shift, a berm is proposed, between the historic site and the highway. The combination of these two will minimize the impacts to the Holden Smelting and Milling Complex.

The total take under the Preferred Alternative would be approximately 0.02 hectares (0.05 acres) of the historic site (included in the Marolt-Thomas open space land) for construction. Although no buildings would be removed, areas of the site where industrial debris of archaeological interest could be located would be disturbed by the new roadway. The proposed edge of LRT platform passes within 50 meters (165 feet) of the museum, 97 meters (320 feet) of the Marolt House, and 85 meters (280 feet) of the Salt Warehouse. The edge of the right-of-way width extends to within 40 meters (130 feet) of the museum, 85 meters (280 feet) of the Marolt House, and 67 meters (220 feet) of the Salt Warehouse.

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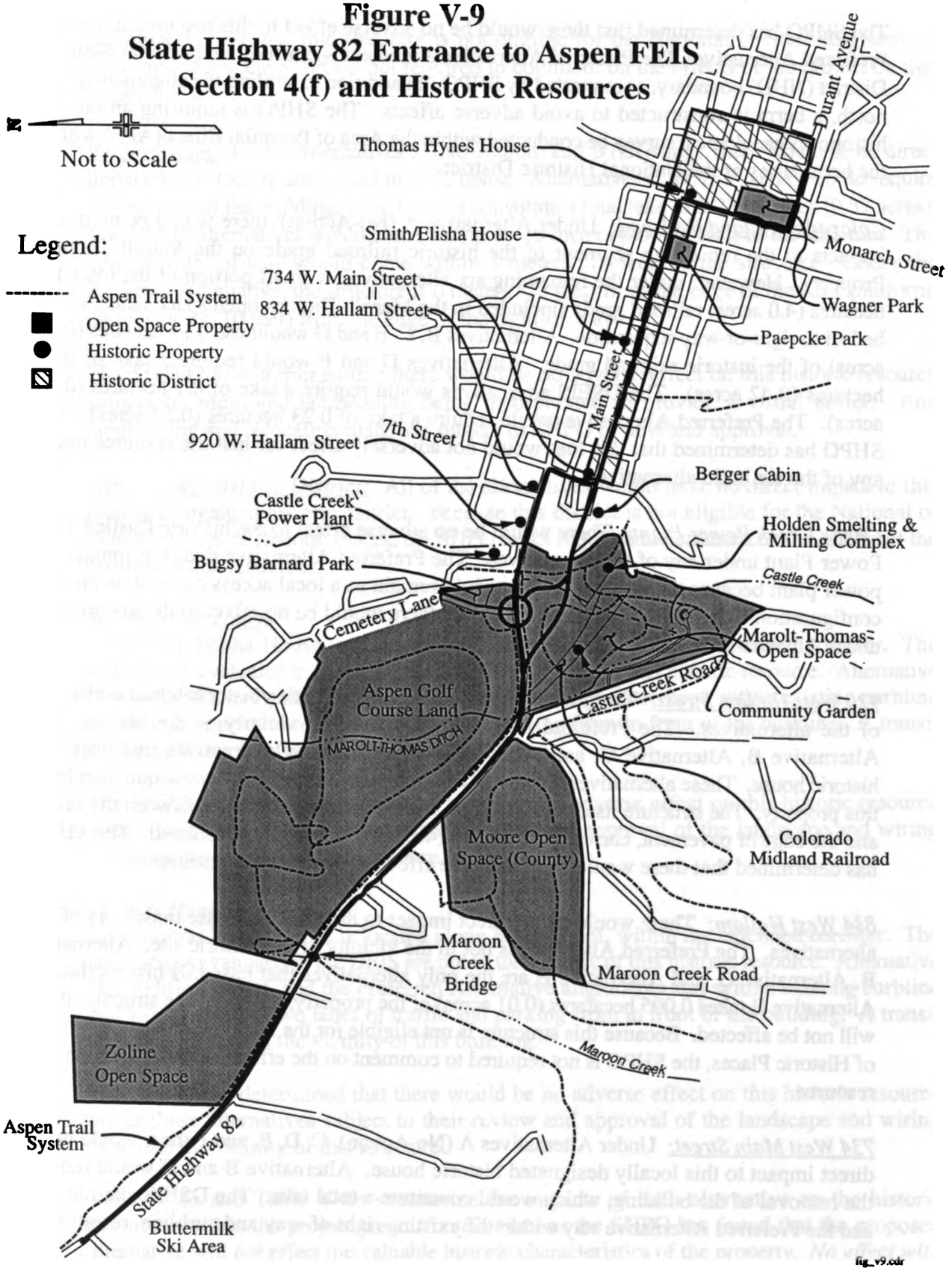
Figure V-9
State Highway 82 Entrance to Aspen FEIS
Section 4(f) and Historic Resources



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The SHPO has determined that there would be no adverse effect to this resource under the Preferred Alternative. The Preferred Alternative alignment is north of the National Historic District (NHD) boundary, as requested by SHPO. In addition to shifting the alignment to the north, a berm is constructed to avoid adverse affects. The SHPO is requiring an on-site historic archaeological survey be conducted within the Area of Potential Effect (APE) within the boundaries of the National Historic District.

Colorado Midland Railroad: Under Alternative A (No-Action), there would be no direct impacts to the remaining segment of the historic railroad grade on the Marolt-Thomas Property. However, under the remaining six alternatives, a small portion of the total 1.6 hectares (4.0 acres) railroad grade (included in the Marolt-Thomas open space land) would be lost to right-of-way acquisition. Alternatives B, C, E and G would use 0.13 hectares (0.32 acres) of the historic railroad grade. Alternatives D and F would require a take of 0.17 hectares (0.42 acres). The DSEIS alternatives would require a take of 0.1 hectares (0.25 acres). The Preferred Alternative would require a take of 0.23 hectares (0.57 acres). The SHPO has determined that this loss would not adversely affect the historic resource under any of the six build alternatives.

Castle Creek Power Plant: There would be no adverse affect to the historic Castle Creek Power Plant under any of the alternatives. The Preferred Alternative does not impact the power plant because the existing bridge would remain as a local access route in its present configuration. The SHPO has determined that there would be no effect to the historic site under Alternative B.

920 West Hallam Street: There would be no direct impact to this historic house under any of the alternatives. The Preferred Alterntive is not in the vicinity of the historic site. Alternative B, Alternative G, and Alternative H are the only alternatives that pass this historic house. These alternatives, however, would not require right-of-way acquisition from this property. The structure itself would not be affected, and the distance between the house and the edge of pavement, currently 12 meters (40 feet), would not be reduced. The SHPO has determined that there would be no adverse effect on this historic resource.

834 West Hallam: There would be no direct impact to this historic house under any of the alternatives. The Preferred Alterntive is not in the vicinity of the historic site. Alternative B, Alternative G, and Alternative H are the only alternatives that pass this historic house. Alternative B takes 0.005 hecatares (0.01 acres) of the property, however, the structure itself will not be affected. Because this structure is not eligible for the National or State Registers of Historic Places, the SHPO is not required to comment on the effects of the project on this resource.

734 West Main Street: Under Alternatives A (No-Action), C, D, E, and F there would be no direct impact to this locally designated historic house. Alternative B and G would require the removal of the building, which would constitute a total take. The DSEIS alternatives, and the Preferred Alternative stay within the existing right-of-way and curbline, resulting in

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no impacts. Because this structure is not eligible for the National or State Registers of Historic Places, the SHPO is not required to comment on the effects of the project on this resource.

Berger Cabin: Under Alternatives A (No-Action) and B (Existing), there would be no direct impact to this locally designated historic house. Alternatives C, D, E, F, and G would require the removal of the building, which would constitute a total take of 0.23 hectares (0.57 acres). The DSEIS alternatives would come within 6 - 10 meters (20 - 30 feet) of the structure. The edge of right-of-way would come within 3 meters (10 feet) of the structure. Under the Preferred Alternative, the structure is 6 meters (20 feet) from the edge of the LRT platform, and 3 meters (10 feet) from the edge of the right-of-way.

The SHPO has determined that there would be no adverse effect on this historic resource subject to additional landscaping being incorporated to provide a visual buffer. Any landscaping and relocation plans are subject to SHPO review and approval.

Main Street Historic District: All of the alternatives would have no direct impact to this locally designated historic district. Because this district is not eligible for the National or State Registers of Historic Places, the SHPO is not required to comment on the effects of the project on this resource.

Smith/Elisha House
The Smith/Elisha House is located along Main Street, within the extended corridor. The alternatives evaluated in the DEIS are not in the vicinity of this historic resource. Alternative H, Modified Direct, and the Preferred Alternative alignment stays within existing curbline and would remove two lanes of traffic and parking from in front of the building. A transit station is located in the vicinity of this building.

The SHPO has determined that there would be no adverse effect on this historic resource under these alternatives subject to their review and approval of the landscape and wiring design in the vicinity of this structure.

Thomas Hynes House
The Thomas Hynes House is located along Main Street, within the extended corridor. The alternatives evaluated in the DEIS are not in the vicinity of this historic resource. Alternative H, Modified Direct, and the Preferred Alternative alignments stay within existing curbline and would remove two lanes of traffic and parking from in front of the building. A transit station is located in the vicinity of this building.

The SHPO has determined that there would be no adverse effect on this historic resource under these alternatives subject to their review and approval of the landscape and wiring design in the vicinity of this structure.

Table V-8a and Table V-8b summarize the impacts of each alternative on the historic resources within the project area. *No effect* means the SHPO has found that the proposed alternative will not effect the valuable historic characteristics of the property. *No effect with*

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mitigation means that with specific mitigation, the characteristics that provide the historic value will not be effected. N/A (not applicable) refers to historic properties that are not located in the vicinity of the respective alternative.

4k. Impacts on Archaeological Resources

Review of previous studies and the files of the Office of Archaeology and Historic Preservation in addition to limited field investigations indicate that there will be no effect on significant archaeological resources in the Entrance to Aspen corridor.

When the preferred alignment is surveyed and staked, it will be compared to the alignments studied in 1974 by the CDOT staff archaeologist. If any inconsistencies between the 1974 survey and the alignment which is to be constructed are evident, on-the-ground reconnaissance will be conducted as necessary to document that the final highway alignment has been adequately evaluated and that no archaeological resources will be adversely affected.

4l. Impacts on Paleontological Resources

No potential impacts on paleontological resources have been identified in the Entrance to Aspen corridor. In the event that paleontological resources are uncovered anywhere along the alignment corridor during construction, work in the immediate vicinity will cease. The staff paleontologist of the Colorado Department of Transportation will be notified, and the material will be evaluated by a qualified paleontologist.

4m. Section 4(f) Resources Impacts

Section 4(f) resources include lands from publicly owned parks or recreation areas and historic sites listed on or eligible for the National Register of Historic Places. Transportation projects may not be approved by the U.S. Department of Transportation unless there is no prudent and feasible alternative to using that land and the project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site.

In the proposed project area 16 properties are potentially subject to Section 4(f) review (Figure V-10). These properties include the Aspen Trail System, the Zoline Ranch Open Space, Aspen City Golf Course, the Moore Property Open Space, the Marolt-Thomas Open Space, Bugsy Barnard Park, Maroon Creek Bridge, the Holden Smelting and Milling Complex, the Colorado Midland Railroad, the Castle Creek Power Plant, 920 West Hallam, the Berger Cabin, Main Street Historic District, Smith/Elisha House, Thomas Hynes House, Paepcke Park, and Wagner Park.

Please refer to **Appendix A: Section 4(f) Resources Evaluation** for a complete discussion of the Section 4(f) Resources and potential impacts of the proposed alternatives.

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Table V-8a
Impacts to Historic Resources for the DEIS Alternatives

Historic Resource	*Project Corridor Section*							
	Buttermilk to Maroon Creek Road		*Maroon Creek Road to 7th and Main Street*					
	Alternative							
	2	*3*	*B*	*C*	*D*	*E*	*F*	*G*
1) Maroon Creek Bridge	Visual Impact	Visual Impact	N/A	N/A	N/A	N/A	N/A	N/A
2) Holden Smelting & Milling Complex	N/A	N/A	N/A	0.22 ha (0.54 ac) potential historic archaeology and visual impacts	0.30 ha (0.74 ac) potential historic archaeology and visual impacts	0.22 ha (0.54 ac) potential historic archaeology and visual impacts	0.30 ha (0.74 ac) potential historic archaeology and visual impacts	0.13 ha (0.32 ac) potential historic archaeology and visual impacts
3) Colorado Midland Railroad 1.6 ha (4.0 ac) included in #5 above	N/A	N/A	0.13 ha (0.32 ac)	0.13 ha (0.32 ac)	0.17 ha (0.42 ac)	0.13 ha (0.32 ac)	0.17 ha (0.42 ac)	0.13 ac (0.32 ac)
4) Castle Creek Power Plant 0.6 ha (1.5 ac)	N/A	N/A	No Impact	N/A	N/A	N/A	N/A	No Effect
5) 920 Hallam St. 0.1 ha (0.2 ac)	N/A	N/A	No Effect w/ Mitigation	N/A	N/A	N/A	N/A	No Effect
6) 834 W. Hallam	N/A	N/A	.005 ha (.01 ac) (510 sq. ft.)	N/A	N/A	N/A	N/A	No Effect w/ Mitigation
7) 734 W. Main St. .06 ha (.14 ac)	N/A	N/A	.06 ha (.14 ac)*	N/A	N/A	N/A	N/A	.06 ha (.14 ac)*
8) Berger Cabin	N/A	N/A	N/A	.23 ha* (.57 ac)	.23 ha* (.57 ac)	.23 ha* (.57 ac)	.23 ha* (.57 ac)	.23 ha* (.57 ac)

* *Requires removal of the building*

Notes: 1 hectare (ha) = 2.471 acres (ac), 1 meter (m) = 3.281 feet (ft)
For the DEIS Alternatives, an alternative from Buttermilk Ski Area to Maroon Creek Road must be combined with an alternative from Maroon Creek Road to 7th Street and Main Street to make one complete alternative.

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Table V-8b
Impacts to Historic Resources for the DSEIS Alternatives and Preferred Alternative

Historic Resource	Alternative H	Modified Direct	Phased Alternative H	Phased Modified Direct	Preferred Alternative
1) Maroon Creek Bridge	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation
2) Holden Smelting and Milling Complex 3.2 ha (8.0 ac)	0.08 ha (0.20 ac) No adverse effect with mitigation	0.17 ha (0.42 ac) No adverse effect with mitigation	0.08 ha (0.20 ac) No adverse effect with mitigation	0.17 ha (0.43 ac) No adverse effect with mitigation	0.02ha (0.05ac) No adverse effect with mitigation
3) Colorado Midland Railroad 1.6 ha (4.0 ac)	0.10 ha (0.25 ac) No adverse effect	0.10 ha (0.25 ac) No adverse effect	0.10 ha (0.25 ac) No adverse effect	0.10 ha (0.25 ac) No adverse effect	0.22 ha (0.54 ac) No adverse effect
4) Castle Creek Power Plant 0.6 ha (1.5 ac)	No effect	No effect	No effect	No effect	No effect
5) 920 West Hallam Street 0.1 ha (0.2 ac)	No adverse effect with mitigation	N/A	No adverse effect with mitigation	N/A	N/A
6) 834 West Hallam Street	No effect	N/A	No effect	N/A	N/A
7) 734 West Main Street 0.06 ha (0.14 ac)	No effect	No effect	No effect	No effect	No effect
8) Berger Cabin 0.23 ha (0.57 ac)	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No effect with mitigation
9) Main Street Historic District	No effect	No effect	No effect	No effect	No effect
10) Smith/Elisha House	No adverse effect	No adverse effect	No adverse effect	No adverse effect	No adverse effect
11) Thomas Hynes House	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation	No adverse effect with mitigation

Note: After the release of the DEIS, the Berger Cabin has been determined by SHPO as a structure eligible for listing on the National Register, therefore, it is included in the historic resources analysis.
The extended corridor (DSEIS and the Preferred Alternatives) includes 3 additional historic resources than the DEIS Corridor.

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4n. Farmland Impacts

The "Important Farmland Inventory," Soil Conservation Service (now the National Resources Conservation Service), U.S. Department of Agriculture, October 1982, indicates that no prime farmland, as defined by the Soil Conservation Service, exists within Pitkin County. This determination is based on the short growing season and low temperatures encountered in the mountain counties of Colorado. Potential impacts to lands not identified as prime or unique by the Farmland Protection Policy Act of 1971 (7 U.S.C. 420 et. seq.) were identified for the study corridor. These include irrigated hay meadows, which are classified as "irrigated lands not prime" and are thus considered Farmlands of Statewide Importance, land designated by Pitkin County as Valued Agricultural Land (designated by the Farmland Protection Policy Act as "farmland other than prime or unique that is of local importance"), and other agricultural land. The Soil Conservation Service determined that these farmlands should not be included in the Farmland Conversion Impact Rating (Form AD 1006) as they do not meet the criteria of the Farmland Protection Policy Act.

No Valued Agricultural Lands, as classified by Pitkin County, have been identified in the Entrance to Aspen study corridor, and there are no Farmlands of Statewide Importance. Therefore, this project will have no impact on classified farmlands and a Form AD 1006 is not required.

Other agricultural lands not purchased for right-of-way may be subject to access modifications, but access will be maintained to all properties not purchased. Impacts to existing irrigation systems due to highway construction will be temporary and completed out of irrigation season as much as possible. All irrigation systems impacted will be relocated and replaced during the State Highway 82 construction projects.

4o. Noise and Vibration Impacts

Noise - A noise study was conducted for the Entrance to Aspen alternatives. The assessment identified noise-sensitive receptors based on existing and predicted noise levels. The noise generated by highway traffic was prepared in accordance with 23 CFR 772, Code of Federal Regulations, and the noise generated by the LRT was prepared in accordance with the United States Department of Transportation's (USDOT) Transit Noise and Vibration Assessment. Since noise levels are sensitive to distances from roadways and relative elevations, further noise assessment will be done during preliminary and final design to determine locations and heights for constructed noise barriers. The purpose of this assessment is to compare the noise impacts for receivers versus established criteria and to estimate if effective noise mitigation can be provided.

FHWA's maximum noise level allowed is 67 decibels (dBA) for residential/recreational areas and 72 dBA for commercial districts. Colorado defines a noise impact as being 1 dBA below the noise abatement criteria, and mitigation must be evaluated for receivers at or above 66 dBA for residential/recreational areas and 71 dBA for commercial areas. An increase of 10 or more dBA from the existing noise levels is also considered an impact in which mitigation must be evaluated.

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The existing noise at each receiver was determined either by field measurements or using the STAMINA 2.0 computer model. This model is based on the FHWA method for predicting noise generated by constant speed traffic.

Existing noise levels along the current alignment are near or above 67 dBA at most of the residences and businesses facing the roadway. Current noise levels along the proposed modified direct alignment are generally below 60 dBA. Noise levels further into the City of Aspen are generally below 64 dBA.

The noise levels under the DEIS alternatives are entirely generated from highway traffic. The DSEIS Alternatives and the Preferred Alternative generate noise from three sources -- fixed guideway source (LRT), highway/transit source (vehicles), and stationary source (transit stations). Where there were more than one source, each of the sources were logarithmically added together to get the overall noise level at each receiver. The inputs to the analysis include the speed of both the vehicles and the LRT, the traffic volume, the frequency of the LRT, the distance between the receivers and the highway, the type of LRT, the location of the LRT stations, and whether there are any noise barriers such as fences present. The receiver locations are intended to represent individual or close groups of residences or businesses. Figure V-10 shows the locations of the receivers analyzed. In addition to the receivers in the figure, the Inn at Aspen located at MP 38.6 (receiver 4), Pomegranate Condos located at MP 39.0 (receiver 3), The Kingdom Hall of Jehovah's Witnesses located at MP 39.4 (receiver A), and the Aspen Tennis Club located at MP 39.4 (receiver B) were also analyzed.

For the DEIS alternative analysis, Alternative B (S-curves) impacts receivers 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18, and 19. Alternatives C, D, E, and F (modified direct alignment) impact receivers 14, 16, 17, 18, 19, and 20. Alternative G impacts receivers 5, 6, 7, 8, 9, 10, 12, 13, 14, 18, and 19.

Based on the DSEIS analysis, receivers 14, 19, 32, 33, 34, and 41 are impacted in both Alternative H and the Modified Direct Alternative, and receivers C and 18 are approaching impact. In addition to these impacts, receivers 15, 16, and 17 in the Modified Direct are approaching impact. Receivers 14 and 19 are impacted in both Phased Alternative H and the Phased Modified Direct.

The Preferred Alternative decreases the noise levels for receivers along the existing S-curves (5, 6, 7, 8, 9, 10, 11, 12, 13) by 6 dBA. This decrease is a result of eliminating the State Highway 82 traffic from the S-curves. The Preferred Alternative impacts receivers 14, 15, 16, 17, 18, 19, 20, 27, 29, 41, 47, 48, and 51. Mitigation measures were modeled for these receivers, and are able to lower the noise levels to those below the noise abatement criteria. Types of mitigation used involve earthen berms, noise walls, quieter warning horn, etc., and will be determined during preliminary and final design.

A summary of all the alternatives and the number of receivers they impacted can be found in Table V-9.

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Table V-9
Projected Impacts to Residential, Recreational, and Commercial for All Alternatives

Alternative	*Number of Residents/Recreational Facilities Impacted*	*Number of Commercial Businesses Impacted*
B	12	0
C	6	0
D	6	0
E	6	0
F	6	0
G	11	0
H*	8	0
Modified Direct*	11	0
Preferred Alternative*	13	3

**These alternatives include a transit corridor that extends to Rubey Park that the others did not.*

A summary of the noise levels at the noise sensitive receivers along the Preferred Alternative alignment is presented in Table V-10a (Residences and Recreational Facilities), and Table V-10b (Businesses). The receivers not shown in either table are not relevant to the Preferred Alternative.

Upon selection of an alignment alternative, Aspen officials will be advised of the results of an updated noise analysis for use in planning and land use decision making.

Construction noise from any future construction must comply with Aspen and Pitkin County ordinances pertaining to construction noise. Fore more information, please see the technical reports ***FEIS Noise and Vibration Report, DSEIS Noise and Vibration Report,*** and ***DEIS Noise Report.***

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Table V-10a
Existing and Projected Noise Levels for Residences and Recreational Facilities
Preferred Alternative (FHWA Criteria - 67 dBA)

Receiver	*Existing*	*2015 LRT*	*2015 LRT w/o horn*	*2015 w/ mitigation*
A	64	64	64	64
B	63	63	63	63
3	62	58	58	58
4	62	62	62	62
14	69	70	69	63
15	59	66	66	58
16	59	68	68	60
17	61	69	69	62
18	66	71	71	64
19	68	73	71	66
20	62	68	68	62
22	62	59	59	59
23	61	70	68	63
24	65	64	64	64
25	63	65	65	65
26	61	65	65	65
31	60	64	64	64
32	60	62	62	62
33	60	67	65	63
34	64	69	64	64
35	61	66	65	65
46	56	69	62	62
53	61	65	63	63

Receiver 28 represents a structure that will be taken due to State Highway 82 improvements, the future noise levels were not projected. Receivers 1, 2, 21, and 30 do not apply to this analysis.
Shaded areas represent receivers requiring mitigation.

