

A. INTRODUCTION

1. Program Agencies and The National Environmental Policy Act (NEPA) Process

The Forest Highway Program is administered by a three-agency group known as the Program Agencies. The function of the Program Agencies is to maintain a Forest Highway Program and to make decisions concerning projects in the program. The Program Agencies in Colorado are the Federal Highway Administration (FHWA), the United States Forest Service (FS), and the Colorado Department of Transportation (CDOT). Highways designated for improvement under the Forest Highway Program are selected at an annual Program Agency Meeting. The routes selected are those that serve both the National Forests (NF) and the State (or counties where appropriate) and have the greatest need for improvement. The Guanella Pass Road (Colorado Forest Highway 80) project was selected for inclusion in the program at the 1993 Program Agency meeting. Surveys, topographical mapping, scoping meetings, engineering studies, preliminary roadway design, and environmental studies have been conducted to evaluate potential roadway improvements.

The intent of NEPA is to declare a national policy that:

- Encourages productive and enjoyable harmony between people and the environment,
- Promotes efforts that prevent or eliminate damage to the environment while stimulating health and welfare of all living things, and
- Enriches the understanding of the ecological system and natural resources important to the nation.

NEPA establishes environmental policy for the nation, provides an interdisciplinary framework for federal agencies to prevent environmental damage, and contains “action-forcing” procedures to ensure that federal agency decision-makers take environmental factors into consideration. This final environmental impact statement (FEIS) is part of the NEPA process.

An environmental impact statement (EIS) is prepared when a federal agency determines that the action is likely to cause a significant impact on the environment (23 CFR 771.123(a)). The general steps for an EIS are as follows:

- Determine the lead agency for the project.
- Publish in the Federal Register a Notice of Intent (NOI) to prepare an environmental document.
- Conduct a fact-finding and issue-discovery (scoping) process to define the project.
- Prepare a draft environmental impact statement (DEIS).

- Circulate the DEIS for review.
- File the DEIS with the Environmental Protection Agency (EPA).
- Conduct a public hearing on the DEIS.
- Prepare a FEIS which directly answers questions raised through circulation of the DEIS and identifies a Preferred Alternative.
- Release the FEIS to the public.
- File the FEIS with the EPA.
- Prepare a Record of Decision (ROD) identifying the selected alternative and explaining the basis for the project decision.

Decisions made concerning this project are ultimately the responsibility of the FHWA with input from Park County, Clear Creek County, the Town of Georgetown, and the cooperating agencies. The cooperating agencies include the Colorado Division of Wildlife (CDOW), the CDOT, the EPA, the U.S. Army Corps of Engineers (USACE), and the FS (see **Appendix A**). No sooner than 30 days after the FEIS is filed with the EPA, an agency decision will be made and a ROD will be published.

2. Description of the Proposed Action

This FEIS evaluates improvements to Colorado Forest Highway 80 (Park County Road 62, Clear Creek County Road 381, Forest Development Road 118), Guanella Pass Road. The proposed improvements begin at the intersection of US Highway 285 and Guanella Pass Road in Grant, Colorado. The roadway extends northward, crosses Guanella Pass at an elevation of 3,547 meters (11,669 feet), and ends in Georgetown, Colorado (Figure S-1). The project corridor lies within the Pike and Arapaho National Forests in Park and Clear Creek Counties, Colorado.

Based upon environmental concerns, current and projected traffic volumes, roadway deficiencies, maintenance problems, safety considerations, and other needs detailed in **Chapter I: Purpose and Need**, the Forest Highway Program Agencies propose to improve Guanella Pass Road. The EIS process is the tool used to identify and evaluate improvement alternatives.

Improvements under the build alternatives lie within the existing Guanella Pass Road corridor. Roadway realignments outside the existing road corridor were considered and eliminated from further consideration (see **Chapter II.F: Other Alternatives Considered and Eliminated**). The alternatives presently under consideration include improvements to the horizontal and vertical alignment, drainage, structural stability, small-stream crossings, road width, culverts, and roadside cut and fill slopes. Improvements to the roadway width include widening the road where necessary to create a consistent width and to provide a travel lane and shoulder in each direction. Parking areas along the road will be formalized with definite boundaries. The roadway will be surfaced with a combination of asphalt with chip seal, gravel, and/or a stabilized alternative surface type. Major construction items will include excavation of material sources, clearing and