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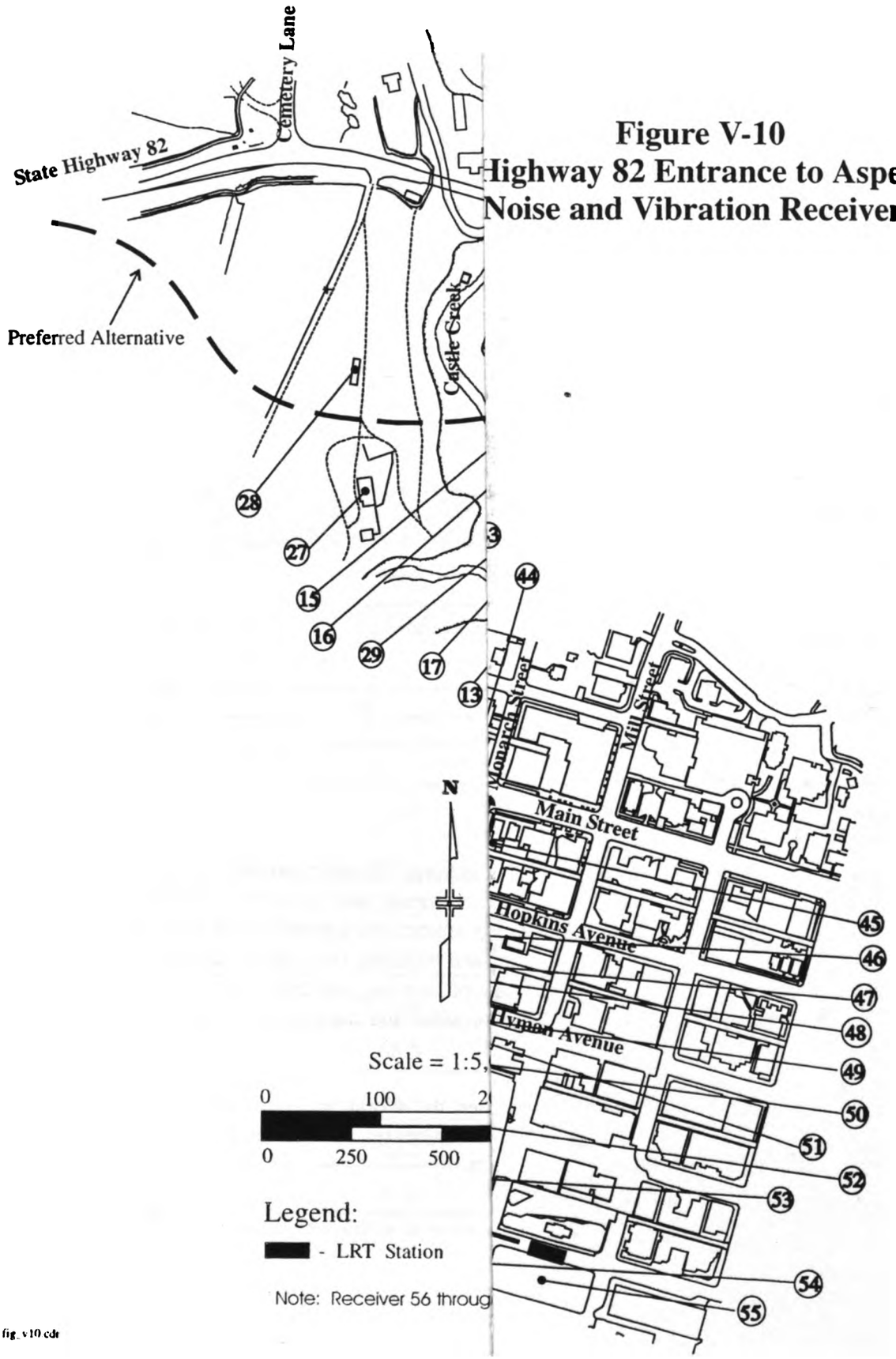

Figure V-10
Highway 82 Entrance to Aspen FEIS
Noise and Vibration Receivers

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Table V-10b
Existing and Projected Noise Levels for
Commercial Districts Preferred Alternative
(FHWA Criteria - 72 dBA)

Receiver	*Existing*	*2015 LRT*	*2015 w/o Horn*	*2015 w/ Mitigation*
36*	76	65	65	65
37	61	64	63	63
38	65	65	65	65
39	61	63	63	63
40*	73	64	64	64
42	64	64	64	64
43	63	65	65	65
44	57	60	60	60
45	61	61	61	61
49	55	63	59	59
50	56	59	59	59
52	54	59	58	58
54	55	64	61	61
55*	70	66	60	60
65	57	59	59	59

* *Receivers 36, 40, and 55 are currently located near bus stops, but are not located near proposed LRT Stations. This accounts for the significant drop in noise level.*

Vibration - A vibration study following the general vibration assessment outlined in the USDOT's ***Transit Noise and Vibration Assessment*** was performed for the Preferred Alternative. The analysis consisted of taking values from a generalized curve of vibration levels as a function of distance from the track and building, making adjustments based upon the track support system, vehicle speed, type of building and track and wheel conditions. Table V-11 shows the distance between the receiver and the LRT tracks, and the vibration level each receiver experiences from the LRT.

A ground-borne vibration impact occurs when the vibration level exceeds 72 Vibration Decibel (Vdb) for residences and 75 Vdb for businesses. Based on the general vibration impact analysis, there are no vibration impacts.

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Table V-11
Vibration Levels

Receiver	*Distance (ft)*	*Vibration (Vdb)*	*Receiver*	*Distance (ft)*	*Vibration (Vdb)*
A	230	54.5	35	50	67.0
B	400	48.5	36	50	67.0
3	230	54.5	37	60	65.5
4	135	60.5	38	45	67.5
14	70	64.5	39	55	66.5
15	100	61.5	40	55	66.5
16	85	63.0	41	40	68.5
17	80	63.5	42	50	67.0
18	80	63.5	43	50	67.0
19	50	67.0	44	55	64.5
20	40	68.5	45	35	67.5
22	55	66.5	46	55	64.5
23	70	64.5	47	55	64.5
24	65	65.0	48	30	68.0
25	55	66.5	49	50	65.0
26	55	66.5	50	55	64.5
27	175	56.0	51	30	68.0
29	30	70.0	52	55	64.5
31	55	66.5	53	25	69.5
32	60	65.5	54	45	66.0
33	80	63.5	55	80	61.5
34	65	65.0	65	55	64.5

Receiver 28 represents a structure that will be taken due to the State Highway 82 improvements, vibration levels for these receivers were not determined.

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4p. Visual Impacts

The State Highway 82 Entrance to Aspen project corridor lies within the Roaring Fork Valley and is visually dominated by natural open space areas and the residential and ski area developments adjacent to the highway. The viewshed from the existing highway extends well beyond the vicinity of the project corridor, with distant mountain peaks, creek valleys and foothills easily visible from the highway. The City of Aspen lies within a valley defined by the land forms of Smuggler Mountain and Shadow Mountain, also easily visible. The unique quality of the view from State Highway 82 into Aspen contributes to the character of the community. The scenic river valley and mountain peaks are views shared by residents and travelers alike. The visual impacts associated with each alternative are discussed below.

The Preferred Alternative

The viewshed from the existing highway west of Maroon Creek Road includes open pastureland and creek valleys contrasted sharply by the distant mountain peaks and rolling foothills.

The visual impact created by the Preferred Alternative is identical for the length of the project corridor, with the exception of Maroon Creek Road to 7th Street and Main Street intersection. The addition of a landscaped median is expected to enhance the resident's and driver's viewing experience. Additionally, the median will reduce the visual scale of the roadway by dividing it in two. The addition of LRT will create a visual disruption within the project corridor in the sense that the hardware required for the operation of the system does not currently exist in the viewshed. The LRT adds a new visual element to the existing landscape and will change the existing visual character of the project corridor. This is in contrast to the addition of pavement width which is not a new visual element in the project corridor. The type of hardware for the LRT system includes items such as overhead wires, catenary poles, and track for the LRT. The visual design of the system may be enhanced throughout the use of aesthetically pleasing hardware where possible.

Catenary poles support the overhead power supply to the LRT vehicles and are placed between the LRT tracks (double tracks) or on the south side of the track (single track). The spacing of the catenary poles is generally about 60 meters (200 feet) in straight sections of track. Depending upon the radius of a curve, the spacing of the catenary poles may be as close as 10-15 meters (20-50 feet). The catenary poles will be used for the length of the project corridor between the LRT Maintenance Facility and the intersection of 7th Street and Main Street.

The character of Main Street is defined by the historic building structures and Victorian-style mountain cottages easily seen from within the project corridor. The view of Main Street is enhanced by the elevation difference between the west end of Main Street and the east end of Main Street. The roadway at the west end is higher in elevation by approximately 6 meters (20 feet) and provides a long scenic view of Main Street as viewed from the west end.

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"Trolley" poles are placed to the outside of the LRT tracks. The trolley poles are generally spaced no farther than 30 meters (100 feet) on straight sections of track. The trolley poles will be used on Main Street, Monarch Street and Durant Avenue to reduce the cross section. Because the trolley poles use span wires across the width of the Main Street cross section, the use of trolley poles will increase the amount of overhead wires visible in the project corridor. The trolley poles are spaced closer together in curves and the amount of overhead wires will increase in these locations. The span wires may be attached to buildings existing light poles or other objects to reduce the visual impact along Main Street. The visual impact of the overhead wires will be most noticeable from a vantage point on the west end of Main Street looking down into Aspen.

The Preferred Alternative will change the character of State Highway 82 between Maroon Creek Road and the intersection of 7th Street and Main Street. From the roadway, the alignment will change the character of State Highway 82 from an urban setting to a more rural setting as compared to the existing alignment. The presence of the catenary poles will disrupt the unobstructed view of the Marolt-Thomas Property from outside the project corridor and from the roadway. The cut and cover tunnel section of the Modified Direct will mitigate some of the impact of the new roadway by hiding it from the residents to the northeast and south of the new alignment. Although the tunnel will not be completely hidden (there will be a slight hump present in the location of the tunnel) it will imitate the existing character of the Marolt-Thomas Property.

Additionally, the modified direct alignment across the Marolt-Thomas Property will change the contrast for viewers away from the roadway. The new roadway alignment and new bridge over Castle Creek may be viewed by the residents of the Villas of Aspen and other homes near 8th Street as a visual intrusion upon space that is currently open. However, if the existing portion of the highway between Maroon Creek Road and the intersection of 7th Street and Main Street is returned to open space as planned, the flow of open space from the Golf Course to the Marolt-Thomas Property will be uninterrupted.

DEIS Alternatives

Alternatives 2, 3, and B

The alignment of these alternatives do not differ significantly from the existing alignment, however, the views of motorists driving on these alternatives will have greater pavement width in the foreground.

Widening the S-curves at 7th Street and Hallam Street, and 7th Street and Main Street under Alternative B will change the view experience for the driver and residents in the immediate vicinity. The viewshed in this area is limited to the immediate foreground and the shape of the roadway itself. The foreground will not change but the shape of the roadway will become smoother in transition around the S-curves. The smoother curvature of the roadway and the hardscaped separation of the sideroads may enhance the driver's viewing experience. The new view for the residents in the immediate vicinity will consist of the existing foreground with changes in the roadway geometry. The widened existing roadway and widened Castle

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Creek Bridge may be seen as a visual intrusion by residents along Hallam Street, 7th Street, and Main Street. The localized nature of these impacts is expected to be offset by the incorporation of landscaping and hardscaping of the roadway edges.

Alternatives C and E - Modified Direct Alignment (At-Grade)
These alternatives will have similar visual impacts as the Preferred Alternative. The difference is instead of the LRT hardware visual, a wider pavement cross-section is viewed. Also, these alternatives cross the Marolt-Thomas Property on the modified direct alignment at grade. The Marolt-Thomas Property is mostly cultivated pasture and brush pasturelands. The flatness of this open space allows distant views to be unobscured by trees or buildings.

Alternatives C and E would change the contrast of this open space for viewers away from the roadway. The new roadway alignment and new bridge over Castle Creek may be viewed by the residents of the Villas of Aspen and other homes near 8th Street and Main Street as a visual intrusion upon space that is currently open. The land form would become discontinuous at the roadway, and the view disrupted.

Alternatives D and F - Modified Direct Alignment (Cut and Cover Tunnel)
The viewshed for Alternatives D and F is similar to the Preferred Alternative. The difference is instead of the LRT hardware visual, a wider pavement cross-section is viewed. These alternatives also include the cut-and-cover, as does the Preferred Alternative. The roadway itself will be at least partially hidden from an outside viewer because the alignment is below the existing grade.

Alternative G - Existing Alignment and Transitway on Modified Direct Alignment
This alternative is a combination of two alignments, the existing alignment and the modified direct alignment. The visual impacts are discussed below with respect to each alignment.

Existing Alignment - Alternative G follows the existing alignment for the general lanes and improves the S-curves to accommodate a design speed of 32 km/h (20 mph). The view from the roadway will not change and no adverse impacts are anticipated.

Modified Direct Alignment - Alternative G crosses the Marolt-Thomas Property on the modified direct alignment. This viewshed of this section of Alternative G is similar to the Preferred Alternative. The difference is the Villas of Aspen views only the transitway and not the highway. The view from the new transitway would become less urban and more rural as compared to the existing alignment. New views of the open space and other landforms will also become available.

The combined effect of the two separate roadway facilities is more than if just one alignment was considered. The separation of the general lanes and transitway eliminates the possibility of returning any portion of the existing roadway to open space. Also there is no opportunity for the open space to be continuous on either side of State Highway 82.

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DSEIS Alternatives

The visual impacts for the Modified Direct Alternative and Phased Modified Direct Alternative are the same as the Preferred Alternative.

Alternative H and Phased Alternative H have similar impacts, the difference is in the section between Maroon Creek Road and the intersection of 7th Street and Main Street. The curves at the Cemetery Lane roundabout and immediately west of the new Castle Creek Bridge will require a significantly closer spacing of the catenary poles. From a vantage point within these curves, the closer spacing may inhibit an unobstructed view of the distant visual qualities of the Aspen area.

The alignment of Alternative H along the west bank of Castle Creek gorge is an impact on the visual character of the Marolt-Thomas Property as viewed by the residents on the east side of the gorge. The topography of the Marolt-Thomas Property slopes gently downward to the edge of the gorge where it drops off rapidly. The topography of the area restricts the ability to berm, lower the vertical profile or otherwise hide the alignment and associated LRT hardware form the residents on the east side of the gorge.

4q. Impacts on Potential Hazardous Waste Sites

Potential hazardous waste sites within 152 meters (500 feet) of the highway construction are noted. This distance was selected as a reasonable limit for investigation in recognition of evidence that hazardous substances can migrate above or below ground from their sources. Hazardous waste impacts were identified by the right-of-way required from each of the potential hazardous waste sites.

During an initial site assessment (ISA) of the Entrance to Aspen corridor, seven properties have been identified as potential hazardous waste sites due to past or present use. These sites include:

- Aspen City Shop (north of milepost [mp 40.1])
- Dooger Diggings (mp 40.1)
- U.S. Forest Service Ranger Station (mp 40.3)
- Holden Smelting & Milling Complex (south of mp 40.1)
- Roaring Fork Transit Authority Maintenance Facility (mp 37.5)
- Pitkin County Airport (between mp 36.5 and mp 38.0)
- Aspen Airport Business Center (mp 40.4)

Their locations are indicated on Figure V-11. A brief description of each site may be found in **Chapter IV. Affected Environment.**

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Figure V-11a
Potential Hazardous Waste Sites
State Highway 82 Entrance to Aspen FEIS

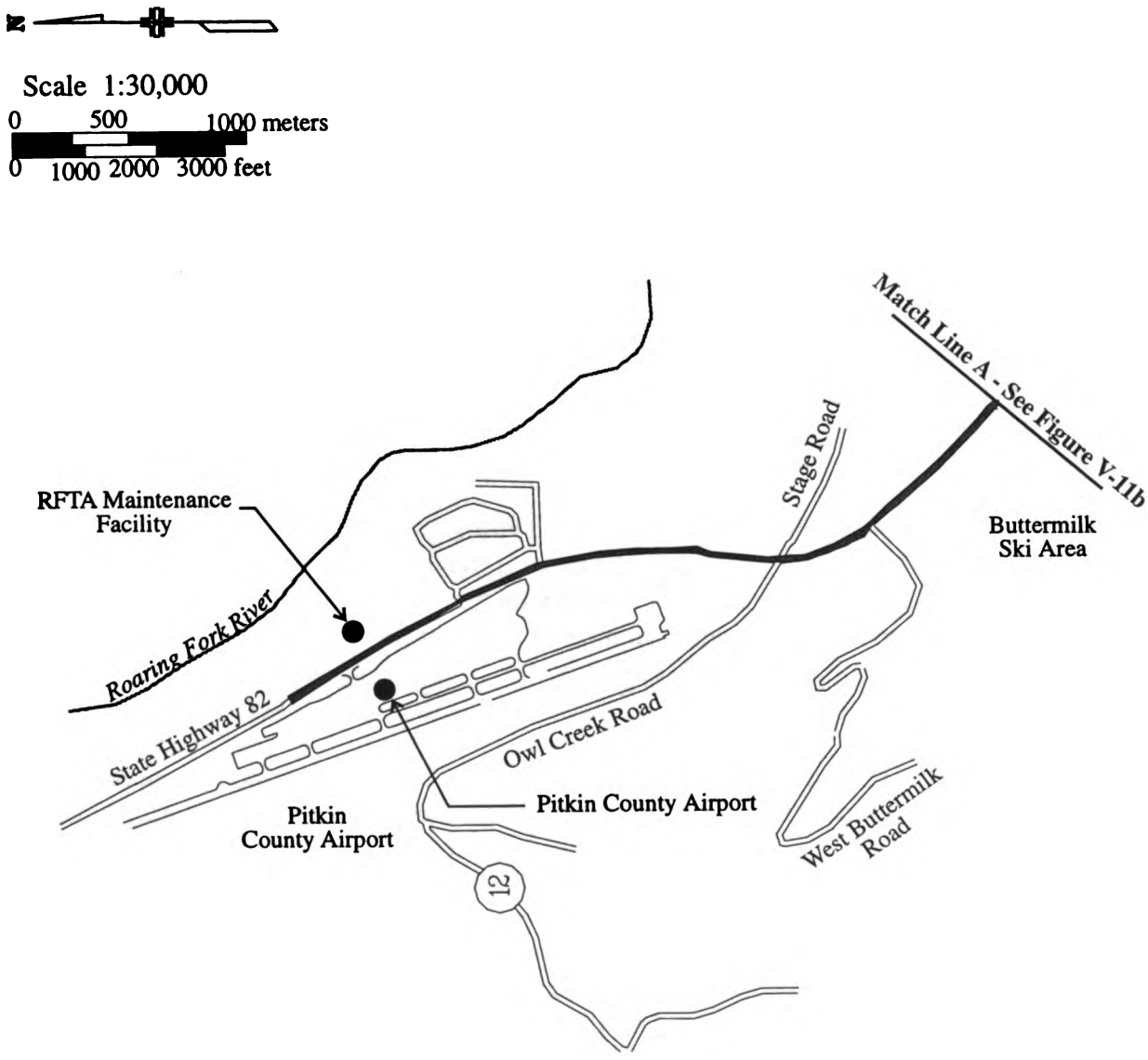

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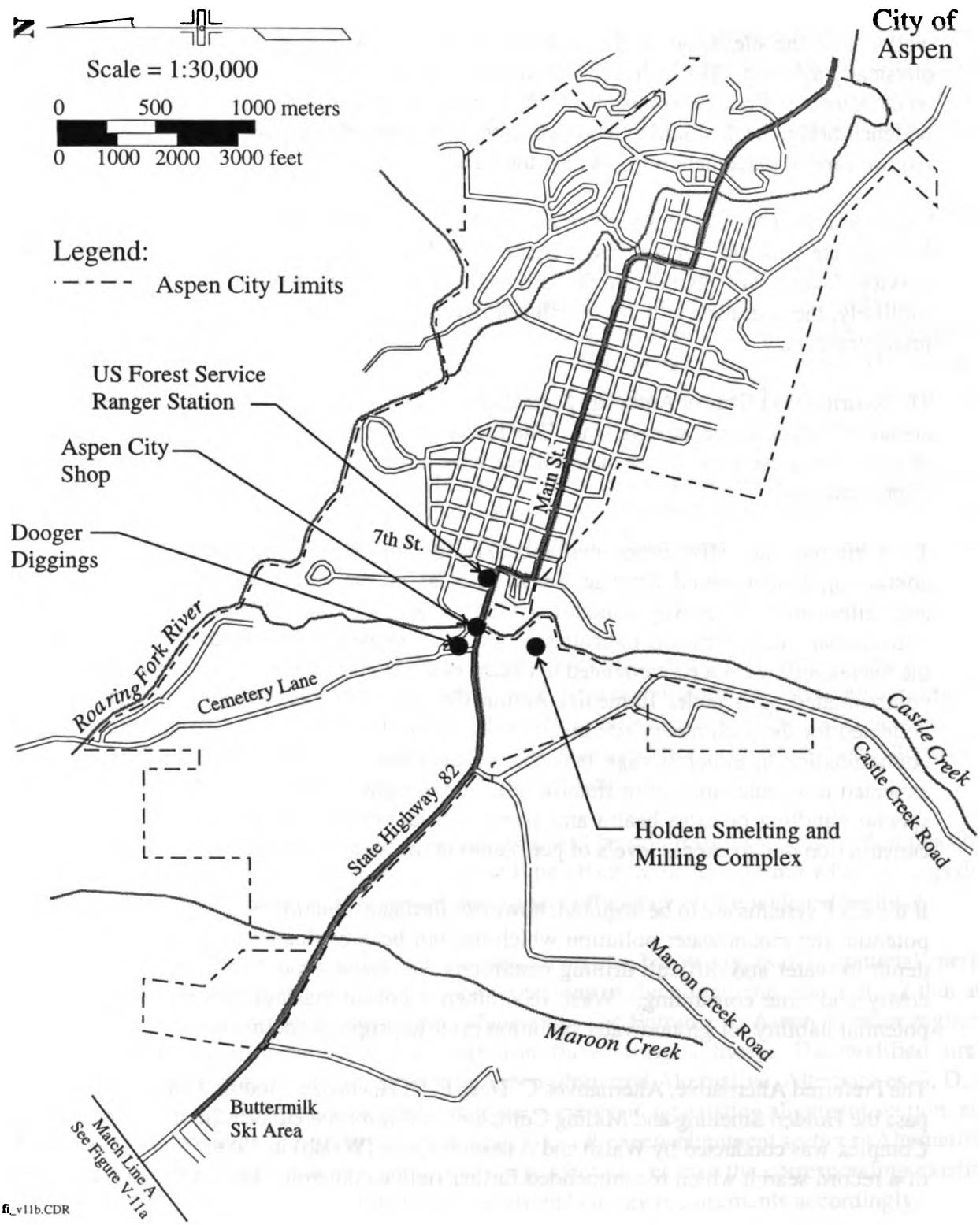
Figure V-11b
Potential Hazardous Waste Sites
State Highway 82 Entrance to Aspen FEIS



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The Aspen City Shop, Dooger Diggings, U.S. Forest Service Ranger Station, Roaring Fork Transit Authority Maintenance Facility, and Aspen Airport Business Center have been eliminated as potential hazardous waste sites of concern. The Aspen City Shop located in the old Castle Creek Power Plant and Dooger Diggings on Power Plant Road are underground fuel storage tank sites. Both the plant building and Dooger Diggings are located well below the elevation of the widened Castle Creek bridge deck and would not be physically affected. The operations of those properties are not expected to have any effect on the transportation operations overhead. Conceptual bridge design studies indicate that the widened bridge deck would extend two to three feet into the air space above the plant and require careful placement of piers near the building.

The U.S. Forest Service Ranger Station at 806 West Hallam Street is also an underground fuel storage tank site. Alternatives B and G widen the existing roadway near the Forest Service Station but do not require any right-of-way from the Forest Service Station. Similarly, the operation at this site will not have any effect on the proposed transportation improvements.

The Roaring Fork Transit Authority Maintenance Facility and the Pitkin County Airport both are an underground fuel storage tank. The Preferred Alternative does not require any right-of-way from these sites. These sites will not have any effect on the proposed transportation improvements.

The Preferred Alternative airport multimodal facility may include acquisition of right-of-way containing Underground Storage Tanks (USTs) at the Pitkin County Airport. Any acquisition of right-of-way containing USTs would involve tank closure and possible remediation. Sample results indicate soils in the drainage crossing State Highway 82 from the release area are not contaminated in excess of CDH guidelines for cleanup of petroleum contaminated soils under Remedial Action Category I (CDH, 1991). Subsurface soils collected for the preliminary site investigation (PSI) did not contain significant petroleum contamination at either storage tank site investigated. Petroleum contamination is not expected to be encountered in shallow soils along right-of-way. Therefore, it appears no special handling or extra health and safety considerations will be required for highway construction due to excess levels of petroleum in the areas investigated.

If the UST systems are to be acquired, however, further evaluation will be necessary. Some potential for groundwater pollution which has not been evaluated exists at the site. The depth to water and difficult drilling conditions will cause groundwater assessment to be costly and time consuming. Wash recommends consulting legal counsel to determine potential liability for groundwater pollution prior to property acquisition.

The Preferred Alternative, Alternatives C, D, E, F, G, H, and the Modified Direct Alternative pass the Holden Smelting and Milling Complex. A PSI for the Holden Smelting and Milling Complex was conducted by Walsh and Associates, Inc. (Walsh) in 1989. The PSI consisted of a record search which recommended further field evaluation. This evaluation included

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drilling boreholes, collecting soil samples, installing piezometers, collecting groundwater samples, and analyzing laboratory samples.

Results of surface samples in the area showed elevated total concentrations of arsenic (As), cadmium (Cd), and lead (Pb), which could expose the public to heavy metal laden dust and soil. The highest elevated concentrations found were: 44 milligrams per kilogram (mg/kg) for arsenic, 35 mg/kg for cadmium, and 3,300 mg/kg for lead. The water quality at the proposed bridge pier locations were within anticipated limits for a possible dewatering permit.

Further evaluation of potential hazardous waste sites will continue during highway design prior to property acquisition, along with continued coordination with the Colorado Department of Public Health and the Environment (CDPHE) and other appropriate agencies. The selected improvements will avoid potentially contaminated areas. Where avoidance of a contaminated site is not feasible, a detailed site investigation (DSI) will be conducted to determine the extent of contamination and the concentrations of contaminants. The DSI will provide the information that may be required for the preparation of a Health and Safety Plan (HASP) and the Materials Management Plan (MMP).

Results of this investigation are published in their report: ***Preliminary Site Investigation Highway 82 Basalt to Aspen***, CDOT Project No. FC 082-1(14), June 25, 1992. All information in this section and **Chapter IV. Affected Environment** is compiled from that report.

4r. Energy Impacts

Construction Energy - Each of the build alternatives has construction energy impacts of two types. The first type is energy needed to build the transportation improvements, primarily resulting from earthwork and the erection of retaining walls and bridges. The second type is energy wasted by vehicles delayed by construction activities. The No-Action Alternative, by definition, has no construction energy requirements.

Delays to highway traffic due to construction will be minimized by construction phasing. Overall congestion energy requirements will be offset in the long-term by fuel savings due to reduced congestion and improved operational efficiency on the widened highway.

Operational Energy - Each of the build alternatives also has two types of operational energy impacts. The first type results from new portions of the alignments under study that are longer than the corresponding existing alignment. The Entrance to Aspen corridor segment includes alignment options that diverge from the existing highway. The modified direct connection alignment at the Entrance to Aspen (Preferred Alternative, Alternatives C, D, E, F, H, and Modified Direct) is shorter than the corresponding existing alignment section, and will reduce operational energy requirements. The other new alignment sections (Alternatives 2, 3, B, and G) are from two percent to ten percent longer than the corresponding existing alignment sections, and will increase operational energy requirements accordingly.

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The second type of operational energy impact results from operational efficiency. All of the DEIS build alternatives will significantly reduce operational energy requirements for State Highway 82 because they reduce congestion and improve the LOS of the highway.

Based on conceptual modeling of train performance for the Preferred Alternative and all of the DSEIS alternatives power consumed ranges from 8 to 10 kilowatt hours (KWH) per car mile, including propulsion and auxiliary loads such as heating and cooling. Car miles per year has been estimated at 283,605 or 526,695 based on a one-car train or a two-car train, respectively. Considering these estimates, annual power consumed would be 2.9 million KWH and 5.3 million KWH. The LRT power use would comprise a small amount of the total consumption for the region.

4s. Construction Impacts

General construction impacts are addressed by category in the following discussion for all build alternatives. A more detailed discussion, if different from the general discussion, for each build alternative in the two corridor sections follows.

Air Quality. Construction impacts on air quality result from the particulates released by earthwork and the carbon monoxide created by construction equipment exhausts and vehicles delayed by construction. Air quality impacts will be mitigated by minimizing construction activities during the critical winter air pollution season, and by pre-wetting cuts and fills when necessary.

Water Quality. Temporary increases in siltation will occur due to construction or improvement of bridges over Maroon Creek and Castle Creek. The water quality impacts will be mitigated by adherence to the conditions described in the 404 and NPDES stormwater permits issued for the project, through the application of standard CDOT erosion control measures, and by the development and implementation of a spill prevention and emergency response plan as a contract condition. Temporary erosion control measures during construction and permanent revegetation in sidehill cut areas will also be required. NPDES guidelines will be followed, as discussed in the Water Quality section of this chapter.

Traffic Safety. Potential safety impacts are due to construction next to active traffic lanes. Increased accident potential is due to stop-and-go traffic and the presence of workers and equipment on the roadway. Certain LRT operations will interfere with highway traffic, especially in Aspen, where the LRT crosses the highway and for LRT construction within the median of Main Street. Safety impacts will be minimized by traffic control measures including signs, pavement markings, barriers and flagging.

Construction Materials. A balance of earthwork (equal amounts of fill material used and cut material obtained) is feasible for all of the alternatives. Road base material will be obtained from existing permitted borrow sources in the Roaring Fork Valley. There are approximately five operating sand, gravel, and concrete sources in the valley between Glenwood Springs and Aspen. LRT materials would be trucked to the site for staging as no existing rail head exists near the property site.

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Noise. To minimize impacts of construction noise, construction equipment will include appropriate mufflers in good working condition, and noisy construction will be limited to daylight hours. However, certain LRT construction operations may be more productive during the night time, especially those requiring highway closures. Variance from local ordinances may be requested in those cases, and appropriate mitigation may be necessary. For further information, refer to the Noise Impacts section of this chapter.

Utilities. Construction operations may require that electric, telephone, and other overhead utilities be relocated to avoid conflicts. Underground utilities, such as electric, telephone, gas, water, sewer, and others may require special construction techniques to avoid or to relocate in order to accommodate construction.

Hazardous Waste. Areas which have been identified as existing hazardous waste sites are identified in **Section B.4q. Hazardous Waste** of this chapter. Mitigation will follow Federal and State guidelines. Any newly identified sites or spills during construction will be investigated and mitigated as necessary.

Traffic Delays. Construction of the Preferred Alternative will have a negative impact on traffic. Construction of the highway portion of the alternatives will follow past successful practices to minimize traffic delays. Adverse impacts will be greatest in areas of highest congestion, namely at intersections along the alignment and along Main Street and into Rubey Park. Construction of the LRT poses additional traffic delays as the construction of the LRT is a linear operation, that is, track construction will start at the LRT maintenance facility and progress to Rubey Park. Traffic delays may be experienced where LRT construction crosses the highway, first in the construction of the crossing, then subsequently as materials for track construction are delivered to the construction site along the completed track. Construction of street improvements within Aspen, along with the construction of the LRT, will create traffic delays, some of which may be mitigated through the use of detours onto other streets during construction.

When construction activities conflict with existing traffic, CDOT will utilize several techniques to minimize delays. These include:

- Establishment of two-lane detours adjacent to work zones on State Highway 82 to allow continuous traffic flows outside the work area.
- Inclusion of specifications in construction contracts to prohibit traffic stoppages during the morning and evening commuter and tourist (peak) periods.
- Inclusion of specifications in construction contracts that do not allow any traffic stoppages for longer than a specified number of minutes (20-25), with a penalty clause to the contractor for violation.
- Provision for traffic control coordination between construction projects or work zones to ensure the cumulative traffic delays are minimized.
- Specifying night construction periods when appropriate to minimize interference with traffic.

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- Use of local radio and newspaper notices to inform local commuters of specific construction activities which could result in traffic delays and to recommend ways to avoid them.
- Inclusion of construction specifications that minimize the stoppage of Roaring Fork Transit Agency (RFTA) buses and provide the opportunity to allow the buses to proceed to the front of construction traffic delay queues.
- Inclusion of construction specifications that avoid the stoppage of emergency vehicles and allow the emergency vehicles to proceed to the front of construction traffic delay queues.
- Encouragement of car and van pooling and use of expanded bus service to promote increased usage of high occupancy vehicles.
- Establishment of contract incentives for early completions of critical work.
- Establishment of contract penalties for delays in completion of critical or specialty work.

These traffic management techniques have been used successfully on many highway projects to minimize the inconveniences of highway construction. Traffic management will be a primary consideration that CDOT will address in the planning, design, and construction phases to ensure that traffic is safely and efficiently maintained.

RFTA Delays. Construction of the Preferred Alternative may have a negative impact on RFTA service. Use of alternate routes and stops, and special consideration for transit riders may contribute to mitigating the delays during construction.

Business Access. Access to business may be impacted during construction, especially from the intersection of 7th Street and Main Street to Rubey Park. Access plans will be required to address these access issues prior to construction.

Section 4(f) Resources. The construction of the Preferred Alternative will have some negative impact on open space, parks, historic properties, and/or trails. The areas would likely include the Marolt-Thomas Open Space, Moore Open Space, the Airport Business Center Trail, and the Aspen Historic District. For more information, please see **Appendix A: Section 4(f) Resources Evaluation.**

Phasing. The Preferred Alternative will require construction phasing to accommodate commuter, tourist, and local traffic to the local businesses and residential areas in the corridor. With the area experiencing the highest traffic during the tourist seasons, construction of portions of the project causing the most conflict would be scheduled during the off-seasons, whenever possible.

4t. Short-Term Uses and Long-Term Productivity

All of the transportation build alternatives under consideration for the proposed action have similar short-term effects. These include additional right-of-way acquisitions, construction

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noise, temporary soil erosion, traffic disruption, unsightly construction activities and residence and business relocations.

The primary products, however, of the Aspen area are recreation and tourism and this industry is assumed to grow. This assumption is documented and consistent with local planning efforts. Because of this growth and current inadequacies, improvements to the transportation system are necessary. These improvements will provide a safer and larger capacity system which will help to ensure the future productivity and economic viability of the area.

4u. Commitments of Resources

Construction of any of the build alternatives for the Entrance to Aspen will involve a similar commitment of natural, physical, human and fiscal resources. These specifically include land, fossil fuels, labor, cement, aggregates and bituminous paving material. The use of the land for the transportation improvements is generally an irreversible commitment of the resource.

The use of the fossil fuels, labor, cement, aggregates and bituminous paving materials are generally not retrievable. However, these are not in short supply and their use will not have an adverse effect upon continued availability of these resources. The construction of the various alternatives will also involve the expenditure of fiscal resources.

Highway and air travel, however, are the primary forms of travel in the Roaring Fork Valley and the use of these resources is required if the transportation improvements are to meet the project objectives.

C. SUMMARY OF IMPACTS

Tables V-12a and V-12b summarize the various quantitative impacts discussed in this chapter.

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Table V-12a
Summary of Quantitative Environmental Impacts to the DEIS Alternatives

	Project Corridor Section							
	Buttermilk to Maroon Creek Road		*Maroon Creek Road to 7th Street and Main Street*					
Alternative	*2*	*3*	*B*	*C*	*D*	*E*	*F*	*G*
Alignment Length kilometers (miles)	2.24 (1.39)	2.24 (1.39)	1.11 (0.69)	0.99 (0.61)	0.99 (0.61)	0.99 (0.61)	0.99 (0.61)	*Existing:* 1.11(0.69) *Transit-way:* 0.99(0.61)
SOCIAL IMPACTS								
- # NH's Affected	0	0	1	1	1	1	1	2
- Relocations:								
# Households	2	2	7	1	2	1	2	1
# Business	0	0	3	0	0	0	0	1
Total Relocations	2	2	10	1	2	1	2	2
- ROW Acquisition								
Hectare (acres)								
Open Space	3.0 (7.6)	3.7 (9.4)	1.2 (3.0)	(2.6 (6.5)	2.9 (7.3)	1.8 (4.5)	2.0 (5.1)	2.0 (4.9)
General ROW	2.1 (5.3)	3.0 (7.1)	0.2 (0.6)	0.3 (0.8)	0.4 (1.1)	0.3 (0.9)	0.4 (1.1)	0.2 (0.4)
Total ROW**	5.1 (12.9)	6.7 (17.0)	1.4 (3.6)	2.9 (7.4)	3.3 (8.4)	2.1 (5.4)	2.5 (6.2)	2.2 (5.4)
- Pedestrian & Bike Facilities Impacted	3	3	2	3	3	3	3	4

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Table V-12a ***(continued)***
Summary of Quantitative Environmental Impacts to the DEIS Alternatives

	Project Corridor Section							
	Buttermilk to Maroon Creek Road		*Maroon Creek Road to 7th Street and Main Street*					
Alternative	*2*	*3*	*B*	*C*	*D*	*E*	*F*	*G*
PHYSICAL IMPACTS								
- Air Quality (refer to Table V-6)								
- Water Quality								
# River Crossings								
# Brg Piers in Wetlands	1	1	1	1	1	1	1	1
- Upland/Floodplain Veg.	1	1	---	---	---	---	---	---
- Wildlife	NI	NI	Disturb.	Perm. Loss	Perm. Loss	Re-estab.	Re-estab.	Perm. Loss
- Floodplain Impact	MI	MI	MI	MI	MI	MI	MI	MI
- Threat.& Endang. Spec.	NI	MI	MI	MI	MI	MI	MI	MI
- Historic Resources hectares (acres)	NI	NI	NI	NI	NI	NI	NI	NI
- Archaeological Resource	0	0	0.195(0.47)	0.36(0.89)	0.40(0.99)	0.36(0.89)	0.40(0.99)	0.42(1.03)
- Paleontological Resource	NI	NI	NI	NI	NI	NI	NI	NI
- 4(f) Resources hectares (acres)	NI	NI	NI	NI	NI	NI	NI	NI
- Potential & Hazardous Waste Sites	3.0(7.6)	3.7(9.4)	1.3(3.3)	3.0(7.4)	3.3(8.5)	3.0(7.4)	3.3(8.5)	2.3(5.5)
	NI	NI	NI	1	1	1	1	1

** Costs do not include rolling stock (train sets).*
*** Does not include right-of-way required for multimodal facilities.*

NI = No Impact *NH's = Neighborhoods* *Re-estab = Re-establishment*
MI = Minor Impact *Perm = Permanent* *Disturb = Disturbance*
Brg = Bridge

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Table V-12b
Summary of Quantitative Environmental Impacts to the DSEIS Alternatives and Preferred Alternative

	Alternative				
	Alternative H	*Modified Direct*	*Phased Alternative H*	*Phased Modified Direct*	*Preferred Alternative*
Alignment Length kilometers (miles)	6.87 (4.28)	6.81 (4.15)	6.87 (4.28)	6.81 (4.15)	6.81 (4.15)
SOCIAL IMPACTS					
- # NH's Affected	2	1	2	1	1
- Relocations					
# Households	2	2	2	2	0
# Businesses	0	0	0	0	0
Total Relocations	2	2	2	2	0
- ROW Acquisition--Hectares (acres)					
Open Space	3.7 (9.2)	3.4 (8.5)	3.7 (9.2)	3.4 (8.5)	4.0 (9.9)
General ROW	7.4 (18.2)	7.4 (18.2)	7.4 (18.2)	7.4 (18.2)	6.5 (16.2)
General ROW Owl Creek Road Relocation	0	0	0	0	2.3 (5.7)
Total ROW*	11.1 (27.4)	10.8 (26.7)	11.1 (27.4)	10.8 (26.7)	12.8 (31.7)
- Pedestrian and Bike Facilities Impacted	5	5	5	5	5
PHYSICAL IMPACTS					
- Air Quality (refer to Table VI-3)					
- Water Quality					
# River crossings	2	2	2	2	2
#Bridge piers in Wetlands	---	---	---	---	—
- Upland/Floodplain Veg.	Perm. Loss	Perm. Loss	Perm. Loss	Perm. Loss	Perm. Loss
- Wildlife	MI	MI	MI	MI	MI
- Floodplain Impact	MI	MI	MI	MI	MI
- Threat. & Endangered Species	NI	NI	NI	NI	NI
- Historic Resources--hectares (acres)	0.1 (0.25)	0.1 (0.25)	0.1 (0.25)	0.1 (0.25)	0.23 (0.57)
- Archaeological Resources	NI	NI	NI	NI	NI
- Paleontological Resources	NI	NI	NI	NI	NI
- 4(f) Resources--hectares (acres)	4.0 (9.9)	3.1 (7.7)	4.0 (9.9)	3.1 (7.7)	4.0 (9.9)
- Potential & Hazardous Waste Sites	1	1	1	1	1

NI - No Impact
MI - Minor Impact
Re-estab - Re-establish
NH's - Neighborhoods
Perm - Permanent
Disturb - Disturbance
* *Includes ROW needed for LRT and multimodal stations*

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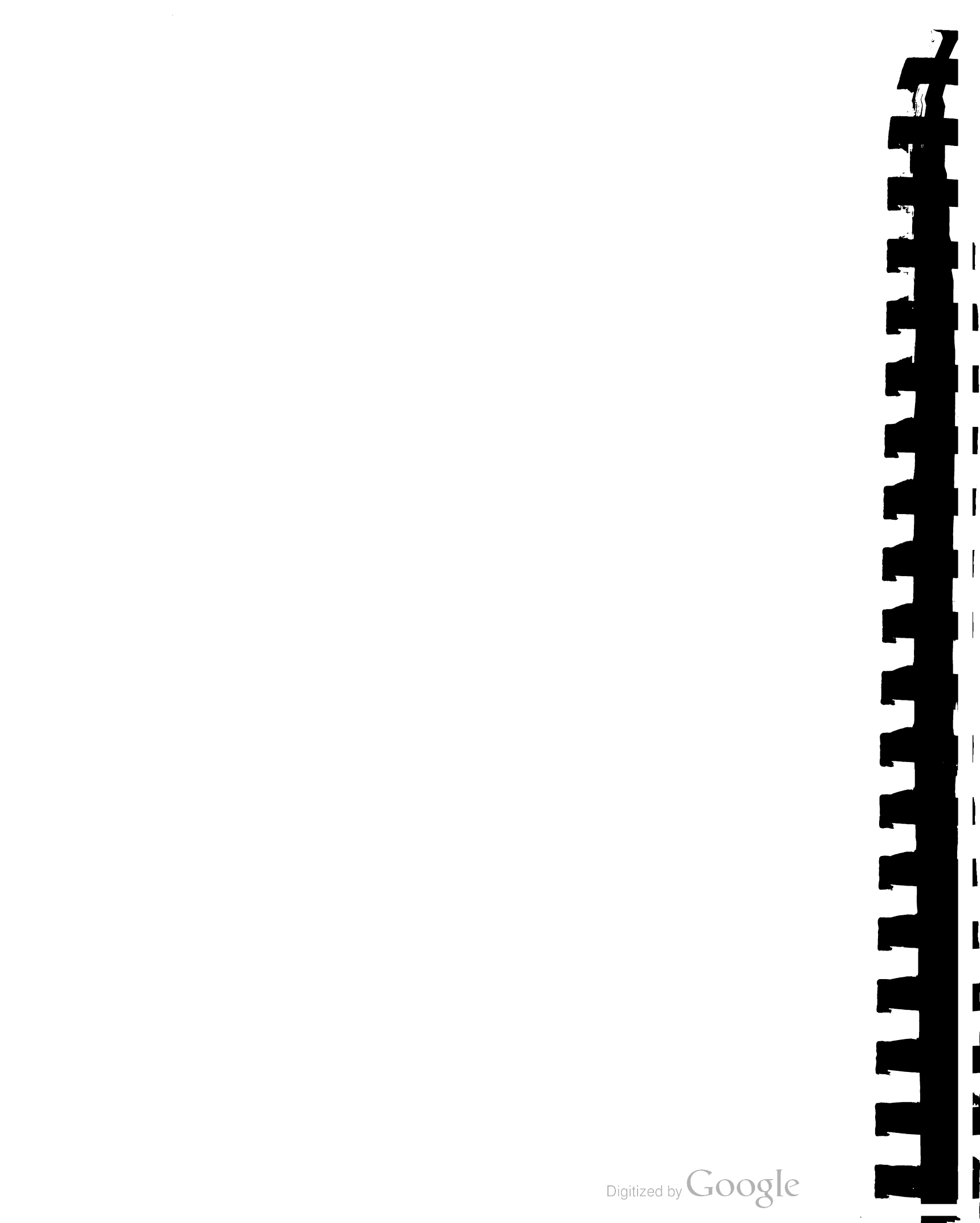

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VI. Mitigation Summary

The Colorado Department of Transportation (CDOT) is committed to the general mitigation measures listed below for the State Highway 82 Entrance to Aspen Preferred Alternative.

A. RELOCATIONS

The acquisition and relocation program for the State Highway 82 Entrance to Aspen Preferred Alternative will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (1989). Relocation resources will be available without discrimination to all residents and businesses that are required to relocate.

B. RECREATIONAL ACCESS

With respect to the multimodal approach of the EIS, a more friendly pedestrian/bicycle environment will be created in conjunction with the Preferred Alternative. CDOT will relocate, improve, and/or replace all existing trail/bike path facilities and sidewalks impacted by the Preferred Alternative.

C. CONSISTENCY WITH LOCAL PLANS

Pitkin County's planning goal of complementing the rural character of lands currently undeveloped or developed at low density will be acknowledged wherever consistent with right-of-way requirements and local access requirements. This includes a narrow median serving as either a planting area or left-turn lane. A narrow median is also used to minimize right-of-way requirements in the vicinity of open space and park lands.

In keeping with Aspen's desire to slow traffic entering the city, traffic calming techniques will be incorporated into the design of the Preferred Alternative. These techniques include a landscaped narrow median, narrow lanes on Main Street, and a cut and cover section.

D. AIR QUALITY

The air quality mitigation measures are in conformance with the PM_{10} State Implementation Plan (SIP) for Aspen, the Clean Air Act Amendments (CAAA), and subsequent regulations. The City of Aspen, Pitkin County, and CDOT are committed to continuing implementation of current air quality measures.

E. WATER QUALITY

Construction impacts to water quality will be mitigated by the following:

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VI. Mitigation Summary

- Adherence to the conditions described by the National Pollution Discharge Elimination System (NPDES) Stormwater Permit.
- Adherence to CDOT Best Management Practices (BMPs).
- The development and implementation of a water quality management plan.
- Use of water quality control and erosion control specifications.
- The development and implementation of a spill prevention and emergency response plan.

The water quality management plan will include erosion control measures and water quality enhancement practices. The spill prevention and emergency response plan will consist of plans for storage, handling, and use of chemicals and a detailed plan for emergency response in the event a spill occurs.

Water quality impacts from the operation and maintenance of the Preferred Alternative will be primarily mitigated by the design of the drainage system. This system includes long drainage pathways with wide bottoms. In the vicinity of river crossings, drainage will be directed away from the streambed. Vegetation will be planted and maintained in the drainageways to enhance natural constituent removals. Runoff from above the project area will be intercepted and carried under the highway where it will be combined with highway runoff to promote dilution. CDOT will continue using alternative de-icers on the State Highway 82 study corridor to minimize potential salt impacts.

F. UPLAND AND FLOODPLAIN VEGETATION

Impacts on upland and floodplain vegetation will be minimized by mitigation measures that include revegetation of disturbed upland areas with dryland shrubs and grasses similar to the species removed during construction. In riparian zones and wetlands, special seed mixes will be used that have been developed for riparian and wetland areas. Displaced trees and shrubs, which are transplantable, will be transplanted from disturbance areas to areas where construction is nearly completed. Riprap protection at bridge piers will be buried and topsoiled to the high water elevation, then naturally revegetated to repair construction damage.

G. WETLANDS

Mitigation measures for wetland impacts will consist of:

- Avoiding wetland systems and riparian strips to the greatest practical extent.
- Minimizing loss of wetland acreage and trees.
- Using CDOT Standard Erosion Control Measures to slow sediment and pollutant influx into wetlands.
- No stockpiling of material or staging of equipment or supplies in wetland or riparian areas.
- Storing equipment and construction materials away from wetland and riparian areas.
- Replacing wetlands on a one to one basis in suitable sites along the highway corridor.
- Temporary fencing to protect adjacent wetlands from accidental construction equipment encroachment.

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H. FISHERIES

Mitigation commitments for fisheries impacts include:

- Avoiding damage to or removal of shoreline vegetation.
- Revegetating according to CDOT Standard Erosion Control Measures.
- Avoiding channel restrictions and channel destabilization.
- Replacing pools and irregular bends where such existing features are lost.
- Filtering runoff in settlement ponds wherever practical.
- Avoiding in-stream activities during fall months and early spring when resident fish are spawning.
- Avoiding removal or damage to gravel substrates which are critical to the survival of fish eggs.

H. FISHERIES

CDOT will cooperate with the Colorado Division of Wildlife (DOW) during design of the project. The DOW will review preliminary highway design plans and specific wildlife mitigation techniques will be requested at that time.

J. FLOODPLAINS

To minimize impacts to floodplains, extensive longitudinal encroachments to channels have been avoided in the study corridor in the design of bridges and roadway embankments in accordance with 23 CFR 650A, Subchapter G, Subpart A. This is in compliance with FHPM 6-7-3-2, "Hydraulic Design of Encroachments on Floodplains" and Executive Order 11296. Buried riprap will be provided in design and construction phases to minimize erosion.

K. THREATENED AND ENDANGERED SPECIES

No threatened and endangered species have been identified in the State Highway Entrance to Aspen corridor. The application of standard CDOT erosion and sediment control measures will ensure that long-distance impacts to federally-listed endangered fish, downstream in the Colorado River, will be avoided. No threatened and endangered species will be impacted in this project area.

L. HISTORIC RESOURCES

Mitigation measures for historic resources impacts will consist of:

Maroon Creek Bridge: The State Historic Preservation Office (SHPO) and Historic Preservation Commission (HPC) will be given the opportunity to comment on the architectural compatibility of the design and placement of the new bridge. Design plans, drawings, and a photo record will be provided to the SHPO if the existing bridge is modified in any way to accommodate transit use.

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Holden Smelting and Milling Complex: The Preferred Alternative alignment is north of the Holden Smelting and Milling Complex property. The SHPO and HPC will review and approve the landscaping and light rail transit (LRT) overhead wire design in the vicinity of the Holden Smelting and Milling Complex.

Colorado Midland Railroad: Efforts to minimize harm to this resource include designing the Preferred Alternative with the least possible right-of-way width for the new State Highway 82.

734 W. Main Street,: CDOT commits to a photographic recordation of this locally designated resource if adverse effects cannot be avoided. Efforts to minimize harm to this resource include designing the Preferred Alternative with the least possible right-of-way width where possible.

Smith/Elisha House: The SHPO and HPC will review and approve the landscaping and LRT overhead wire design in the vicinity of the Smith/Elisha House. Efforts to minimize harm to this resource include designing the Preferred Alternative with the least possible right-of-way width where possible.

Thomas Hynes House: The SHPO and HPC will review and approve the landscaping and LRT overhead wire design in the vicinity of the Thomas Hynes House. Efforts to minimize harm to this resource include designing the Preferred Alternative with the least possible right-of-way width where possible.

Berger Cabin: The Berger Cabin is avoided in the Preferred Alternative. If during final design it is determined that avoidance is not possible, the Berger Cabin will be moved away from the Preferred Alternative alignment, but remain on the existing property. The SHPO and HPC will review and approve the landscaping and LRT overhead wire design in the vicinity of the Berger Cabin.

M. ARCHAEOLOGICAL RESOURCES

The Preferred Alternative has been compared to alignments studied previously by the CDOT staff archaeologist. If any inconsistencies between the previous survey and the final alignment are evident, on-the-ground reconnaissance will be conducted as necessary. The reconnaissance will document that the final highway alignment has been adequately evaluated and that no archaeological resources determined to be significant by the SHPO will be adversely affected. Should any evidence of archaeological resources be discovered during construction, the work will be stopped in that vicinity until the CDOT staff archaeologist and the SHPO representative fully evaluate the importance of the resources.

N. PALEONTOLOGICAL RESOURCES

If any paleontological resources are uncovered along the alignment corridor during construction, work in the immediate vicinity will cease. The CDOT staff paleontologist will be notified, and the material will be evaluated by a qualified paleontologist and coordinated with the SHPO.

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O. 4(f) RESOURCES

A discussion of mitigation measures for impacts to Section 4(f) resources is included in **Appendix A. Section 4(f) Resources Evaluation**. These measures are adopted by FHWA.

P. FARMLANDS

There are no prime and unique farmlands, valued agricultural lands, or farmlands of statewide significance in the State Highway 82 Entrance to Aspen study area. Impacts to existing irrigation systems due to highway construction will be relocated and replaced.

Q. NOISE AND VIBRATION

Residences and businesses in the downtown area are impacted by noise when the LRT warning horn is used. This may be mitigated by using a quieter warning horn, or replacing the horn with flashing lights. A noise barrier has been modeled in the vicinity of the intersection of 7th Street and Main Street. If right-of-way provides, a berm is recommended. Any form of noise barrier will be approved by the area residents or business owners, prior to construction.

Residences and businesses along the project corridor may be subject to construction noise. Construction noise will vary depending on the activities involved. The noise is anticipated to exceed 90 dBA for short durations in some instances. Two measures that will be taken to minimize the construction noise impacts include restricting noisy construction to the daylight hours and to requiring an appropriate/good condition mufflers on all equipment. These measures will eliminate construction noise during sensitive nighttime and early morning hours, and minimize it at other times.

No vibration impacts are created as a result of the Preferred Alternative and no vibration mitigation is necessary.

R. VISUAL

Visual mitigation measures include:

- A minimum-width landscaped median to visually separate the roadway lanes and lessen the feeling of an asphalt corridor.
- Revegetation of all disturbed areas with natural species to reduce soil erosion and minimize color contrasts caused by exposed soil surfaces.
- Adjusting the final roadway layout to save existing large trees and other significant groupings of vegetation.
- Creating slopes which approximately match the existing slopes.
- Using building materials which approximate the natural tones and textures of the area being traversed.

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- Adjusting the alignment to provide enhanced views and vistas for highway users to minimize the effects of unavoidable impacts elsewhere.
- Using aesthetically pleasing poles, station designs, and embedded track pavement surfacing to reflect and enhance the landforms and character of the area where the LRT system is located.
- Providing landscaped or grass covered sideslopes and medians where possible within the LRT right-of-way to soften the visual impact of the LRT tracks.

These mitigation measures would directly benefit the design quality of the Preferred Alternative. In addition to increased design quality through enhancement of the natural setting, sensitive roadway design and detailing could also enhance project design quality. Horizontal curvature and vertical profiles can be adjusted to provide visual interest for the highway user. Significant sections of retaining walls may be enhanced by the wall layout, texture, color and vertical profile; this may integrate with the landscape or accent unique natural or historic features, as well as building types and features within the project area.

S. HAZARDOUS WASTE

Further evaluation of potential hazardous waste sites will continue prior to property acquisition and during final highway design, along with coordination with the Environmental Protection Agency (EPA), CDOT, and local agencies. The Preferred Alternative avoids potentially contaminated areas whenever practical. However, where avoidance is not feasible, a detailed site investigation (DSI) will be conducted. Necessary cleanup plans will be coordinated with appropriate agencies and landowners.

The inclusion of environmental specifications in the construction bid package (such as Section 252 Fugitive Petroleum Product Management) may be necessary based on existing Preliminary Site Investigation (PSI) data or based on any future investigative activities.

Partial acquisition at the Pitkin County Airport will require UST closure, with soil and/or groundwater remediation if necessary. Acquisition of right-of-way at the Holden Smelting and Milling Complex requires a more comprehensive study of soil lead (Pb) values and remediation if necessary.

T. CONSTRUCTION

During the construction of the Preferred Alternative, CDOT will utilize appropriate traffic management techniques to minimize delays and inconvenience to the traveling public. This may be done by phased construction of the transportation improvements and by restricting the timing of construction activities and limiting traffic stoppages to off-peak traffic hours. Whenever feasible, provisions will be included to minimize the effects on Roaring Fork Transit Agency (RFTA) buses. Construction delays will be limited to 20 to 25 minutes duration whenever possible.

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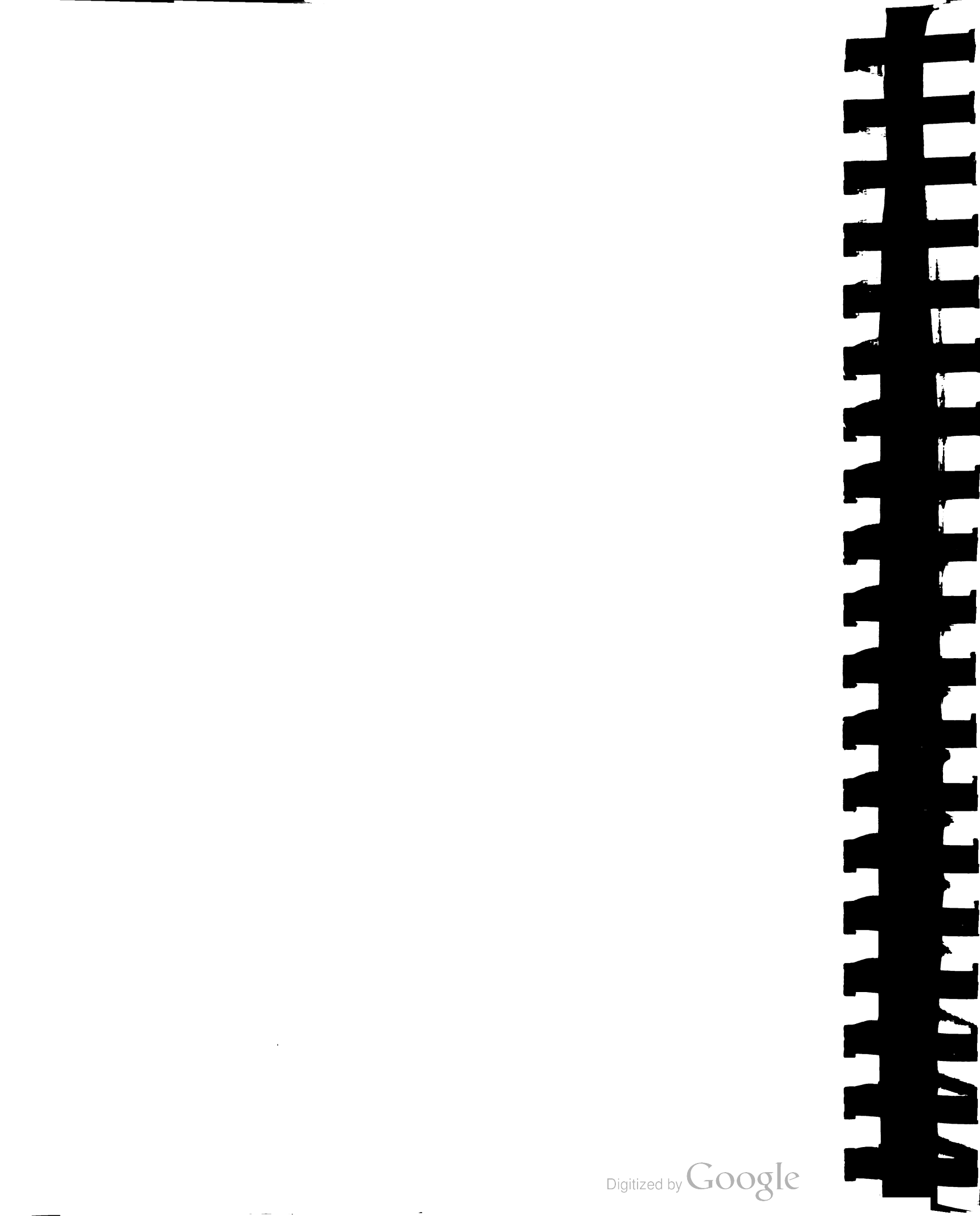

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The following people contributed to the preparation of the ***State Highway 82 Entrance to Aspen Final Environmental Impact Statement*** (FEIS):

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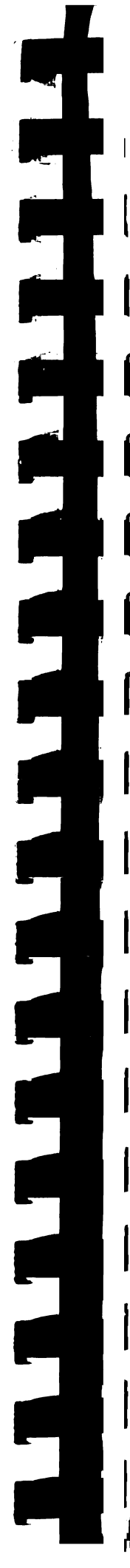

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VIII. Availability of Technical Reports

Several sections of the FEIS are summaries of technical memorandums and reports prepared by members of the study team. These detailed technical reports are available for agency and public review upon request from the Colorado Department of Transportation in their offices at Grand Junction, Glenwood Springs, and Denver. A copy of these reports is also available at the Pitkin County Library, the Aspen/Pitkin County Planning Department, and the Denver office of the Federal Highway Administration.

ALTERNATIVE EVALUATIONS

Alternative Screening Analysis, July 1995, prepared by Stephen Pouliot and Barry Schulz, MK Centennial.

Technical Memorandums, State Highway 82 Entrance to Aspen Draft Supplemental Environmental Impact Statement, July 1996, prepared by MK Centennial.

Technical Memorandums, State Highway 82 Entrance to Aspen Final Environmental Impact Statement, June 1997, prepared by MK Centennial.

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PALEONTOLOGY

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VIII. Availability of Technical Reports

ARCHAEOLOGY

An Archaeological Inventory of State Highway 82 - Brush Creek Road Intersection between Basalt and Aspen, Pitkin County, Colorado, July 1993, prepared by Christian J. Zier, Centennial Archaeology, Inc.

Archaeological Status for Project FC 082-1(14), East of Basalt to Aspen, July 1988, prepared by Debra Angulski, Colorado Department of Transportation.

FUTURE TRANSPORTATION DEMAND

State Highway 82 Entrance to Aspen Transportation Demand Model, July 1995, prepared by Stephen Pouliot and Barry Schulz of MK Centennial

ORIGIN AND DESTINATION STUDY

Mount Sopris Transportation Project, Final Report: 1992 Origin and Destination Summer Study and Selected Traffic Count Information, March 1993, prepared by the Colorado Department of Transportation Mount Sopris Project Team.

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HAZARDOUS WASTE

Preliminary Site Investigation: Highway 82 Basalt to Aspen, CDOT Project No. FC082-1 (14), June 1992, prepared by Walsh and Associates.

FARMLANDS

Prime and Unique Farmland and Valued Agricultural Land in Pitkin County and Impacts of the Proposed Project on Farmland Along the SH 82 Impact Area, September 1988, prepared by Joan Bossert of Environmental Research Consultants, Ltd.

SOCIAL AND ECONOMIC IMPACTS

Social Profile and Social Impacts and Relocation Analysis, July 1988, prepared by Joan Bossert of Environmental Research Consultants, Ltd.

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Economic Profile and Economic Impacts Analysis, July 1988, prepared by Joan Bossert of Environmental Research Consultants, Ltd.

Parking Impacts of Light Rail in Downtown Aspen, May 1996, prepared by Coley/Forrest, Inc.

Parking Impacts of Light Rail in Downtown Aspen - Update from Previous Report, June 1997, prepared by Coley/Forrest, Inc.

ECOLOGY AND WATER QUALITY

Ecology and Water Quality - Highway 82 Entrance to Aspen, February 1995, prepared by Science Applications International Corporation.

GEOLOGY

Preliminary Draft Geologic and Geotechnical Engineering Investigation, Proposed State Highway 82 Upgrade Alternatives Between Basalt and Aspen, Colorado, October 1987, prepared by Richard Tocher, P.E., Chen & Associates, Inc.

TRANSPORTATION MANAGEMENT

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Transportation Management (TM) Measures, May 1995, prepared by TDA, Inc.

ENVIRONMENTAL IMPACT STATEMENT

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State Highway 82: Entrance to Aspen Draft Environmental Impact Statement, August 1995, prepared by U.S. Department of Transportation, Federal Highway Administration, and Colorado Department of Transportation.

State Highway 82: Entrance to Aspen Draft Supplemental Environmental Impact Statement, July 1996, prepared by U.S. Department of Transportation, Federal Highway Administration, and Colorado Department of Transportation.

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VIII. Availability of Technical Reports

REPORT LOCATIONS

Copies of these reports are on file at the following locations:

Aspen/Pitkin Planning Department
130 S. Galena Street
Aspen, Colorado 81611
(970) 920-5090
fax: (970) 920-5439

Pitkin County Library
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Aspen, Colorado 81611
(970) 925-4025
fax: (970) 925-3935

Colorado Department of Transportation
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Colorado Department of Transportation
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Denver, Colorado 80222-3400
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Colorado Department of Transportation
Mount Sopris Transportation Project
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Glenwood Springs, CO 81601-2845
(970) 945-7629
fax: (970) 945-3860

Federal Highway Administration
Colorado Division
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Lakewood, Colorado 80228
(303) 969-6730
fax: (303) 969-6740

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IX. Acronyms

AABC	Aspen Airport Business Center
AADT	Average Annual Daily Traffic
ACC/MVM	Accidents Per Million Vehicle Miles Traveled
ACOE	Army Corp of Engineers
ADT	Average Daily Traffic
AF-2	Agriculture and Forest
APE	Area of Potential Effect
AVFD	Aspen Volunteer Fire Department
AVO	Average Vehicle Occupancy
BBFEIS	Basalt to Buttermilk Final Environmental Impact Statement
BEA	Bureau of Economic Analysis
BMP	Best Management Practices
BOCC	Board of County Commissioners
°C	Degrees Centigrade
C1	Category 1
C2	Category 2
C3	Category 3
C	Conservation
CC	Commercial Core
CAAA	Clean Air Act Amendments
CAC	Citizen's Advisory Committee
Cd	Cadmium
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and the Environment
CERCLIS	Comprehensive Environmental Response, Compensation and Liability List
CMC	Colorado Mountain College
Cr	Chronium
CWA	Clean Water Act
CWQCC	Colorado Department of Water Quality Control Commission
dBA	Decibels - average noise fluctuations over an hour
D&RGW	Denver and Rio Grande Western Railroad
DDT	Dichloro-disphenyl-trichloroethane
DEIS	Draft Environmental Impact Statement
DERA	Designated Emergency Response Authority
DLA	Department of Local Affairs
DSEIS	Draft Supplemental Environmental Impact Statement
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EO	Executive Order
EOTC	Elected Officials Transportation Committee
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAC	Facultative Plants

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IX. Acronyms

FACU	Facultative Upland Plants
FACW	Facultative Wetland Plants
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GOCO	Greater Outdoor Colorado
HASP	Health and Safety Plan
HCM	Highway Capacity Manual
Hg	Mercury
HOV	High Occupancy Vehicle
HPC	Historic Preservation Commission
HUTS	Highway and Underground Transit Solution
I	Industrial
ISA	Initial Site Assessment
ISTEA	Intermodal Surface Transportation Efficiency Act
km/h	Kilometers Per Hour
KWH	Kilowatt Hours
LOS	Level of Service
LRT	Light Rail Transit
LRV	Light Rail Vehicle
MMP	Materials Management Plan
MP	Milepost
MPH	Miles Per Hour
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act of 1969
NHD	National Historic District
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
OBL	Obligate Wetland Plants
O&M	Operation and Maintenance
P	Park
Pb	Lead
PCB	Polychlorinated Biphenyls
PM_{10}	Particulate matter 10 microns or smaller in diameter
PMH	Permanent Moderate Housing
PRT	Personal Rapid Transit
PSI	Preliminary Site Investigation
PUD	Planned Unit Development

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PUP	Public
R-6	Medium Density Residential
R-15	Moderate Density Residential
R-30	Low Density Residential
R/MF	Residential Multi-family
RCRA	Resource Conservation and Recovery Act
RETT	Real Estate Transfer Tax
RFTA	Roaring Fork Transit Agency
ROD	Record of Decision
ROW	Right-of-Way
RPZ	Residential Parking Zone
SADT	Summer Average Daily Traffic
SCI	Service/Commercial/Industrial
SCS	United States Soil Conservation Service
Se	Selenium
SH 82	State Highway 82
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOV	Single Occupant Vehicle
SQG	Small Quantity Generator
T&E	Threatened and Endangered
TAC	Technical Advisory Committee
TCLP	Toxic Characteristics Leaching Procedure
TDM	Transportation Demand Management
TDP	Transit Development Program
TM	Transportation Management
TSM	Transportation System Management
TVS	Table Value Standards
USACOE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VdB	Vibration Decibel - Average Vibration Fluctuations Over an Hour
VMT	Vehicle Miles Traveled
VPD	Vehicles Per Day
VPH	Vehicles Per Hour
WADT	Winter Average Daily Traffic
WQCC	Water Quality Control Commission

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APPENDIX A

SECTION 4(f) RESOURCES EVALUATION

STATE HIGHWAY 82
ENTRANCE TO ASPEN
PITKIN COUNTY, COLORADO

PROJECT STA 082A-008

PREPARED BY:

COLORADO DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENTAL SERVICES

August 1997

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APPENDIX A: Section 4(f) Resources Evaluation

A. PROPOSED ACTION

Colorado Department of Transportation (CDOT) in conjunction with Federal Highway Administration (FHWA) is proposing to improve an approximately 6.9 kilometer (4.3 mile) section of Colorado State Highway 82. The study corridor, which lies entirely in Pitkin County, Colorado, extends from the Pitkin County Airport to Rubey Park in downtown Aspen.

The Preferred Alternative is a variation of the Modified Direct Alternative evaluated in the Draft Supplemental Environmental Impact Statement (DSEIS). The Preferred Alternative is a combination of highway improvements and an Light Rail Transit (LRT) transit system. The highway consists of a two-lane divided highway. The alignment follows the existing State Highway 82 alignment from Buttermilk Ski Area to the vicinity of Maroon Creek Bridge, where the alignment deviates to the north. The highway crosses Maroon Creek on a new bridge, north of the existing bridge. The highway returns to the existing alignment to a roundabout located at the Maroon Creek Road intersection. The highway then deviates to the south, across the Marolt-Thomas Property and through a cut and cover tunnel, connecting with the intersection of 7th Street and Main Street. The new Main Street cross section is within the existing curb lines.

The Preferred Alternative provides a light rail system from an LRT Maintenance Facility near Service Center Road to Rubey Park in downtown Aspen. The LRT alignment leaves the Maintenance Facility and follows an alignment north of State Highway 82 to the Aspen Airport Business Center (AABC) (west of Service Center Road), where it crosses State Highway 82 to the Airport LRT Terminal Station. The LRT then follows an alignment south of the existing State Highway 82 to the intersection of 7th Street and Main Street, where it crosses to the center of Main Street. Within this section, the LRT crosses Maroon Creek on the existing Maroon Creek Bridge, and bypasses the Maroon Creek Road roundabout on the south side. The LRT alignment runs down the center of Main Street to Monarch Street. The LRT alignment continues south on Monarch Street, running on the east side. At Durant Avenue, the LRT runs east on the north side of the street and ends at Rubey Park. Figure A-1a and Figure A-1b show a schematic of the Preferred Alternative alignment.

The LRT consists of single track between the LRT Maintenance Facility and the Airport Terminal LRT Station, across Maroon Creek Bridge, through the cut and cover tunnel, across Castle Creek Bridge, at the 7th Street LRT Station, at the 3rd Street LRT Station, and between the intersection of Main Street and Monarch Street to Rubey Park. The LRT consists of double track from the Airport Terminal LRT Station to the intersection of Main Street and 7th Street (except bridges and the cut and cover tunnel), and from 7th Street to Monarch Street on Main Street (between stations).

LRT transit stations are located at the Airport Terminal, Buttermilk Ski Area, Moore Property, 7th Street, 3rd Street, Monarch Street, and Rubey Park.

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Figure A-1a
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment

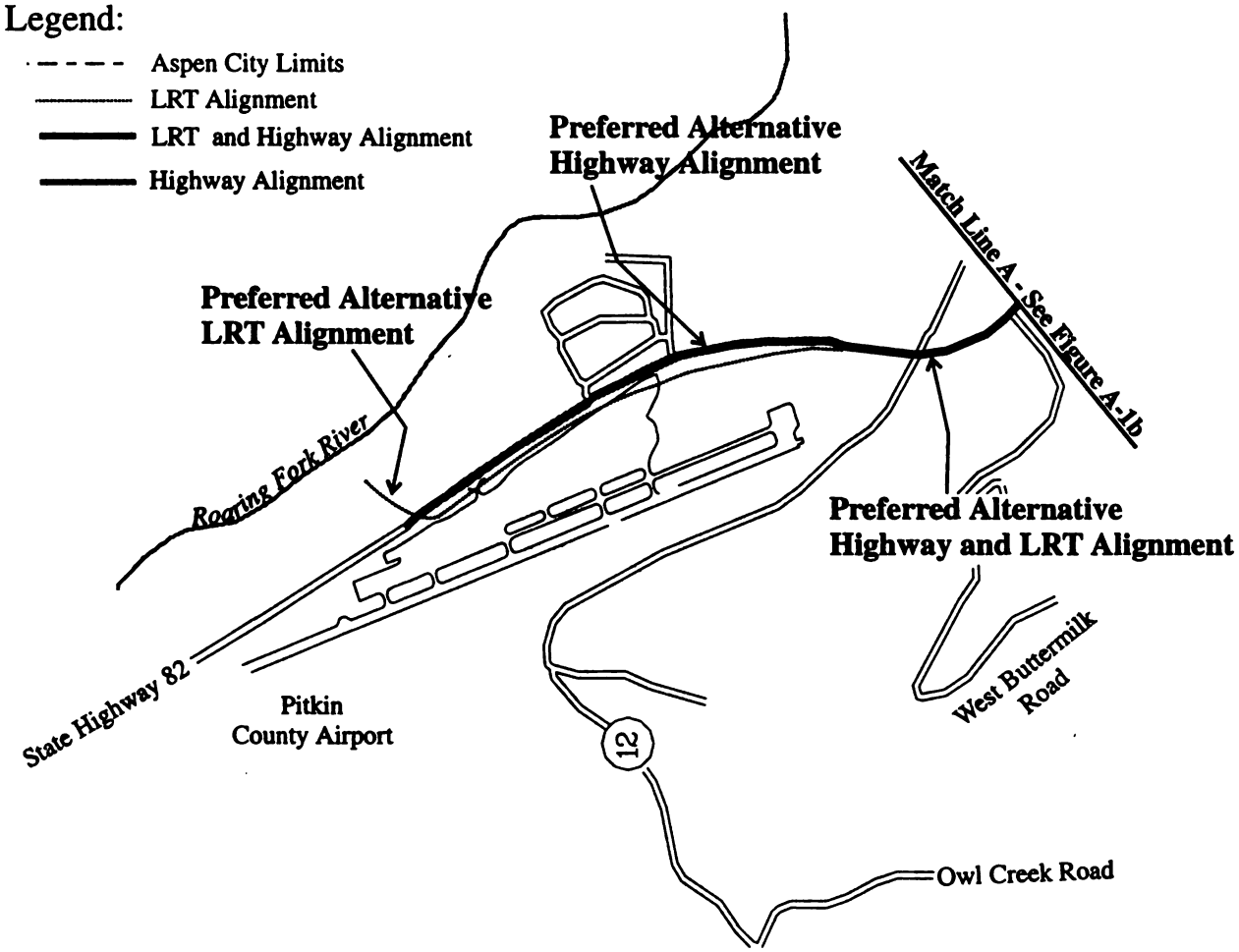

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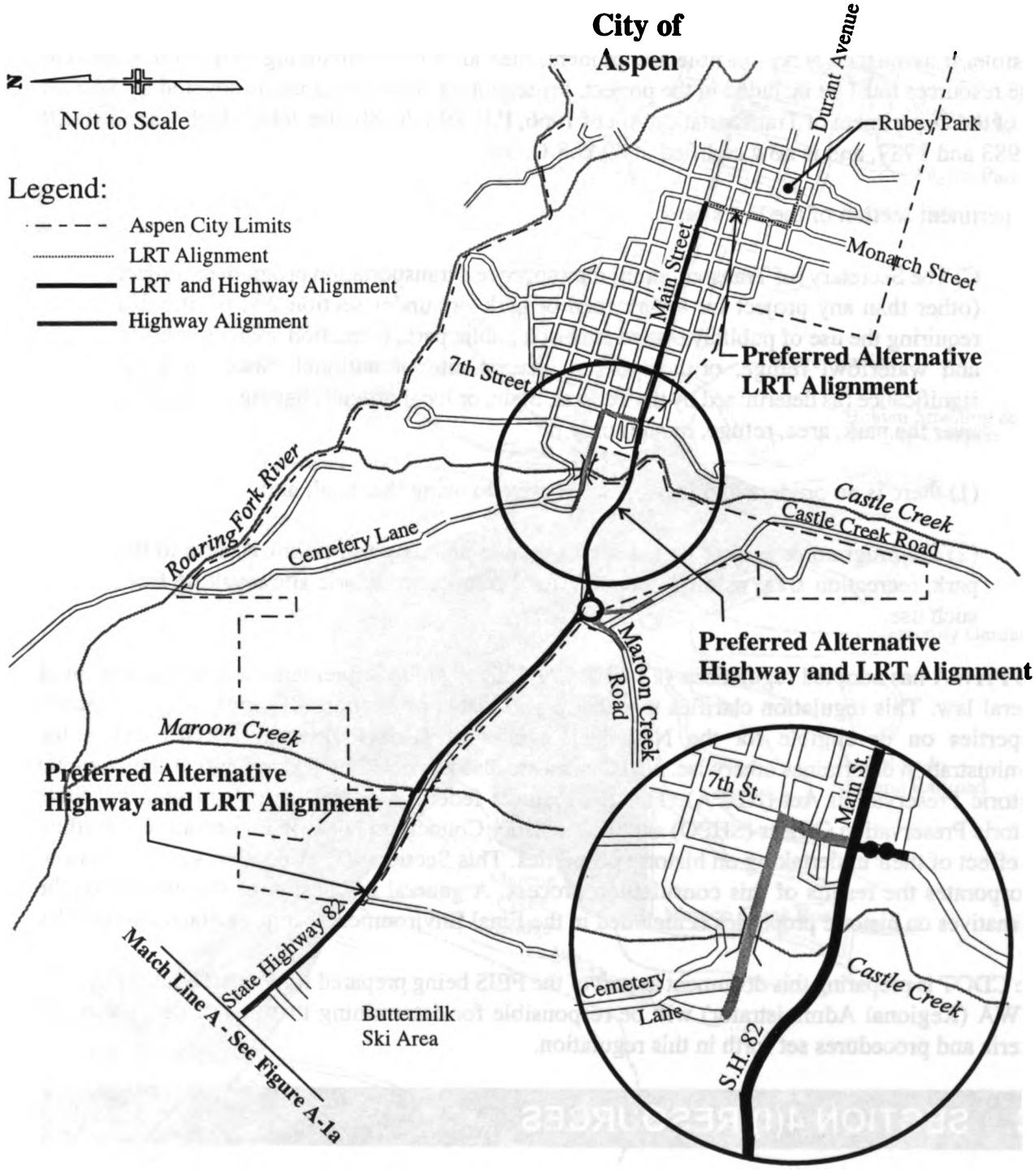
Figure A-1b
State Highway 82 Entrance to Aspen FEIS
Preferred Alternative Alignment



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B. WHAT IS SECTION 4(f)?

Section 4(f) applies to publicly owned lands which are managed as parks and recreation areas, wildlife or waterfowl refuges, and to all historic sites regardless of ownership. Impacts to Section 4(f) resources resulting from the need to improve existing State Highway 82 must be avoided if possible. If avoidance is not feasible and prudent, then all possible planning to minimize harm to these resources must be included in the project. Protection of these resources is covered by Section 4(f) of the Department of Transportation Act of 1966, P.L. 89-670, 80 Stat. 934, which was amended in 1983 and 1987, and is now codified at 49 U.S.C. 303.

The pertinent section of the law states:

> C) The Secretary [of Transportation] may approve a transportation program or project (other than any project for a park road or parkway under section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if -
>
> (1) there is no prudent and feasible alternative to using that land; and
>
> (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.

The FHWA has adopted regulations (23 CFR 771.135) to guide implementation of this section of federal law. This regulation clarifies that the requirements of Section 4(f) apply only to historic properties on or eligible for the National Register of Historic Places (NRHP) unless the Administration determines otherwise. NRHP sites are also protected by Section 106 of the National Historic Preservation Act (NHPA). This act requires federal agencies to consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation regarding the effect of their undertaking on historic properties. This Section 4(f) evaluation summarizes and incorporates the results of this consultation process. A general discussion of the impacts of the alternatives on historic properties is included in the Final Environmental Impact Statement (FEIS).

The CDOT is preparing this document as part of the FEIS being prepared for Project STA 082A-008. FHWA (Regional Administrator) will be responsible for determining that this project meets the criteria and procedures set forth in this regulation.

C. SECTION 4(f) RESOURCES

This section describes each of the properties eligible for Section 4(f) consideration. Figure A-2 shows the location and boundary of each Section 4(f) resource.

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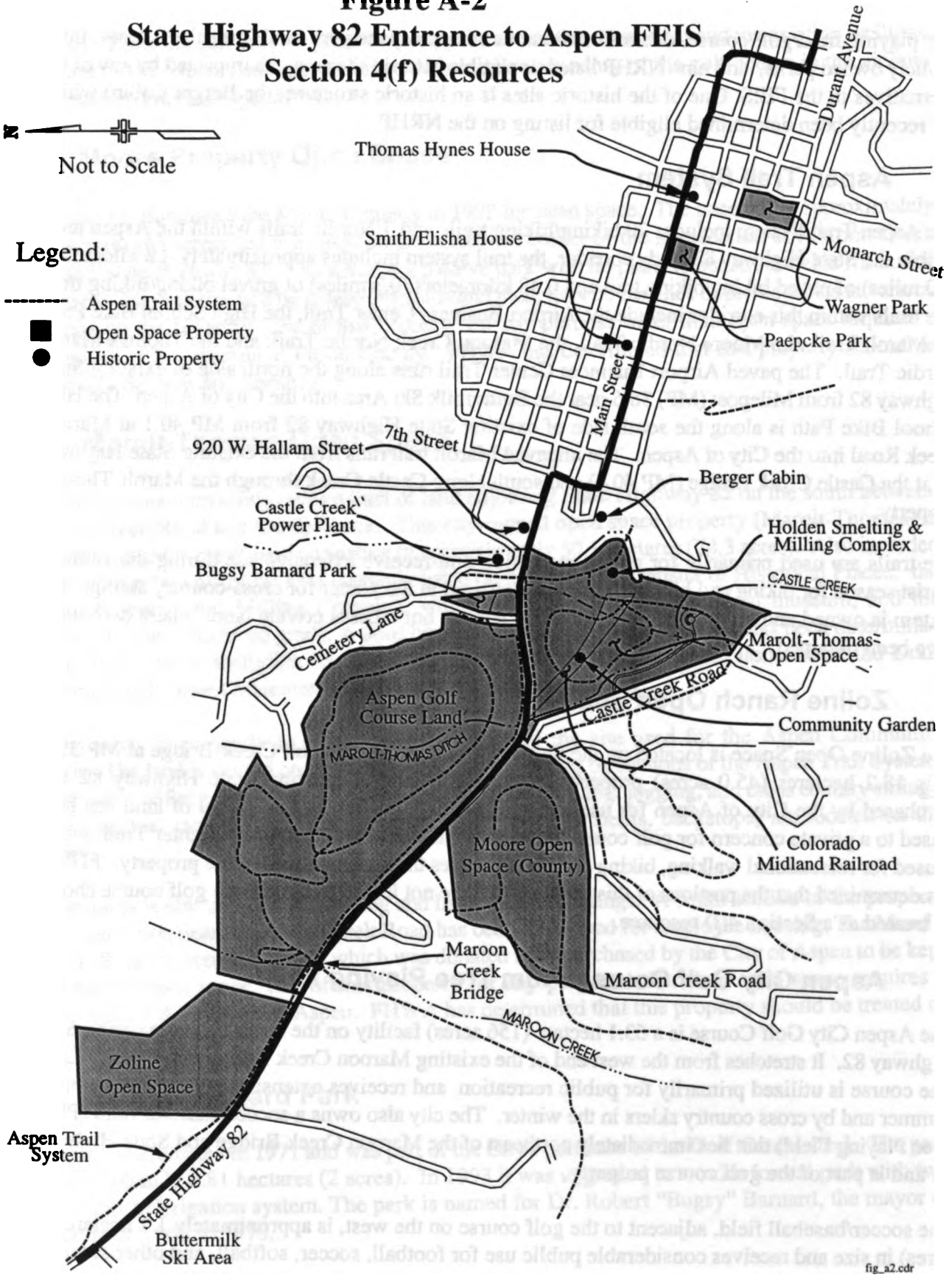
Figure A-2
State Highway 82 Entrance to Aspen FEIS
Section 4(f) Resources



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One playing field/golf course, one trail system, three open space/park land (greenbelt) areas, three publicly owned parks, and nine NRHP listed or eligible historic sites may be impacted by any of the alternatives in the FEIS. One of the historic sites is an historic structure (the Berger Cabin) which has recently been determined eligible for listing on the NRHP.

1. Aspen Trail System

The Aspen Trail System includes 20 biking/hiking trails and 7 Nordic trails within the Aspen area. Within the State Highway 82 study corridor, the trail system includes approximately 4.8 kilometers (3.0 miles) of paved biking/hiking trail and 0.48 kilometers (0.3 miles) of gravel biking/hiking trail. The trails within this corridor include the Airport Business Center Trail, the High School Bike Path, the Marolt Trail, the Moore Nordic Trail, the Maroon Creek Nordic Trail, and the Thomas/Marolt Nordic Trail. The paved Airport Business Center Trail runs along the north side of existing State Highway 82 from Milepost (MP) 38.5 near the Buttermilk Ski Area into the City of Aspen. The High School Bike Path is along the south side of existing State Highway 82 from MP 40.1 at Maroon Creek Road into the City of Aspen. The unpaved Marolt trail runs from the existing State Highway 82 at the Castle Creek Bridge (MP 40.4) and south along Castle Creek through the Marolt-Thomas Property.

The trails are used primarily for public recreation and receive extensive use during the summer tourist season for biking and hiking. They are also used in the winter for cross-country skiing. The system is owned and maintained by the City of Aspen, but crosses private lands where easements have been obtained.

2. Zoline Ranch Open Space

The Zoline Open Space is located on the northwest side of the Maroon Creek Bridge at MP 39.2. This 18.2 hectares (45.0 acres) property on the north side of existing State Highway 82 was purchased by the City of Aspen for use as open space. A portion of this parcel of land has been leased to a private concern for golf course development. The Airport Business Center Trail, which is used for recreational walking, biking and skiing passes through a portion of the property. FHWA has determined that the portions of this property that are not leased to the private golf course should be treated as a Section 4(f) resource.

3. Aspen City Golf Course/Plum Tree Playing Field

The Aspen City Golf Course is a 63.1 hectare (156 acres) facility on the north side of existing State Highway 82. It stretches from the west end of the existing Maroon Creek Bridge to Cemetery Lane. The course is utilized primarily for public recreation, and receives extensive use by tourists in the summer and by cross country skiers in the winter. The city also owns a soccer/baseball field (Plum Tree Playing Field) that lies immediately northeast of the Maroon Creek Bridge and State Highway 82 and is part of the golf course property.

The soccer/baseball field, adjacent to the golf course on the west, is approximately 1.2 hectares (3 acres) in size and receives considerable public use for football, soccer, softball, and other seasonal

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activities. There are currently no plans to change the use of this area or expand the existing facilities. A portion of the Aspen Trail System forms the southern boundary of the golf course in the vicinity of the Marolt-Thomas Open Space.

4. Moore Property Open Space

Pitkin County purchased the Moore Property in 1992 for open space. The property is approximately 26.3 hectares (65 acres) and is located on the northwest corner of the intersection of Maroon Creek Road and State Highway 82. The space is a passive park with no plans to construct fields for active recreation. The property will be crossed by trails and there may be benches or picnic tables at various locations on the property. Use of this property for any purpose other than open space requires a referendum of the citizens of Pitkin County. FHWA has determined that this property should be treated as a Section 4(f) resource.

5. Marolt-Thomas Open Space

The City of Aspen presently owns a tract of land adjoining State Highway 82 on the south between Maroon Creek Road and Castle Creek. This city-owned open space property (Marolt-Thomas) is a triangle-shaped piece of land consisting of approximately 30.1 hectares (74.3 acres). Also included on this site are two historical sites currently listed on the National Register of Historical Places: the Holden Smelting and Milling Complex, which includes the local historical museum, and the Colorado Midland Railroad grade. A third historic resource, the Marolt Ditch, has been determined by the SHPO to be ineligible for listing on the NRHP subsequent to the issuance of the Draft Environmental Impact Statement (DEIS). All are discussed below.

This property is presently in pasture with portions of the site used for the Aspen Community Gardens. The land is skirted on its north, south, and east sides by sections of the Aspen Trail System. The majority of the parcel is used for passive recreation (walking, jogging, and cross country skiing). No recreational facilities or improvements (structures, ball fields, backstops) are located on the property.

The property is also used for parasailing and hang gliding landings. A small section of the property on the south side near the Castle Creek Road has been developed for employee housing. The Marolt-Thomas Property consists of land which was donated to or purchased by the City of Aspen to be kept and used as open space. Use of this property for any purpose other than open space requires a referendum of the citizens of Aspen. FHWA has determined that this property should be treated as a Section 4(f) resource.

6. Bugsy Barnard Park

This park was created in 1971 and was part of the City's purchase of the Golf Course land. The park is approximately 0.81 hectares (2 acres). In 1993 it was upgraded to a more formal park with two ponds and an irrigation system. The park is named for Dr. Robert "Bugsy" Barnard, the mayor of Aspen from 1966 to 1970.

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7. Maroon Creek Bridge

The historic Maroon Creek Bridge is located on State Highway 82, approximately 1.6 kilometers (1 mile) northwest of the center of Aspen. The bridge, built in 1888 by the Colorado Midland Railroad, was converted to automobile use in 1929. The structure is listed on the NRHP as one of the last remaining metal multiple-span high railroad trestles in Colorado. This structure was determined eligible under Criterion C- of the NRHP Criteria provided in the Secretary of the Interior's "Standards and Guidelines for Evaluation of Eligibility" to the NRHP. Criterion C refers to a structure that embody distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that posses high artistic volumes, or that represent a significant and distinguishable entity whose components may lack individual distinction.

8. Holden Smelting and Milling Complex

The historic Holden Smelting and Milling Complex is located on approximately 3.2 hectares (7.9 acres) on what is now called the Marolt-Thomas Open Space owned by the City of Aspen. Although most of the buildings have been torn down, there are potentially significant archeological remains of the mill structure on the east end of the site: the salt warehouse has been cut in half, but is still in its original location; the sampling works building (barn) has been altered on the interior, but still retains most of its original exterior appearance; and the office building, now known as the Marolt House, was significantly remodeled by the Marolts but is still in its original location. This complex was constructed in 1891 and purchased by the Marolts in the 1930's.

The site has been listed on the NRHP under Criteria A, C, and D for its association with the mining history in Aspen, as one of the few remaining structures from the industrial aspects of Aspen's mining history, and because the site is likely to yield archaeological information about the smelting and mining industry in Aspen. Criterion A refers to a structure that is associated with events that have made a significant contribution to the broad patterns of our history. Criterion C is defined under the Maroon Creek Bridge section. Criterion D refers to a structure that has yielded, or may be likely to yield information important in prehistory or history.

9. Marolt Ditch

This ditch, using water from Castle Creek, crosses the Marolt-Thomas Open Space from the southeast, passing around the Marolt House before turning north toward the golf course and eventually reaching the Roaring Fork River. It was constructed in approximately 1902 for irrigation purposes; A. E. Carlton, owner of the Colorado Midland Railroad, owned and operated this property during that time for cattle ranching.

The Marolt family took possession of the land in the 1930's, maintaining the ditch for irrigation purposes for their farming and ranching operation. Subsequent to issuance of the DEIS/Section 4(f) Evaluation the SHPO determined that this ditch is not eligible for listing on the NRHP. Therefore, FHWA does not consider the Marolt Ditch eligible for 4(f) evaluation. The Marolt Ditch is carried through to be consistent with the DEIS.

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10. Colorado Midland Railroad

The Colorado Midland Railroad arrived in Aspen in 1887, a month after the Denver and Rio Grande. Very little of the railroad grade remains in Pitkin County, as the majority was obliterated by the construction of State Highway 82. One short segment remains intact from the junction of Maroon Creek Road and State Highway 82 to the Aspen city limits, crossing through approximately 1.6 hectares (4.0 acres) of the Marolt-Thomas Property. The line is eligible for the NRHP under Criteria A and B, as the first standard gauge railroad to penetrate the Rockies, and for its association with Jerome Wheeler and the early railroad history in Colorado.

11. Castle Creek Power Plant

The Castle Creek Power Plant is located in Castle Creek Canyon on approximately 0.6 hectares (1.5 acres) of land, just below and to the north of the existing State Highway 82 Castle Creek Bridge. It was constructed in 1893. Known originally as the Roaring Fork Electric Light and Power Plant Number 2, the building is a two story, brick warehouse type building with a gabled roof and is now owned by the City of Aspen. This resource is eligible for listing on the NRHP under Criteria A and B for its association with three of Aspen's most significant individuals (H.P. Cowenhoven, D.R.C. Brown, and James H. Deveraux) and as only the second commercially run hydroelectric plant in the country. Criterion A is defined under the Holden Smelting and Milling Complex section. Criterion B refers to a structure that is associated with the lives of persons significant in our past.

12. 920 West Hallam

This historic privately owned house is located on the north side of existing State Highway 82 on approximately 0.08 hectares (0.2 acres) of land just east of the Castle Creek Bridge within the Aspen city limits. This small, one story, wood house, built about 1888, is eligible for listing on the NRHP under Criterion C as a good example of the typical late 19th century miner's cottage. Criterion C is defined under the Maroon Creek Bridge section.

13. Berger Cabin (835 West Main)

Built in 1947, the Berger Cabin is one of the first buildings built in Aspen by longtime resident and architect Fritz Benedict. The building represents a style of Aspen architecture that is largely unrecognized, the Wrightian Style. Although there are other Benedict buildings in Aspen, this is one of the first buildings he built in the town and represents the beginnings of the new Aspen that came into being after World War II. The SHPO has determined that this structure is eligible for listing on the NRHP under Criteria B and C. Criterion B is defined under the Castle Creek Power Plant section, and Criterion C is defined under the Maroon Creek Bridge section.

14. Smith/Elisha House

The Smith/Elisha House, built around 1890, is significant as one of Aspen's best Queene Anne Style residences built during the height of Aspen's silver mining period. Original owner Eben Smith was one of the most prominent mining men in Colorado. Second owner, Laurence Mansor Elisha,

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assumed management of the Jerome Hotel in 1935 after the death of his father Mansor Elisha, who came to Aspen about 1888, established a business, and bought the Jerome Hotel in 1911. This structure is listed on the NRHP under Criteria B and C. Criterion B is defined under the Castle Creek Power Plant section, and Criterion C is defined under the Maroon Creek Bridge section.

15. Thomas Hynes House

Built in 1885, this structure is one of the few remaining single-family residences within the commercial core area of Aspen. It is an excellent example of a typical Aspen Victorian Miner's Cottage. Little is known about the original owner miner Thomas Hynes. This structure is listed on the NRHP under Criterion C. Criterion C is defined under the Maroon Creek Bridge section.

16. Paepcke Park

This park is located between Main Street and Hopkins Avenue and between Garmish Street and Aspen Street. The park is 0.69 hectares (1.72 acres) in size. It is a formal park with a gazebo in the center and is lined with mature trees. The park serves as a location for active play.

17. Wagner Park

This park is located between Monarch Street and Mill Street and fronts Durant Avenue. The park is 1.17 hectares (2.89 acres) in size. It is a formal park with two ball fields, a rugby/soccer field and a playground. The southwest corner of the park is lined with mature trees. The park serves as a location for active sports and recreational play.

D. IMPACTS TO SECTION 4(f) RESOURCES

A description of impacts to the Section 4(f) resources identified above is presented below and summarized in Table A-2 through A-4. Table A-2 provides a detailed summary of the impact of each alternative to each resource. Table A-3 summarizes the Section 4(f) resources impacts to each alternative by project section. Table A-4 summarizes impacts to Section 4(f) resources for each possible combination of alternatives.

The comments of SHPO, which were provided through the Section 106 review process, are noted in the analysis. Though the comments of the SHPO are an important factor in the Section 4(f) analysis, it should be noted that the SHPO findings regarding the impact an alternative has on an historic property does not necessarily equate to the same determination of impacts under Section 4(f).

A full description of the alternatives evaluated for the DEIS can be found in **Chapter III. Alternatives** of the DEIS. The alternatives evaluated in the DSEIS are fully described in **Chapter III. Alternatives** of the DSEIS. All build alternatives under consideration impact Section 4(f) resources to some extent.

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1. Primary Issues

1a. Project Phasing

Alternatives that are phased (Phased Alternative H and Phased Modified Direct Alternative) have a wider cross section than the non-phased alternatives. This wider cross section accommodates the exclusive bus lane as well as the light rail facility. Since the initial phase is likely to span several years, the wider cross section is used for the Section 4(f) resources evaluation for the Phased Alternatives.

The Preferred Alternative is not a phased alternative. The cross section is narrower, and therefore, the Section 4(f) impacts are less.

1b. New Maroon Creek Bridge Alignment

A new bridge across Maroon Creek is necessary with any build alternative. The existing Maroon Creek Bridge is eligible for listing on the NRHP, and must be avoided if prudent and feasible. The DEIS alternatives and the Preferred Alternative are designed with the new bridge to the north side of the existing bridge. Placement of the new bridge on the north side results in impacts to three Section 4(f) resources: the Zoline Property, the Aspen Trail System, the Aspen Golf Course and Plum Tree Playing Field.

The DSEIS alternatives are designed with the new bridge to the south of the existing bridge. Placement of the new bridge on the south side results in less impacts to the Aspen Trail System, and complete avoidance of the Zoline Open Space and the Plum Tree Playing Field on the Aspen Golf Course property. The south-side alignment, however, creates unacceptable adverse social impacts. Multifamily structures (Pomegranate Condominiums and the Aspen Tennis Club) are affected by the south side alignment. The realignment requires the acquisition of some property that is currently planned for covered parking. In addition, the realignment will result in greater noise and visual impacts than if the bridge were placed on the north side of the existing bridge. The Aspen community strongly opposes the south side alignment.

1c. Overhead Wiring System

The Preferred Alternative, the Modified Direct Alternative, and Alternative H include an overhead wiring system for light rail. This wiring system has the potential to cause visual impacts on both park and historic Section 4(f) resources. The SHPO, through the Section 106 process, has indicated that the wiring system will not cause an adverse effect on any historic property, conditioned upon SHPO review and approval of the wiring system in the vicinity of the properties on or eligible for the NRHP.

1d. Maroon Creek Road/State Highway 82 Intersection Options

Two options were evaluated for the intersection of Maroon Creek Road and State Highway 82. The options are a roundabout intersection and a signalized intersection.

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The analysis examined intersection operation and Section 4(f) impacts for each option. For more detailed analysis, see the technical memorandum ***Evaluation of Intersection Options for Maroon Creek Road.*** **Chapter VIII. Availability of Technical Reports** provides locations where this memorandum can be viewed.

The preferred option is the roundabout. The operation of the intersection and the improvement of the Castle Creek Road connection, are used to determine if an option is feasible and prudent.

While the signalized intersection has acceptable operation, vehicle delays are approximately ten times greater than for the roundabout intersection. This delay may also have a detrimental effect on the environment. Vehicles use extra fuel and generate more emissions while delayed, which decreases air quality in the area. Delays are costly to the commuter. While this is not a severe operational problem, proposing an intersection that promotes better traffic flow and increases safety is in the best interests of the community.

Another issue related to operation is the Castle Creek Road connection. The signalized intersection does not address the need to include Castle Creek Road in a proposed intersection option. In comparison, the roundabout option provides direct access for Castle Creek Road via the roundabout, which improves vehicle flow in this area.

The Aspen Valley Hospital is located off of Castle Creek Road. The roundabout option provides direct access to Castle Creek Road. Improving this access improves the access to and from the hospital. With the signalized intersection option, traffic congestion along Maroon Creek Road may create delay for accessing Castle Creek Road.

Based on European studies, roundabouts are generally safer intersections than signalized intersections. With less number of conflict points the roundabout is expected to decrease the accident rate at this intersection.

By reducing delay, improving access, and enhancing safety; the roundabout option better meets the project objectives than the signalized intersection option.

Table A-1 shows the Section 4(f) impacts for each intersection option. The roundabout option impacts Section 4(f) resources to a greater extent than does the signalized intersection, however, most of the Section 4(f) impacts for the roundabout option occur in areas that are not heavily used or are undeveloped for recreational use.

1e. Moore Property LRT Station

To serve major transit demand, it is necessary to place an LRT station located at the intersection of Maroon Creek Road and State Highway 82. This station serves three schools, the Aspen Valley Hospital, and the Aspen Highlands Ski Area. The transit station operates the best located on the Moore Property. At this location, the school buses and ski shuttles do not have to cross the LRT tracks. Also, they have direct access to the station without

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going through the intersection. The footprint of the station has been minimized (no parking permitted) at 0.6 hectares (1.5 acres) for the Preferred Alternative.

Table A-1
Section 4(f) Impacts for Maroon Creek Road and State Highway 82 Intersection Options
Hectares (Acres)

Section 4(f) Property	*Roundabout Intersection*	*Signalized Intersection*
Aspen Golf Course	0.05 (0.13)	0.05 (0.13)
Old Midland Railroad	0.22 (0.54)	0.01 (0.02)
Thomas Property*	0.26 (0.63)	0.07 (0.18)
Total	0.53 (1.30)	0.13 (0.33)

** This does not include the Old Midland right-of-way which is located on the Thomas Property.*

Alternative H and the Modified Direct Alternative has a footprint of 1.0 hectares (2.4 acres) (parking permitted).

2. Section 4(f) Resources Impacts

Following is a description of the impacts of each alternative on each Section 4(f) resource. The Marolt Ditch is not a Section 4(f) resource, but is carried forward in this discussion in order to be consistent with the Draft Section 4(f) analysis included in the DEIS.

2a. Pitkin County Airport to 7th/Main Street

1. Aspen Trail System

The description of Section 4(f) impacts to the Aspen Trail System is divided into two sections: 1) Pitkin County Airport to Maroon Creek Road, and 2) Maroon Creek Road to the intersection of 7th Street and Main Street.

Pitkin County Airport to Maroon Creek Road

Under Alternative 1 (No-Action), there are no direct impacts to the Aspen Trail System, and therefore, no Section 4(f) resources involvement. The build alternatives evaluated in the DEIS, DSEIS, and the Preferred Alternative impact the trail system. The impacts resulting from each alternative are discussed below.

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Preferred Alternative results in takes of approximately

- 1,165 meters (3,825 feet) from the Airport Business Center Trail
- 6 meters (20 feet) from the Moore Nordic Trail
- 30 meters (100 feet) from the Maroon Creek Nordic Trail
- 9 meters (30 feet) from the Aspen Golf Course Nordic Trail

This totals an impact of 1,210 meters (3,975 feet) to Aspen Trail System from Pitkin County Airport to Maroon Creek Road, under the Preferred Alternative. All of the trails that are impacted are replaced or relocated.

Alternative 2 results in takes of approximately:

- 768 meters (2,518 feet) from the Airport Business Center Trail
- 26 meters (85 feet) from the Moore Nordic Trail
- 37 meters (120 feet) from the Maroon Creek Nordic Trail

This totals an impact of 831 meters (2,727 feet) to Aspen Trail System from Pitkin County Airport to Maroon Creek Road, under Alternative 2.

Alternative 3 results in takes of approximately:

- 774 meters (2,538 feet) of the Airport Business Center Trail;
- 26 meters (85 feet) from the Moore Nordic Trail;
- 37 meters (120 feet) from the Maroon Creek Nordic Trail.

This totals an impact of 837 meters (2,746 feet) to the Aspen Trail System from Pitkin County Airport to Maroon Creek Road, under Alternative 3.

Initially, Alternative H and the Modified Direct Alternative were analyzed with the new Maroon Creek Bridge on the south side of the existing structure. However, subsequent to the release of the DSEIS, it was determined that the Maroon Creek Bridge south-side alignment is imprudent due to unacceptable adverse social impacts. This alignment is eliminated from further consideration.

With the Maroon Creek Bridge north-side alignment, Alternative H and the Modified Direct Alternative have the same alignment with takes of approximately:

- 768 meters (2,518 feet) of the Airport Business Center Trail
- 26 meters (85 feet) of the Moore Nordic Trail
- 37 meters (120 feet) of the Maroon Creek Nordic Trail

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This totals an impact of 831 meters (2,727 feet) on the Aspen Trail System from Pitkin County Airport to Maroon Creek Road, under Alternative H and the Modified Direct Alternative.

Maroon Creek Road to 7th/Main Street -- Within the Maroon Creek Road to the intersection of 7th Street and Main Street, there are ten alternatives. Under Alternative A (No-Action), there are no direct impacts to the Aspen Trail System, and therefore, no Section 4(f) resource involvement.

The Preferred Alternative requires the taking of:

- 295 meters (970 feet) from the High School Bike Path
- 33 meters (110 feet) from the Marolt Trail
- 140 meters (460 feet) from the Marolt-Thomas Nordic Trail
- 263 meters (865 feet) from the Airport Business Center Trail

This totals an impact of 731 meters (2,405 feet) on the Aspen Trail System between Maroon Creek Road and 7th/Main Street. All of the trails that are impacted are replaced or relocated.

Alternative B requires a 611 meter (2,005 feet) take from the High School Bike Path. There are no other impacts to the Aspen Trail System.

Alternatives C and E require the taking of:

- 311 meters (1,020 feet) from the High School Bike Path
- 102 meters (335 feet) from the Marolt Trail
- 152 meters (500 feet) from the Marolt-Thomas Nordic Trail

This results in a total take of 565 meters (1,854 feet) from the Aspen Trail System between Maroon Creek Road and 7th/Main Street.

Alternatives D and F require the taking of:

- 320 meters (1,050 feet) from the High School Bike Path
- 126 meters (415 feet) from the Marolt Trail
- 164 meters (540 feet) from the Marolt-Thomas Nordic Trail

This results in a total take of 610 meters (2,001 feet) from the Aspen Trail System between Maroon Creek Road and 7th/Main Street.

Alternative G requires the taking of:

- 280 meters (920 feet) from the High School Bike Path

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- 87 meters (285 feet) from the Marolt-Thomas Nordic Trail
- 37 meters (120 feet) from the Marolt Trail

This results in a total take of 404 meters (1,325 feet) from the Aspen Trail System between Maroon Creek Road and 7th/Main Street.

Alternative H requires the taking of:

- 20 meters (65 feet) from the Airport Business Center Trail
- 479 meters (1,572 feet) from the High School Bike Path Trail
- 35 meters (115 feet) from the Marolt Trail

This results in a total take of 534 meters (1,789 feet) meters from the Aspen Trail System between Maroon Creek Road and 7th/Main Street.

The Modified Direct Alternative takes:

- 326 meters (1,067 feet) from the High School Bike Path Trail
- 102 meters (335 feet) from the Marolt Trail
- 152 meters (500 feet) from the Thomas/Marolt Nordic Trail

This results in a total take of 580 meters (1,902 feet) meters from the Aspen Trail System between Maroon Creek Road and 7th/Main Street.

2. Zoline Open Space

Under Alternative 1 (No-Action), there are no impacts to the Zoline Open Space, and therefore, no Section 4(f) resources involvement.

As discussed earlier, a new bridge is necessary in order to avoid taking of the Maroon Creek Bridge (which is a NRHP historic bridge) and to maintain a pedestrian or transit crossing of Maroon Creek.

All build alternatives may avoid impacts to the Zoline Open Space by constructing the new Maroon Creek Bridge on the south side of the existing bridge. Placement of the new bridge on the south side of the current bridge, however, proves to be imprudent due to unacceptable adverse social impacts to properties on the south side of State Highway 82. This alignment is eliminated from further consideration, and all build alternatives include a new bridge on the north side of the existing bridge.

The following impacts occur with placement of the new structure on the north side of the existing Maroon Creek Bridge. These takes occur along the edge of the existing parcel bordering the existing State Highway 82.

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- The Preferred Alternative takes approximately 0.6 hectares (1.5 acres) from a total of 18.2 hectares (45 acres) designated as open space for the City of Aspen.
- Alternative 2 takes approximately 1.2 hectares (3.0 acres).
- Alternative 3 takes approximately 1.4 hectares (3.5 acres).
- Both Alternative H and the Modified Direct take approximately 0.5 hectare (1.2 acres).

3. Aspen City Golf Course/Plum Tree Playing Field

The description of Section 4(f) impacts to the Aspen City Golf Course/Playing Field is divided into two sections: 1) Pitkin County Airport to Maroon Creek Road, and 2) Maroon Creek Road to the intersection of 7th Street and Main Street.

There are no impacts to the Aspen City Golf Course under the No-Action (Alternative 1); therefore, there are no Section 4(f) resources involvement.

Pitkin County Airport to Maroon Creek Road -- As discussed above, a new bridge is necessary to avoid taking of the Maroon Creek NRHP historic bridge and to maintain a pedestrian or transit crossing of Maroon Creek. The SHPO has concurred with the placement of the new bridge under the Preferred Alternative in a letter that can be found in **Volume 2** of the FEIS.

- *South Bridge Alignment* - Initially, a Maroon Creek Bridge south-side alignment was analyzed. However, subsequent to the release of the DSEIS placement of the new bridge on the south side of the current Maroon Creek Bridge proves to be imprudent due to unacceptable adverse social impacts to properties on the south side of State Highway 82. This alignment is eliminated from further consideration.

- *North Bridge Alignment* - The Preferred Alternative takes approximately 0.47 hectares (1.2 acres) from the Aspen Golf Course between the Pitkin County Airport and Maroon Creek Road. Of the total take, 0.28 ha (0.7 acres) are from the Plum Tree Playing Field and 0.19 hectares (0.5 acres) are from undeveloped golf course property or in the Maroon Creek channel. This take is a result from the combination of the Maroon Creek Bridge north-side alignment and the Maroon Creek Road roundabout. The part of the properties that are impacted are underdeveloped and are not used for any recreational purposes at this time.

  Alternative 2 results in a total take of approximately 1.2 hectares (3.0 acres). Of the total take, 0.4 hectares (0.9 acres) would be from the developed Plum Tree Playing Field, located immediately east of the Maroon Creek Bridge. Approximately 0.8 hectares (2.1 acres) are currently undeveloped golf course property or are in the Maroon Creek channel.

  Alternative 3 requires a total take of 1.4 hectares (3.5 acres). Of the total take, approximately 0.9 hectares (2.4 acres) are currently undeveloped golf course property

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or are in the Maroon Creek channel. Of the area needed for right-of-way, 0.5 hectares (1.1 acres) is from the Plum Tree Playing Field, located immediately east of the Maroon Creek drainage.

Alternative H and Modified direct alignments takes approximately 0.5 hectares (1.2 acres) from the golf course.

Maroon Creek Road to 7th/Main Street -- The Preferred Alternative requires approximately 0.05 hectares (0.1 acres) of the golf course property at the intersection of Cemetery Lane and State Highway 82. This portion of the golf course is vacant and is not used for any recreational purpose at this time.

Alternatives A-G and the Modified Direct avoid any impact on the golf course/playing field in this section of the project.

The Alternative H alignment takes approximately 0.1 hectares (0.25 acres) of the golf course property at the intersection of Cemetery Lane and State Highway 82. This portion of the golf course is vacant and is not used for any recreational purpose at this time.

4. Moore Open Space

The Preferred Alternative alignment has been shifted to the north to avoid the Moore Open Space, and the right-of-way has been minimized to avoid the Aspen Golf Course. The transit station, however, requires 0.6 hectares (1.4 acres) of the Moore Open Space. The amount of open space acquisition has been minimized by eliminating parking. This facility is necessary to serve as a location of major transit demand. The area needed for the transit station is currently undeveloped open space.

Under Alternative 1 (No-Action), there are no impacts to the Moore Open Space, and therefore, no Section 4(f) resources involvement.

Alternative 2 results in a take of approximately 0.6 hectares (1.6 acres) from a total of 26.25 hectares (64.87 acres) designated as open space by Pitkin County.

Alternative 3 takes 0.9 hectares (2.4 acres).

Both Alternative H and the Modified Direct Alternative take 0.6 hectares (1.5 acres) of Moore Open Space for the alignment and 1.0 hectares (2.4 acres) of Moore Open Space for a transit stop and limited park and ride.

5. Marolt-Thomas Open Space

There are no direct impacts to the Marolt-Thomas Property under Alternative A (No-Action), therefore, there would be no Section 4(f) resources involvement.

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Under the Preferred Alternative, Alternatives B, C, D, E, F, G, H and the Modified Direct Alternative, State Highway 82 crosses Marolt-Thomas Open Space to eliminate the existing S-curves. This improvement requires acquisition of various amount of land from the 30.1 hectares (74.26 acres) open space property.

- The Preferred Alternative requires 2.1 hectares (5.2 acres) of the Marolt-Thomas Open Space. Of the current State Highway 82 right-of-way, 0.4 hectares (1.0 acres) are returned to open space. The Preferred Alternative also includes a cut and cover tunnel which returns 0.6 hectares (1.5 acres) of open space. With the return of open space from the cut and cover tunnel and State Highway 82, the total take for the Preferred Alternative is 1.1 hectares (2.7 acres).

- Alternative B results in a take of approximately 1.2 hectares (3.0 acres).

- Alternative C results in a take of approximately 2.6 hectares (6.5 acres). Of the current State Highway 82 right-of-way, 0.4 hectares (1.0 acres) are returned to open space. With the return of open space, the total take is 2.2 hectares (5.5 acres).

- Alternative D takes 2.9 hectares (7.2 acres). Of the current State Highway 82 right-of-way, 0.4 hectares (1.0 acres) are returned to open space. With the return of open space, the total take is 2.5 hectares (6.2 acres).

- Alternative E takes 2.6 hectares (6.4 acres) of which 1.6 hectares (3.9 acres) is returned to open space through a cut and cover tunnel and conversion of State Highway 82. This amounts to a total take of 1.0 hectares (2.5 acres) of the Marolt-Thomas Property.

- Alternative F takes 2.9 hectares (7.2 acres) of property, of which 1.7 hectares (4.2 acres) are returned to open space through a cut and cover tunnel and conversion of State Highway 82. This amounts to a total take of 1.2 hectares (2.9 acres) of the Marolt-Thomas Property.

- Alternative G requires 2.0 hectares (4.9 acres) of the Marolt-Thomas Open Space.

- Alternative H requires 2.2 hectares (5.4 acres) of the Marolt-Thomas Open Space, including right-of-way takes from the Holden Smelting and Milling Complex as well as the Colorado Midland Railroad, which are discussed below. The takes are a result of the combination of the Cemetery Lane roundabout and the modified direct alignment.

- Modified Direct Alternative takes 2.7 hectares (6.7 acres) of the Marolt-Thomas Open Space. Of the current State Highway 82 right-of-way, 0.4 hectares (1.0 acres) would be returned to open space under this alternative. This alternative includes a cut and cover tunnel that would return 0.8 hectares (2.0 acres) of open space. With

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the return of open space from the cut and cover tunnel and State Highway 82, the total take for the Modified Direct alternative is 1.5 hectares (3.7 acres).

All of the takes include right-of-way from the Colorado Midland Railroad. All of the alternatives take right-of-way from the Holden Smelting and Milling Complex. This is discussed in more detail below.

None of the alignments impact the community gardens located on this parcel. Since this park is undeveloped open space, there would be some loss of facilities or functions as a result of visual and audible intrusion on the open space site.

6. Bugsy Barnard Park

Under the Preferred Alternative, Alternatives A (No-Action), B, C, D, E, F, G, and the Modified Direct Alternative alignments there are no impact to this park. Therefore, there are no Section 4(f) resources involvement.

Alternative H includes a roundabout at the intersection of State Highway 82 and Cemetery Lane which takes 0.1 hectares (0.25 acres) of this park.

7. Maroon Creek Bridge

As discussed above, a new bridge is necessary to avoid taking of this NRHP historic bridge and to maintain a pedestrian or transit crossing of Maroon Creek. The existing historic bridge will remain in place under all alternatives. Under all build alternatives, the existing bridge is used for either pedestrian and bicycle use or transit use.

The Preferred Alternative places a new Maroon Creek Bridge north of the historic Maroon Creek Bridge. The new bridge is used for highway lanes. The cantilevers on the historic bridge are removed and the existing bridge is used for transit. The SHPO has determined that there are no adverse effects to the historic bridge, conditioned upon review and approval for compatibility of the ultimate design and placement of the new bridge.

Alternative 1 (No-Action) does not impact the historic Maroon Creek Bridge; therefore, there is no Section 4(f) involvement.

Alternatives 3, H, and the Modified Direct Alternative include placement of the transit envelope along the corridor in one of two places. One option is to place the transit envelope in the center of the travel lanes on the new bridge. The other option is to place the transit corridor on the south side of the travel lanes. The impacts of either location are identical. The SHPO has determined that there would be no adverse effect to the historic bridge under these alternatives and alignments.

For the DSEIS alternatives, the new bridge was analyzed parallel to the existing structure on both the north and south side. Subsequent to the release of the DSEIS, the Maroon Creek Bridge south-side alignment proved to be imprudent due to unacceptable adverse social

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impacts. A copy of the letter from the City of Aspen explaining the social impacts is located in **Volume 2: Project Coordination.** This alignment has been eliminated from further consideration.

Additional structural supports to the existing structure are anticipated. However, the SHPO reserves the right to review and approve the alterations prior to making a final determination of no adverse effect. Adaptive reuse of the bridge as a pedestrian or transit crossing of Maroon Creek without modification does not constitute a Section 4(f) use because it does not substantially impair the integrity of this historic resource.

8. Holden Smelting and Milling Complex

Alternative A (No-Action) and B (Existing Alignment) have no impacts to the historic Holden Smelting and Milling Complex since they are not located in the vicinity of the resource. As a result, there are no Section 4(f) resources involvement. Alternatives C, D, E, F, G, H, and the Modified Direct traverse the property and have a direct impact on the historic resource.

The Preferred Alternative alignment has been shifted to the north to avoid the National Historic District (NHD) boundary. Construction of the Preferred Alternative impacts 0.02 ha (0.05 acres) of this property. The proposed edge of LRT platform passes within 97 meters (320 feet) of the Marolt House, within 50 meters (165 feet) of the museum, and 85 meters (280 feet) of the Salt Warehouse. The proposed edge of right-of-way passes within 85 meters (280 feet) of the Marolt House within 40 meters (130 feet) of the museum, and within 67 meters (220 feet) of the Salt Warehouse. To ensure no adverse effect on this property, earthen berms are incorporated into the project at this location.

The SHPO has determined there would be no adverse effect to this resource under the Preferred Alternative.

Under Alternatives C and E, the total take is approximately 0.22 hectares (0.54 acres) of the historic site (included in the Marolt-Thomas Open Space land) for construction. Although no buildings are removed, areas of the site where industrial debris of archaeological interest might be located may be disturbed by the new paved roadway. The proposed edge of highway pavement passes within 85 meters (280 feet) of the Holden office building (Marolt House), within 41 meters (135 feet) of the sampling works building which houses the Aspen Museum, and within 85 meters (280 feet) of the salt warehouse. The edge of the right-of-way width extends to within 70 meters (230 feet) of the Marolt House, 26 meters (85 feet) of the sampling building, and 70 meters (230 feet) of the salt warehouse.

Under Alternatives D and F, the total take is approximately 0.3 hectares (0.74 acres) of the historic site (included in the Marolt-Thomas open space land) for construction. Although no buildings are be removed, areas of the site where industrial debris of archaeological interest might be located may be disturbed by the new paved roadway and the separate transit envelope. The proposed edge of highway pavement passes within 79 meters (260 feet) of the

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Holden office building (Marolt House), within 35 meters (115 feet) of the sampling works building, and within 79 meters (260 feet) of the salt warehouse. The edge of the right-of-way width extends to within 64 meters (210 feet) of the Marolt House, 20 meters (65 feet) of the sampling building, and 64 meters (210 feet) of the salt warehouse.

Under Alternative G, the total take is 0.13 hectares (0.32 acres) of the historic site (included in the Marolt-Thomas Open Space) for construction. Although no buildings are removed, areas of the site where industrial debris of archaeological interest might be located may be disturbed by the new transit envelope. The proposed edge of the envelope passes within 38 meters (125 feet) of the Museum, 88 meters (290 feet) of the Salt Warehouse, and 88 meters (290 feet) of the Marolt House. The edge of the right-of-way is within 32 meters (105 feet) of the Museum, 76 meters (250 feet) of the Salt Warehouse, and 76 meters (250 feet) of the Marolt House.

Under Alternative H, the total take from the Holden Complex is 0.08 hectares (0.20 acres) (included in the Marolt-Thomas Open Space). Although no buildings are removed, areas of the site where industrial debris of archaeological interest might be located may be disturbed. The proposed edge of the pavement passes within 46 meters (150 feet) of the Museum, 97 meters (320 feet) of the Marolt House and 85 meters (280 feet) of the Salt Warehouse. The proposed edge of right-of-way passes within 37 meters (120 feet) of the Museum, 76 meters (250 feet) of the Salt Warehouse, and 85 meters (280 feet) of the Marolt House.

The Modified Direct Alternative total take from the Holden Complex is 0.17 hectares (0.42 acres) (included in the Marolt-Thomas Open Space). Although no buildings are removed, areas of the site where industrial debris of archaeological interest might be located may be disturbed. The proposed edge of the pavement passes within 40 meters (130 feet) of the Museum, 76 meters (250 feet) of the Marolt House, and 85 meters (280 feet) of the Salt Warehouse. The proposed edge of right of way passes within 21 meters (70 feet) of the Museum, 60 meters (190 feet) of the Marolt House, and 67 meters (220 feet) of the Salt Warehouse.

The SHPO has determined that without further measures there would be an adverse effect to this resource under Alternatives C, D, E, F, G, H and Modified Direct Alternative. The SHPO has requested that CDOT consider the following two alternatives, which they state would avoid an adverse effect: 1) shift the pavement edge to the north to entirely miss the NHD boundary, and 2) extend the length of the cut and cover tunnel for Alternatives E, F, and the Modified Direct past the NHD to directly connect with the proposed Castle Creek Bridge.

9. Marolt Ditch

This description is included in this analysis for continuity purposes only. The SHPO has determined that this resource is not eligible for listing on the NRHP. Therefore, FHWA has determined that this resource does not qualify for protection under Section 4(f).

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10. Colorado Midland Railroad

Under the Alternative A (No-Action), there are no impacts to the remaining segments of the historic railroad grade on the Marolt-Thomas Property.

However, under the nine build alternatives, a small portion of the total 1.6 hectares (4.0 acres) railroad grade (included in the Marolt-Thomas Open Space land) would be lost to right-of-way acquisition. The Preferred Alternative uses 0.22 hectares (0.54 acres) of the railroad grade. Alternatives B, C, E, and G use 0.13 hectares (0.32 acres) of the historic railroad grade. Alternatives D and F require a take of 0.17 hectares (0.42 acres). Both Alternative H and the Modified Direct Alternative use 0.10 hectares (0.25 acres) of this railroad grade.

The SHPO has determined that this loss would not effect the historic resource under the build alternatives. There is no feasible and prudent alternative that avoids the use of this Section 4(f) resource.

11. Castle Creek Power Plant

There is no impact to the historic Castle Creek Power Plant under the Preferred Alternative, Alternatives A (No-Action), C, D, E, F, G, H, and the Modified Direct Alternative. These project alignments are not in the immediate vicinity of the resource and the existing bridge remains as a local access route in its present configuration. Under Alternative B, the existing bridge is widened to the south. The plant building is well below the elevation of the bridge deck and is not physically affected, and the widened bridge does not intrude visually on the site.

Bridge pier placement with the Preferred Alternative, Alternatives C, D, E, F, G, H, and the Modified Direct Alternative does not result in a Section 4(f) use of land from the historic site because they are placed well to the south of the property. Therefore, there is no Section 4(f) involvement with this historic resource. The SHPO has determined that there is no effect to the historic site under Alternative B.

12. 920 West Hallam Street

The Preferred Alternative is not in the vicinity of this historic property, therefore, there is no impact to this historic resource. In addition, traffic volumes in front of this historic structure will decrease since only local traffic will use this roadway.

Alternatives A (No-Action), C, D, E, and F do not include any change in the vicinity of this resource. Alternatives B and G do not require right-of-way acquisition from this property. The structure itself is not affected, and the distance between the house and the edge of pavement, currently 13 meters (40 feet), is not reduced. Visual impacts are not expected to be created by a wider highway because the roadway is already four lanes at this location. However, due to a potential grade difference of approximately one meter (3 feet), a modest retaining wall and railing may be required to be installed along the pavement edge. This activity constitutes Section 4(f) involvement with this historic resource.

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Under Alternative H the highway is narrower than the current highway. In addition, traffic levels decrease in front of this resource since only outbound traffic flows along this section of roadway. The light rail system is not in the vicinity of the resource.

The Modified Direct Alternative is not in the vicinity of this historic property. The traffic levels will decrease in front of this structure for the Modified Direct Alternative since limited local traffic flows along this roadway.

The SHPO has determined that there would be no adverse effect on this historic resource under the Preferred Alternative, Alternative B, G, H, and the Modified Direct Alternative subject to their review and approval of any retaining walls and railing design that may prove necessary during final design.

13. Berger Cabin

The Preferred Alternative, Alternatives C, D, E, F, G, and the Modified Direct Alternative affect this property. These alignment alternatives all have similar effects on the Berger Cabin. Though no alternative takes the structure, all alternatives come within 6-10 meters (20-30 feet) of the structure. The edge of right-of-way comes within 3 meters (10 feet) of the structure.

Alternative A (No-Action) Alternative B (Existing) and Alternative H have no effect on this property.

The SHPO has determined that there would be no adverse effect on this historic resource subject to the structure being relocated back on the property or additional landscaping being incorporated to provide a visual buffer. Any landscaping and relocation plans are subject to the SHPO review and approval. Subject to this move and the SHPO review/approval there will be no Section 4(f) use of this resource.

2b. 7th/Main Street - Rubey Park

The Preferred Alternative, Alternative H, and the Modified Direct Alternative alignments are identical in this area and are the only alternatives that have the potential to impact the following Section 4(f) resources.

14. Smith/Elisha House

All three of the alternatives (Preferred Alternative, Alternative H, Modified Direct Alternative) stay within existing curb line. Two lanes of traffic and parking are eliminated along Main Street in front of this building. A transit stop is located in the vicinity of this building.

The SHPO has determined that there would be no adverse effect on this historic resource under these alternatives subject to their review and approval of the landscape and wiring design in the vicinity of this structure. Subject to such review/approval there will be no Section 4(f) use of this resource.

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15. Thomas Hynes House

All three of the alternatives (Preferred Alternative, Alternative H, Modified Direct Alternative) stay within existing curb line. Two lanes of traffic and parking are eliminated along Main Street in front of this building. A transit stop is located in the vicinity of this building.

The SHPO has determined that there would be no adverse effect on this historic resource under these alternatives subject to their review and approval of the landscape and wiring design in the vicinity of this structure. Subject to such review/approval there will be no Section 4(f) use of this resource.

16. Paepcke Park

All three of the alternatives (Preferred Alternative, Alternative H, Modified Direct Alternative) stay within existing curb line. Two lanes of traffic and parking will be eliminated along Main Street in front of this park. A transit stop is located in the vicinity of this park. There is no use of this property under any of the alternatives.

17. Wagner Park

All three alternatives (Preferred Alternative, Alternative H, Modified Direct Alternative) stay within existing curb line. A transit stop is located in the vicinity of this park. There is no use of this property under any of the alternatives.

2c. Explanation of Tables A-2, A-3, and A-4

Table A-2 summarizes the quantifiable impacts of each alternative on each Section 4(f) resource as well as the comments provided by SHPO regarding each historic property. Table A-3 summarizes the impacts of alternative by Project Corridor Section. In order to provide a more useful summary, Table A-4 summarizes these impacts by the alternative combinations that provide a consistent mode throughout the corridor.

N/A, or "Not Applicable" means that the specific alternative alignment is not located in the vicinity of the Section 4(f) resource.

No Effect means that SHPO, through the Section 106 and project coordination procedures, has determined that an alternative will not have an effect on the historic resource.

No Adverse Effect means SHPO has determined that, though the alternative may affect the resource, that effect will not be adverse to its historic qualities.

No Effect With Mitigation means SHPO has determined that with specified mitigation the effect of the alternative will not be adverse to the historic qualities of the resource.

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Table A-2
Quantifiable Impacts to Section 4(f) Resources

Section 4(f) Resource	*Project Corridor Section*												
	Buttermilk to Maroon Creek Road				*Maroon Creek Road to Rubey Park*								
	Alternative				*Alternative*								
	2	*3*	*H/Mod. Direct*	*Pref. Alt.*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*Mod. Direct*	*Pref. Alt.*
1) Aspen Trail System	New Bridge on north side of Maroon Creek Bridge take: 831 meters (2,727 ft.). Area take included in #2, #3, & #4 below	New Bridge on north side of Maroon Creek Bridge take: 837 meters (2,746 ft.) Area take included in #2, #3, & #4 below	New Bridge on north side of Maroon Creek Bridge take: 831 meters (2,727 ft.) Area take included in #2, #3, & #4 below	New Bridge on north side of Maroon Creek Bridge take: 1,210 meters (3,975 ft)[1] Area take included in #2, #3, & #4 below	Path take: 611 meters (2,005 ft.). Area take included in #5 below	Path take: 565 meters (1,854 ft.). Area take included in #5 below	Path take: 610 meters (2,001 ft.). Area take included in #5 below	Path take: 565 meters (1,854 ft.) Area take included in #5 below	Path take: 610 meters (2,001 ft.) Area take included in #5 below	Path take: 404 meters (1,325 ft.) Area take included in #5 below	Path take: 534 meters (1,789 ft.) Area take included in #5 and #6 below	Path take: 580 meters (1,902 ft) Area take included in #5 below	Path take: 731 meters (2,405 ft) Area take included in #5 below

[1] *Includes a 387 meters (1,270 feet) of take from Airport Business Center Trail west of Buttermilk.*

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Table A-2 (continued)
Quantifiable Impacts to Section 4(f) Resources

Section 4(f) Resource	*Project Corridor Section*												
	Buttermilk to Maroon Creek Road				*Maroon Creek Road to Rubey Park*								
	Alternative				*Alternative*								
	2	*3*	*H/Mod. Direct*	*Pref. Alt.*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*Mod. Direct*	*Pref. Alt.*
2) Zoline Open Space (18.2 ha [45.0 ac])	New Bridge on north side of Maroon Creek Bridge – 1.2 ha (3.0 ac)	New Bridge on north side of Maroon Creek Bridge – 1.4 ha (3.5 ac)	New Bridge on north side of Maroon Creek Bridge – 0.5 ha (1.2 ac)	New Bridge on north side of Maroon Creek Bridge – 0.6 ha (1.5 ac)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3) Aspen Golf Course (63.1 ha [156.0 ac])	New Bridge on north side of Maroon Creek Bridge – 1.2 ha (3.0 ac)	New Bridge on north side of Maroon Creek Bridge – 1.4 ha (3.5 ac)	New Bridge on north side of Maroon Creek Bridge – 0.5 ha (1.2 ac)	New Bridge on north side of Maroon Creek Bridge – 0.47 ha (1.17 ac)	N/A	N/A	N/A	N/A	N/A	N/A	0.1 ha (0.25 ac)	No Effect	New Bridge on north side of Maroon Creek Bridge – 0.05 ha (0.13 ac)
4) Moore Open Space 26.3 ha [65.0 ac])	0.6 ha (1.6 ac)	0.9 ha (2.4 ac)	1.6 ha (3.9 ac)	0.6 ha (1.5 ac)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Table A-2 (continued)
Quantifiable Impacts to Section 4(f) Resources

Section 4(f) Resource	*Project Corridor Section*												
	Buttermilk to Maroon Creek Road				*Maroon Creek Road to Rubey Park*								
	Alternative				*Alternative*								
	2	*3*	*H/Mod. Direct*	*Pref. Alt.*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*Mod. Direct*	*Pref. Alt.*
5) Marolt-Thomas Open Space (30.1 ha [74.3 ac])	N/A	N/A	N/A	N/A	1.2 ha (3.0 ac)	2.6 ha (6.5 ac) Mit. returns 0.4 ha (1.0 ac) to open space Total take with mit. = 2.2 ha (5.5 ac)	2.9 ha (7.2 ac) Mit. returns 0.4 ha (1.0 ac) to open space Total take with mit. = 2.5 ha (6.2 ac)	2.6 ha (6.4 ac) Mit. returns 1.6 ha (3.9 ac) to open space Total take with mit. = 1.0 ha (2.5 ac)	2.9 ha (7.2 ac) Mit. returns 1.7 ha (4.2 ac) to open space Total take with mit. = 1.2 ha (2.9 ac)	2.0 ha (4.9 ac)	2.2 ha (5.4 ac)	2.7 ha (6.7 ac) Mit. returns 1.2 ha (3 ac) to open space Total take with mit.= 1.5 ha (3.7 ac)	2.1 ha (5.2 ac) Mit. returns 1.0 ha (2.5 ac) to open space Total take with mit.= 1.1 ha (2.7 ac)
6) Bugsy Barnard Park (0.81 ha [2.0 ac])	N/A	N/A	N/A	N/A	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	0.1 ha (0.25 ac)	No Effect	No Effect
7) Maroon Creek Bridge	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8) Holden Smelting & Milling Complex (3.2 ha [7.9 ac] included in #5 above)	N/A	N/A	N/A	N/A	N/A	0.22 ha (0.54 ac) included in #5 above; No Effect with Mitigation	0.30 ha (0.74 ac) included in #5 above; No Effect with Mitigation	0.22 ha (0.54 ac) included in #5 above; No Effect with Mitigation	0.30 ha (0.74 ac) included in #5 above; No Effect with Mitigation	0.13 ha (0.32 ac) included in #5 above; No Effect with Mitigation	0.08 ha (0.20 ac) included in #5 above, No Effect with Mitigation	0.17 ha (0.42 ac) included in #5 above, No Effect with Mitigation	0.02 ha (0.0 5 ac) included in #5 above, No Effect with Mitigation
9) Marolt Ditch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Table A-2 (continued)
Quantifiable Impacts to Section 4(f) Resources

Section 4(f) Resource	*Project Corridor Section*												
	Buttermilk to Maroon Creek Road				*Maroon Creek Road to Rubey Park*								
	Alternative				*Alternative*								
	2	*3*	*H/Mod. Direct*	*Pref. Alt.*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*Mod. Direct*	*Pref. Alt.*
10) Colorado Midland Railroad 1.6 ha [4.0 ac] included in #5 above)	N/A	N/A	N/A	N/A	0.13 ha (0.32 ac) No Adverse Effect	0.13 ha (0.32 ac) No Adverse Effect	0.17 ha (0.42 ac) No Adverse Effect	0.13 ha (0.32 ac) No Adverse Effect	0.17 ha (0.42 ac) No Adverse Effect	0.13 ha (0.32 ac) No Adverse Effect	0.10 ha (0.25 ac) No Adverse Effect	0.10 ha (0.25 ac) No Adverse Effect	0.22 ha (0.54 ac) No Adverse Effect
11) Castle Creek Power Plant (0.6 ha [1.5 ac])	N/A	N/A	N/A	N/A	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
12) 920 West Hallam St. (0.08 ha [0.2 ac])	N/A	N/A	N/A	N/A	No Effect with Mitigation	No Effect	No Effect	No Effect	No Effect	No Effect with Mitigation	No Effect with Mitigation	No Effect	No Effect
13) Berger Cabin	N/A	N/A	N/A	N/A	N/A	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation	No Effect with Mitigation
14) Smith/Elisha House	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Effect	No Effect	No Effect
15) Thomas Hynes House	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Effect with Mitigation	No Effect with Mitigation	No Effect
16) Paepcke Park (0.69 ha 1.72ac)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Effect	No Effect	No Effect
17) Wagner Park (1.17 ha 2.89 ac)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Effect	No Effect	No Effect

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Table A-3
Quantifiable Impacts to Section 4(f) Resources by Project Corridor Section

Section 4(f) Resource	*Project Corridor Section*												
	Buttermilk to Maroon Creek Road Alternative				*Maroon Creek Road to Rubey Park Alternative*								
	2	*3*	*H/Mod. Direct*	*Pref. Alt.*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*Mod. Direct*	*Preferred Alternative*
Total Section 4(f) Take (Area) (140 ha 346.7 ac)	3.0 ha (7.4 ac) new bridge on north side of existing Maroon Creek Bridge	3.7 ha (9.1) new bridge on north side of existing Maroon Creek Bridge	2.4 ha (5.9 ac) new bridge on north side of existing Maroon Creek Bridge and Maroon Creek Rd. transit stop.	1.7 ha (4.2 ac) new bridge on north side of existing Maroon Creek Bridge and Moore Transit Station.	1.3 ha (3.3 ac)	2.7 ha (6.8 ac)	3.1 ha (7.6 ac)	2.7 ha (6.7 ac)	3.1 ha (7.6 ac)	2.1 ha (5.2 ac)	2.5 ha (6.2 ac)	2.8 ha (6.9 ac)	2.4 ha (5.9 ac)
Section 4(f) Take with Mitigation:	3.0 ha (7.4 ac)	3.7 ha (9.1 ac)	2.4 ha (5.9 ac)	1.7 ha (4.2 ac)	1.3 ha (3.3 ac)	2.3 ha (5.8 ac)	2.7 ha (6.6 ac)	1.1 ha (2.8 ac)	1.4 ha (3.3 ac)	2.1 ha (5.2 ac)	2.5 ha (6.2 ac)	1.6 ha (3.9 ac)	1.4 ha (3.4 ac)
# of Section 4(f) Resources Impacted:	4	4	4	4	2	3	3	3	3	3	5	3	3
# of Section 4(f) Resources Impacted after Avoidance:	4	4	4	4	2	2	2	2	2	2	4	2	3
Section 4(f) Resource Avoided:	N/A	N/A	N/A	N/A	N/A	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	Shift Align. N to Avoid Holden Smelting and Milling Complex	N/A

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Table A-4
Quantifiable Impacts to Section 4(f) Resources by Alternative Combinations

	2 General Traffic Lanes + 2 HOV/Bus Lanes			*2 General Traffic Lanes + 2 HOV/Bus Lanes + Separate Transit Envelope*		*2 Improved General Traffic Lanes + Separate Transit Way*	*2 Improved General Traffic Lanes + Ultimate LRT with Busway Phasing + Maroon Creek Road Park and Ride*		*2 Improved General Traffic Lanes + LRT + Airport Multimodal Facility, Buttermilk and Moore LRT Station*
Alternative Combination	Alternative 2+B	Alternative 2+C	Alternative 2+E	Alternative 3+D	Alternative 3+F	Alternative 3+G	Alternative H	Modified Direct	Preferred Alternative
Alignment	Existing Align.	Modified Direct Align.	Modified Direct Align. with Cut & Cover	Modified Direct Align.	Modified Direct Align. with Cut & Cover	General Traffic Lanes on Existing Align., Transit Way on Modified Direct	Outbound Gen. Purpose Lanes on Existing Align; Inbound Gen. Purpose +LRT along Rim of Castle Crk.	Modified Direct with Cut &Cover	Modified Direct with Cut &Cover
Section 4(f) Take with mitigation (area)	4.1 ha (10.7 ac)	5.3 ha (13.2 ac)	4.1 ha (10.2 ac)	6.4 ha (15.7 ac)	5.1 ha (12.4 ac)	5.8 ha (14.3 ac)	4.9 ha (12.1 ac)	4.0 ha (9.8 ac)	3.1 ha (7.6 ac)
# of Section 4(f) Resources impacted after avoidance and SHPO no adverse effect conditions	3 -Trail System - Moore - Marolt/Thom.	3 -Trail System - Moore - Marolt/Thom.	3 -Trail System - Moore -Marolt/Thom.	3 -Trail System - Moore - Marolt/Thom.	3 -Trail System - Moore - Marolt/Thom.	3 -Trail System - Moore - Marolt/Thomas	5 -Trail System - Moore - Marolt/Thomas -Bugsy Barnard -Golf Course	3 - Trail System - Moore - Marolt/Thomas	5 -Trail System -Moore -Marolt/Thomas -Golf Course -Zoline Property

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E. AVOIDANCE ALTERNATIVES

Resources protected under Section 4(f) must not be taken unless there is no feasible and prudent alternative to the use of such land. In addition, the program or project must include all planning to minimize harm to the Section 4(f) resource. This section evaluates measures and alternatives that may be available to avoid impacts to each property evaluated under Section 4(f).

1. Aspen Trail System

Only the No-Action Alternative avoids taking right-of-way from the Aspen Trail System. Construction of any of the build alternatives result in losses from the trail system. Because the trail system travels west to east and is parallel to State Highway 82 on the north side, the relocation of State Highway 82 to the north between the Pitkin County Airport and the entrance to Aspen results in greater takes of both the trail system and the Aspen City Golf Course. Shifting the alignment to the south results in more severe impacts to the Marolt-Thomas Open Space, Moore Open Space, and the historic Colorado Midland Railroad grade for all build alternatives.

There are no prudent and feasible alternatives that meet the purpose and need of this project that avoid impacting the Aspen Trail System without impacting other Section 4(f) resources.

2. Zoline Open Space

Alternative 1 (No-Action), as well as the build alternatives with a new bridge on the south side of the existing Maroon Creek Bridge, avoid taking right-of-way from the Zoline Open Space. However, a new bridge to the south side of the existing bridge creates unacceptable adverse impacts to the private properties south of State Highway 82. These alternatives are not considered to be prudent alternatives based on the criteria described earlier. A new bridge on the north side of the existing bridge is included in the Preferred Alternative. This alignment requires approximately 0.6 ha (1.4 ac) of the Zoline Open Space Property.

There are no prudent and feasible alternatives that meet the purpose and need of the project that avoid taking land from the Zoline Open Space.

3. Aspen City Golf Course

Alternative 1 (No-Action), as well as the build alternatives with a new bridge on the south side of the existing Maroon Creek Bridge, avoid taking right-of-way from the Aspen City Golf Course. However, a new bridge to the south side of the existing bridge creates unacceptable adverse impacts to the private properties south of State Highway 82. These alternatives are not considered to be prudent alternatives based on the criteria described earlier. A new bridge on the north side of the existing bridge is included in the Preferred Alternative. This alignment will require approximately 0.67 ha (1.7 ac) of the Aspen City Golf Course. This includes a small take of the Plum Tree Playing Field.

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A portion of the golf course take (for the Preferred Alternative), approximately 0.2 ha (0.49 ac), is a result of the roundabout at Maroon Creek Road. The roundabout take occurs in an undeveloped area of the golf course and would have no significant impact on the aesthetic or recreational value of the golf course. A signalized intersection at Maroon Creek Road (Alternatives C, D, E, F, G, H, and the Modified Direct) does not require any take of the Aspen City Golf Course. However, the signalized intersection creates approximately ten times more vehicle delay than a roundabout and does not serve the Castle Creek traffic at an acceptable level. The signalized intersection is not considered a prudent alternative.

Alignment shifts are not possible to avoid the Aspen City Golf Course. Any shift in the alignment results in greater, more significant impacts to other Section 4(f) resources.

There are no prudent and feasible alternatives that meet the purpose and need of the project that avoid taking land from this property without impacting other Section 4(f) resources.

4. Moore Property Open Space

Construction of any of the build alternatives (with the inclusion of the LRT stations) in this area results in a take from the Moore Property Open Space. Shifting this alignment to the south would result in a greater take of the Moore Open Space Property and shifting to the north would require additional takes from the Aspen City Golf Course and the Plum Tree Playing Field.

There are no prudent and feasible alternatives that meet the purpose and need of the project that avoid taking land from this property without impacting other Section 4(f) resources.

5. Marolt-Thomas Open Space

Construction of any of the build alternatives in this area result in a take from the Marolt-Thomas Property Open Space. Alternative A (No-Action), is the only alternative which avoids Section 4(f) land in this area.

A shift to the north of this property would create design problems in reaching the Main Street connection within the Aspen city limits at an acceptable design standard. Additionally, an alignment shift to the north to avoid the Marolt-Thomas Property results in impacts to the Aspen Golf Course and Bugsy Barnard Park. Shifting the alignment of Alternatives C, D, E, F, G, H, the Modified Direct, and the Preferred Alternative to the south a sufficient distance to avoid the Marolt-Thomas Open Space is not feasible since this open space property extends south beyond the city limits of Aspen.

There are no prudent and feasible alternatives that meet the purpose and need of the project that avoid taking land from this property.

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6. Bugsy Barnard Park

The only Section 4(f) involvement with this property occurs with Alternative H. The Alternative H alignment includes a roundabout that requires 0.1 hectares (0.2 acres) of the Bugsy Barnard Park. Moving the roundabout to the south increases impacts on the Marolt-Thomas Open Space and reduces the effectiveness of the roundabout.

Alternative H is the only alternative that effects this property. Alternative H is not recommended as the Preferred Alternative for the Entrance to Aspen.

7. Maroon Creek Bridge

All build alternatives would result in a bridge being constructed on the north side of the current structure. In addition, the Preferred Alternative requires the use of the existing bridge as a light rail crossing of Maroon Creek. The SHPO has determined that there would be no adverse effect to the historic bridge under these alternatives. This finding is conditional upon review and approval of the ultimate design and placement of the new bridge, review and approval of the ultimate design of the existing bridge, and recordation of the existing Maroon Creek Bridge structure before making structural modifications.

Alternatives 2, 3, and the Modified Direct avoid the use of the Maroon Creek Bridge. However, the use of the existing bridge reduces impacts to the Section 4(f) resources on the north side of State Highway 82.

8. Holden Smelting and Milling Complex

Alternatives A and B avoid taking land from this historic property. A minimal take is necessary under Alternatives C, D, E, F, G, H, and the Modified Direct. Although the Preferred Alternative construction limits are on the Holden property, the alignment is north of the property thus avoiding any takes. A SHPO review of the Preferred Alternative alignment has determined that, because the actual ballasted track portion of the alignment is not within the property boundaries, there is no adverse effect under Section 106.

In all alternatives, however, there may be some minor visual impacts to the Holden Complex that may have to be mitigated with berming, depending on final design of the Preferred Alternative.

9. Marolt Ditch

The SHPO has determined that this property is not eligible for listing on the NRHP and is, therefore, not a Section 4(f) resource.

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10. Colorado Midland Railroad

There is no Section 4(f) involvement under Alternative A (No-Action). The build alternatives all require a minor take of the railroad grade near the intersection of Maroon Creek Road and State Highway 82. Under these alternatives, there are no feasible and prudent alternatives which avoid the use of this historic resource. Shifting the alignment to the north would result in a greater take of the Aspen City Golf Course located on the north side of existing State Highway 82. Shifting farther to the south would result in a greater loss of the historic railroad grade and more severe impact to Marolt-Thomas Open Space.

There are no prudent and feasible alternatives that meet the purpose and need of the project that avoid taking land from this property without impacting other Section 4(f) resources.

11. Castle Creek Power Plant

There is no Section 4(f) involvement with this historic resource.

12. 920 West Hallam

There is no Section 4(f) involvement under the Preferred Alternative, Alternatives A (No-Action) C, D, E, F, H and the Modified Direct. Though no property will be taken, Alternatives B and G impact this property since an approximately 1.0 meter (3 feet) high retaining wall must be constructed due to grade differences between the new alignment and the property.
The SHPO has indicated that there is no effect on this property dependent on SHPO review of the retaining wall design that may be necessary under Alternatives B and G.

13. Berger Cabin

Alternative A (No-Action) and Alternative B avoid this historic resource.

For all other alternatives, the SHPO has indicated that there is no effect on this property dependent on SHPO review and approval on the relocation and landscaping plans and/or overhead wiring design in the vicinity of this resource.

The following Section 4(f) resources are present on Main Street, Monarch Street, or Durant Avenue in Aspen. Alternative H, the Modified Direct, and the Preferred Alternative are the only alternatives that have potential impact to the Section 4(f) resources listed below.

14. Smith/Elisha House

There is no effect on this property dependent on SHPO review and approval of the final landscape and wiring design for both alternatives.

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15. Thomas Hynes House

There is no effect on this property dependent on SHPO review and approval of the final landscape and wiring design for both alternatives.

16. Paepcke Park

There is no use of this property under any alternative.

17. Wagner Park

There is no use of this property under any alternative.

F. MEASURES TO MINIMIZE HARM

This section discusses potential measures to mitigate the impacts of the Preferred Alternative on each affected Section 4(f) resource.

All properties protected by Section 4(f) that are used by a federal transportation project must include all possible planning to minimize harm to those properties if they cannot be avoided by a feasible and prudent alternative. Table A-5 at the end of this section identifies the potentially available measures for minimizing harm to each property impacted by the Preferred Alternative.

1. Aspen Trail System

Efforts to minimize harm to this Section 4(f) resource includes:

- Designing the Preferred Alternative with the least possible right-of-way width to minimize taking part of the trail system.
- Where sections of the trail system cannot be avoided, they will be relocated.

2. Zoline Open Space

Efforts to minimize harm to this Section 4(f) resource include:

- Designing the Preferred Alternative with the least possible right-of-way width.
- Replacing any lost park or open space land or compensating the City of Aspen for the reasonable cost of purchasing replacement parks or open space land.

3. Aspen City Golf Course/Plum Tree Playing Field

Efforts to minimize harm to this Section 4(f) resource include:

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- Designing the Preferred Alternative with the least possible right-of-way width and returning some highway property back to the City of Aspen as open space.
- Replacing any lost park or open space land or compensating the City of Aspen for the reasonable cost of purchasing replacement parks or open space land.

4. Moore Property Open Space

Efforts to minimize harm to this Section 4(f) resource include:

- Designing the Preferred Alternative with the least possible right-of-way width
- Replacing any lost park or open space land or compensating Pitkin County for the reasonable cost of purchasing replacement parks or open space land.
- Mitigating impacts by using berms and landscape that partially screen the station from the highway.

5. Marolt-Thomas Open Space

Efforts to minimize harm to this Section 4(f) resource include:

- Designing the Preferred Alternative with the least possible right-of-way width.
- Incorporate a cut and cover tunnel and earthen berm to mitigate impacts to the open space where prudent and feasible.
- Replacing any lost park or open space land or compensating the City of Aspen for the reasonable cost of purchasing replacement parks or open space land.

6. Bugsy Barnard Park

The Preferred Alternative does not impact this Section 4(f) resource.

7. Maroon Creek Bridge

Efforts to minimize harm to this Section 4(f) resource include:

- Providing SHPO with the opportunity to comment on the architectural compatibility and placement of the new bridge structure included in the Preferred Alternative.
- The Maroon Creek Bridge requires some structural modification to support the LRT. A photographic record, plans, and drawings of the bridge before and after modification will be provided to the SHPO.

8. Holden Smelting and Milling Complex

Efforts to minimize harm to this Section 4(f) resource include:

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- Conducting a historic archaeological survey and monitoring during construction,
- Designing the Preferred Alternative with the least possible right-of-way width.
- SHPO review and approval of berm design and landscaping plans that partially screen buildings on the property from the highway under the Preferred Alternative.
- CDOT will make every effort to construct a berm to mitigate for the visual impact of the facility, if determined necessary during design.

9. Marolt Ditch

This resource has been determined not eligible for the NRHP by the SHPO, therefore no mitigation of impacts is required.

10. Colorado Midland Railroad

Efforts to minimize harm to this Section 4(f) resource include:

- Designing the Preferred Alternative with the least possible right-of-way width for the new State Highway 82 right-of-way.
- Avoidance of railroad right-of-way wherever possible.

11. Castle Creek Power Plant

There is no Section 4(f) involvement and no mitigation of impacts is required.

12. 920 West Hallam

The Preferred Alternative does not impact this Section 4(f) resource.

13. Berger Cabin

Efforts to minimize harm to this historic resource include relocation of the cabin back on the property if prudent and feasible and additional landscaping with SHPO review and approval.

The following Section 4(f) resources are present on Main Street, Monarch Street, or Durant Avenue in Aspen. Alternative H, the Modified Direct, and the Preferred Alternative are the only alternatives that have potential impact to the Section 4(f) resources listed below.

14. Smith/Elisha House

Efforts to minimize harm to this historic resource include SHPO review and approval of street design/wiring in the vicinity of this property.

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15. Thomas Hynes

Efforts to minimize harm to this historic resource include SHPO review of street design/wiring in the vicinity of this property.

16. Paepcke Park

There is no Section 4(f) involvement and no mitigation of impacts is required.

17. Wagner Park

There is no Section 4(f) involvement and no mitigation of impacts is required.

In addition to the mitigation strategies listed in this document, CDOT and FHWA will continue to take all steps necessary to reduce and minimize impacts to the Section 4(f) resources listed in this document. These mitigation opportunities will come during actual design of the transportation facility in each alternative section and may include construction and replacement of sidewalks and appropriate landscaping between Castle Creek and the project terminus and assuring design of the Preferred Alternative is architecturally and environmentally consistent with the surrounding landscape.

G. COORDINATION

This project and all alternatives under consideration have been coordinated over the past four years with the City of Aspen, Pitkin County, SHPO, and other agencies responsible for administration of Section 4(f) resources within the State Highway 82 Entrance to Aspen study corridor. In addition to the public meetings, several smaller staff-level coordination meetings have been held with Pitkin County and the City of Aspen representatives to explain the project's alternatives and impacts in greater detail.

Informal meetings with SHPO staff to discuss the alternatives and the impacts on historic Section 4(f) resources have been held. The SHPO has provided comment on the initial Section 4(f) statement. The verbal comments of the SHPO regarding the effects of each alternative on each historic property are reflected in this document. Formal comment from the SHPO provided through the Section 106 process on the alternatives is included in this final Section 4(f) analysis.

The Aspen HPC has provided comments on the impact of the alternatives on properties listed or eligible for inclusion on the NRHP. A copy of these comments was provided to the SHPO for their information.

Further coordination with the SHPO and the Advisory Council on Historic Preservation is underway and will be completed prior to the final determination and Record of Decision for the Entrance to Aspen project.

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Table A-5
Proposed Mitigation to Section 4(f) Resources

Section 4(f) Resource	*Proposed Mitigation*
1) Aspen Trail System	Selecting and designing the Preferred Alternative with the least possible right-of-way width to avoid taking part of the trail. Where the trail cannot be avoided, it will be relocated.
2) Zoline Open Space	Designing the Preferred Alternative with the least possible right-of-way width. CDOT will make every reasonable effort to replace any lost parkland or compensate the City of Aspen for the reasonable cost of purchasing replacement parkland.
3) Aspen Golf Course/Playing Field	Designing the Preferred Alternative with the least possible right-of-way width. CDOT will make every reasonable effort to replace any lost parkland or compensate the City of Aspen for the reasonable cost of purchasing replacement parkland.
4) Moore Open Space	Designing the Preferred Alternative with the least possible right-of-way width. CDOT will make every reasonable effort to replace any lost parkland or compensate the Pitkin County for the reasonable cost of purchasing replacement parkland. Berming and landscaping will be used to screen the station from the highway.
5) Marolt-Thomas Open Space	Designing the Preferred Alternative with the least possible right-of-way width. CDOT will make every reasonable effort to replace any lost parkland or compensate the City of Aspen for the reasonable cost of purchasing replacement parkland.
6) Bugsy Barnard Park	Designing the Preferred Alternative with the least possible right-of-way width and make every reasonable effort to replace any lost parkland or compensate the City of Aspen for the reasonable cost of purchasing replacement parkland.
7) Maroon Creek Bridge	The SHPO will be provided opportunity to comment on the architectural compatibility of the design and placement of the new structure in Alt. 2,3, H and Modified Direct . A photo record, design plans and drawings will be provided to the SHPO if existing bridge is modified in anyway to accommodate transit.

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Table A-5
Proposed Mitigation to Section 4(f) Resources
(Continued)

Section 4(f) Resource	*Proposed Mitigation*
8) Holden Smelting & Milling Complex	The Preferred Alternative will include a shift of the pavement edge to miss the NHD. If this shift process not feasible or prudent during design, prior to construction of State Highway 82 improvements, a Memorandum of Agreement between the SHPO, CDOT, FHWA, and the Advisory Council on Historic Preservation will be executed to mitigate the adverse effects of the Preferred Alternative. Possible mitigation measures include conducting an historic archaeological survey and excavation, slight reductions in right-of-way width requirements for the new State Highway 82 right-of-way, extending the cut and cover tunnel to the bridge portal, and SHPO review and approval of berm design and landscaping plans that partially screen buildings on the property from the highway.
9) Marolt Ditch	There will be no Section 4(f) involvement.
10) Colorado Midland Railroad	Designing the preferred alternative with the least possible right-of-way width for the new State Highway 82 right-of-way, and avoidance of railroad right-of-way wherever possible.
11) Castle Creek Power Plant	There will be no Section 4(f) involvement.
12) 920 Hallam Street	SHPO review and approval of the proposed retaining wall and railing which may be required under Alternative B, G or other improvements that may be necessary under the other alternatives in the vicinity of this resource.
13) Berger Cabin	Move cabin back on property, landscaping/SHPO Review
14) Smith/Elisha House	SHPO review and approval of the land scape and overhead wire design in the vicinity of this resource.
15)Thomas Hynes House	SHPO review and approval of the landscape and overhead wire design in the vicinity of this resource.
16) Paepcke Park	There will be no Section 4(f) involvement.
17) Wagner Park	There will be no Section 4(f) involvement.

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The City of Aspen and Pitkin County have also been asked to comment on the Section 4(f) resources under their respective jurisdiction as described in this Section 4(f) evaluation. A presentation to a combined meeting of the Aspen City Council, Pitkin County Commissioners, and Snowmass Town Council was made on April 3, 1996 discussing the requirements of Section 4(f), the properties subject to Section 4(f), and requesting comments on the draft Section 4(f) Statement. A discussion of Section 4(f) impacts has also been presented in most public meetings throughout the Environmental Impact Statement (EIS) process.

H. LEAST HARM ANALYSIS

1. What Goes into the Least Harm Analysis?

The intent of the Section 4(f) requirement is to avoid, whenever "feasible and prudent", impacts to public parks, recreation areas, wildlife refuges, and historic sites. The first step in the Section 4(f) evaluation is to determine whether there is a feasible and prudent alternative which would avoid impacts to the Section 4(f) properties. Avoidance may not be "prudent and feasible" for any of the following reasons:

- Not meeting the project purpose and need.
- Excessive costs of construction.
- Severe operational or safety problems.
- Unacceptable adverse social, economic, or environmental impacts.
- Serious community disruption.
- An accumulation of a lesser magnitude of the foregoing types of factors.

Impacts to Section 4(f) resource should not be included in those factors which are considered in determining whether an alternative is feasible and prudent.

If a Section 4(f) resource cannot be avoided, then a least harm analysis must be performed to determine how to minimize overall harm to the Section 4(f) resources. In performing this analysis the net harm (after mitigation) to the resources is the governing factor. The net harm should be determined in consultation with the agency (the SHPO in the case of historic sites) having jurisdiction over, or ownership of, the resource. The feasible and prudent alternative which does the least harm to the Section 4(f) resource must be selected. Where there is little or no difference between alternatives in the overall harm to Section 4(f) resources, any of the alternatives may be selected.

2. Discussion of Key Issues

The information provided in this Section 4(f) evaluation seeks to demonstrate that there are no feasible and prudent alternatives that completely avoid use of Section 4(f) resources that also meet the purpose and need for this project. CDOT and FHWA are proposing a preferred alternative that

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meets the project purpose and need and minimizes harm to Section 4(f) resources, after considering mitigation to the Section 4(f) resources and the relative impacts to the affected resources.

In subsequent sections of this analysis, detailed information is provided that identifies the impacts of the various alternatives on the resources eligible for consideration under Section 4(f). The different alternatives affect the various Section 4(f) resources in different ways. As a result, the qualities and relative importance of the affected resources must be considered in determining the alternative that meets the purpose and need for the project with the least harm to Section 4(f) resources. Following are the primary issues and findings, derived from the detailed analysis described in **Chapter II through Chapter VI** of this FEIS, that must be balanced by FHWA Regional Administrator in determining compliance with Section 4(f):

a. An evaluation of all the build alternatives for the section of this project between the Pitkin County Airport and Maroon Creek Road reveals that the new Maroon Creek Bridge should be constructed on the north side of the existing structure thus avoiding impacts to privately owned property within this section of the project corridor. The alignment of the bridge will take approximately 0.6 ha (1.5 ac) of the Zoline Property and 0.47 ha (1.17 ac) of the Aspen Plum Tree Playing Field. An alignment on the south side of the existing bridge will take two homes and disrupt the site plan for a condominium complex. The north side alignment was developed at the request of the City of Aspen (which owns and manages the Golf Course, Aspen Plum Tree Playing Field, and Zoline Property) and in response to public comments. Agreements have been reached between the City of Aspen and CDOT to permit the acquisition of a small portion of the Zoline Property and the Aspen Plum Tree Playing Field (golf course) for the purpose of the transportation corridor. With the north side alignment, none of the integrity of the Section 4(f) resources in this area will be lost.

b. Evaluation of the alternatives in the Maroon Creek Bridge to Rubey Park section of the corridor reveals that effects to the Holden Smelting and Mining Complex are avoided by keeping the alignment north a sufficient distance to avoid the historic district boundary. Berming may be necessary to mitigate visual or noise impacts to this resource.

c. Alternatives E, F, the Modified Direct, and the Preferred Alternative consist of a cut and cover tunnel through the Marolt-Thomas Property. The top of the cut and cover tunnel is used as open space. These alternatives also convert a portion of existing State Highway 82 to open space uses; however, despite the return of some land to open space, there will likely be a residual impact to the qualities that make this property important that cannot be completely mitigated, such as residual noise impacts and visual impacts from the cut and cover tunnel.

d. Alternative H results in a greater total take from Section 4(f) resources (Bugsy Barnard Park, Golf Course Property and Marolt-Thomas Open Space) than Alternatives E, F, the Modified Direct, and the Preferred Alternative. The portion of the Golf Course impacted by Alternative H is a nonrecreational portion that does not contribute to the recreational value of the property. Alternative H runs along the perimeter of the Marolt-Thomas

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Property which may result in less of an imposition on the important qualities of the Marolt-Thomas Property and the Holden Property than the cut and cover tunnel alternatives. However, the view of the Marolt-Thomas Property and the Holden Smelting and Milling Complex from across Castle Creek may be affected to a greater degree with this alternative than with Alternatives E, F, the Modified Direct, and the Preferred Alternative.

e. The Preferred Alternative includes a roundabout and an LRT station at the intersection of Maroon Creek Road and State Highway 82. During the public comment period and discussions that occurred after the distribution of the ***State Highway 82 Entrance to Aspen Draft Supplemental Environmental Impact Statement*** (DSEIS), the City of Aspen proposed that a roundabout be evaluated at the State Highway 82 and Maroon Creek Road intersection. A copy of this letter is included in **Volume 2: Project Coordination.** CDOT and FHWA have evaluated the roundabout in combination with a light rail transit (LRT) station proposed for this location. An LRT station is necessary at this intersection to service the high transit demand. The station is located on the Moore Property for safer bus operations and transfers between the LRT and buses. The LRT bypasses the roundabout as it enters the station. The LRT station takes approximately 0.6 ha (1.5 ac) of the Moore Property. This combination (roundabout intersection and LRT station on the Moore Property) best meets the purpose and need for the project as well as the stated community objectives. This combination is included in the Preferred Alternative.

The roundabout intersection more clearly supports the following project objectives (refer to the FEIS for more details on the objectives).

Objective 1 — *Community Based Planning* - The proposal for the roundabout was made by local city representatives through the community based planning effort associated with this project.

Objective 2 — *Transportation Capacity* - The roundabout increases the Level of Service (LOS) for this intersection over the previously proposed signalized intersection. The total delay is decreased by approximately 90 percent versus the signalized intersection. The direct access reduces the congestion on Maroon Creek Road by eliminating the traffic volume added by Castle Creek Road accessing State Highway 82 via Maroon Creek Road.

Objective 3 — *Safety* - Based off of European studies, roundabouts are safer than signalized intersections. A roundabout is designed for entering vehicles to yield to circulating vehicles. The entering vehicles only have one direction of conflicting traffic, whereas at a signalized intersection there may be more than three directions of conflicting traffic. Upon approaching a roundabout intersection, the driver slows down and prepares to stop. At a signalized intersection, however, depending upon the situation the driver

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decides whether to slow down or speed up (each situation is different). The speed within a roundabout is low, the speed through a signalized intersection may be high if the driver did not have to stop. Based upon the above information, the accident rate is expected to be less for a roundabout than the signalized intersection.

The Aspen Valley Hospital is located on Castle Creek Road. The roundabout provides direct access to Castle Creek Road, whereas, a signalized intersection provides access to Castle Creek Road off of Maroon Creek Road. A direct route (one intersection) is safer than a non-direct route (two intersections).

A roundabout serves as a better designed intersection based on the layout of the three roads. The intersection of Castle Creek Road and Maroon Creek Road is located approximately 35 meters (110 feet) from the intersection of State Highway 82 and Maroon Creek Road. With a signalized intersection, traffic on Maroon Creek Road may block the Castle Creek Road intersection, creating delays. The roundabout eliminates this conflict.

Access and operation of the shuttle buses picking up passengers at the LRT station will be safer with a roundabout intersection since the buses will not have to travel through as many traffic conflict points as if there is a signalized intersection.

Objective 8 — *Emergency Access* - Emergency access to and from the Aspen Valley Hospital will be improved by the roundabout. The hospital is located on Castle Creek Road. The congestion associated with a signalized intersection will slow emergency access to and from the hospital.

Objective 9 — *Livable Communities* - The City of Aspen and Pitkin County would like to provide a system which reflects small town character and scale. A roundabout more closely fits this objective than a traffic signal.

The proposed roundabout uses 0.53 hectares (1.3 acres) of Section 4(f) Property. The signalized intersection takes approximately 0.13 hectares (0.33 acres) of Section 4(f) Property. Section 4(f) properties impacted include the Aspen Golf Course and Old Midland Property. The portion of the Aspen Golf Course property that would be affected is not an active use area and does not contribute to the characteristics that qualify this property for 4(f) protection. CDOT and FHWA commit to make every reasonable effort to replace the

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lost of open space land (Marolt-Thomas Property) or compensate Pitkin County for the reasonable cost of purchasing replacement open space land.

f. The Preferred Alternative includes an LRT station located on the Moore Property. An LRT station must be placed at this intersection to accommodate the high transit demand (schools, Aspen Valley Hospital, Aspen Highlands). The station must be placed on the south side of the highway for easy access. The two feasible location options are either on the Moore Property or the Marolt-Thomas Property, which are both Section 4(f) resources. It is easier to mitigate the Moore Property since currently there are natural berms/hills. Placing the station on the Marolt-Thomas Property instead of the Moore Property would impact the same amount of Section 4(f) property, but would also create adverse social and traffic impacts. Buses and shuttles would be required to enter the roundabout and cross the LRT tracks to reach the station access. The terrain on the Marolt-Thomas Property is generally flat, which does not accommodate a berm. The operations of school buses and ski shuttles are better with the LRT station on the Moore Property. This is because the station access is located on Maroon Creek Road, and the buses/shuttles will not have to enter the roundabout or cross the LRT tracks. The LRT station takes approximately 0.6 hectares (1.4 acres). The Moore Property right-of-way impacts have been minimized from the previous alternative's 1.6 hectares (3.9 acres) layout by moving the highway and LRT alignment completely off the Moore Property, and by eliminating the parking from the transit station.

   The use of the Moore Open Space requires a vote of the electorate of Pitkin County. Should the County decide not to release this open space property for the proposed use, this portion of the project would no longer be feasible. The possibility of locating the station on the Marolt-Thomas Property would need to be investigated.

The comments of the local governments and SHPO regarding the area of impacts, the impacts on the qualities of the resources, and the relative importance of the affected Section 4(f) resources to the community must be taken into account. In addition to any other areas of comment, agency comments on the following resources were specifically sought:

a. The tradeoffs between the loss of portions of the Moore Property, Zoline Property, Aspen Golf Course, Marolt-Thomas Open Space (including the Old Midland corridor) and Bugsy Barnard Park under the various alternatives under consideration.

b. The visual impact of the Preferred Alternative on views of and from the Marolt-Thomas Open Space, and the Holden Smelting Complex.

c. The visual impact of overhead wiring on the Section 4(f) resources in the vicinity of each light rail transit alignment.

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d. The noise, visual, and other impacts of a cut and cover tunnel for the modified direct alignment alternatives (includes the Preferred Alternative) on the recreational qualities of the Marolt-Thomas Property and the Holden Smelting Complex.

3. Least Harm Alternative

A detailed description of the Preferred Alternative for the State Highway 82 Entrance to Aspen FEIS is discussed in **Section II.C. Preferred Alternative.**

The No-Action Alternative is the only alternative that avoids impacts to all Section 4(f) resources; however, this alternative is not feasible and prudent since is does not meet the purpose and need of the project, it has severe operational and safety problems, and it would not be responsive to planning efforts of the community. Although the Preferred Alternative does not have the fewest quantifiable impacts of all alternatives that were evaluated in the Section 4(f) Evaluation, this alternative imposes the least harm of all alternatives that also meet the purpose, need, and objectives for the Entrance to Aspen project identified in the FEIS.

One of the primary objectives in the EIS process, and one that is of primary importance to the community, is to hold future traffic at existing (1993) levels. To accomplish this objective, all of the alternatives must include transportation management (TM) measures. These measures are described in **Chapter III. System Management.**

As a result, only those alternatives that combine single occupant vehicles (SOV), opportunities to park the vehicle and transfer to an alternative mode in an efficient fashion, and other incentives to use the alternative mode comply with the goals of the community. The Preferred Alternative and the alternatives evaluated in the DSEIS are the only alternatives that comply with this objective and meet the purpose and need of the project.

Subsequent to the release of the DSEIS, the Maroon Creek Bridge south-side alignment has proved to be imprudent due to unacceptable adverse social impacts. This alignment creates adverse impacts to properties located on the south side of the existing State Highway 82. This alignment is eliminated from consideration. The alternatives evaluated in the DSEIS consist of the Maroon Creek Bridge south-side alignment.

The Preferred Alternative uses a combination of highway improvements, an LRT system, and TM measures to meet the project purpose and need, and the project objectives. The Preferred Alternative balances meeting the purpose, need, and objectives of the project with the effort to minimize harm to Section 4(f) resources. The Preferred Alternative is chosen because it:

a. Minimizes visual impacts to the Marolt-Thomas Property when viewed from Aspen near Castle Creek, the Aspen Golf Course, Bugsy Barnard Park and the remaining portion of State Highway 82/Cemetery Lane area.

b. Returns a portion of existing State Highway 82 to open space uses.

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c. Includes a cut and cover tunnel across the Marolt-Thomas Open Space.

d. Minimizes Moore Property impacts from the necessary LRT Station by eliminating parking.

e. Limits future vehicle trips to existing levels while providing for future capacity.

f. Eliminated the dangerous S-curves from the State Highway 82 alignment.

g. Takes the least amount of Section 4(f) resources compared to the other alternatives.

h. Exceeds the requirements of the Clean Air Act Amendments.

i. Improves emergency access.

There are likely to be some remaining noise and visual impacts on the recreational qualities of the Holden-Marolt Property and the Holden Smelting Complex even with the proposed cut and cover tunnel and berming mitigation identified below and described in more detail in **Section V.20.Noise**. These remaining impacts are judged not to interfere to a significant degree with the qualities that make the resource valuable. These noise and visual impacts that remain after mitigation are judged to be more acceptable than the noise, visual, and area impacts that would occur with the DSEIS Alternatives.

The Preferred Alternative includes all possible planning to minimize harm, including the following:

a. Relocation of the trail system where impacts cannot be avoided.

b. Designing the Preferred Alternative with the least possible right-of-way width when impacts to Section 4(f) resources are unavoidable.

c. Replacing any lost open space land or compensating the City of Aspen and Pitkin County for the reasonable cost of purchasing replacement open space land.

d. Incorporate a cut and cover tunnel and earthen berms to mitigate impacts to the Marolt-Thomas Open Space and the Holden Smelting Historic District.

e. SHPO and the local Historic Preservation Committee (HPC) are provided the opportunity to comment on the architectural compatibility and placement of the new bridge structures across Maroon Creek and Castle Creek.

f. CDOT will conduct a historic archaeological survey, excavation if necessary, and monitoring during construction in the vicinity of the Holden Smelting and Milling Complex and the Castle Creek Bridge.

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g. Shifting the alignment across the Marolt-Thomas Property as far north as feasible to avoid impacts to the Holden Smelting and Milling Complex.

h. SHPO and local HPC will be provided the opportunity to review and approve the berm design and landscaping plans in the vicinity of the Holden Complex.

i. SHPO and local HPC will be provided the opportunity to review and comment on street design and wiring plans in the vicinity of historic resources.

j. Providing SHPO a photographic record, plans, and drawings of the Maroon Creek Bridge before and after modification.

k. Minimize LRT stations footprints when impacts to Section 4(f) resources are unavoidable.

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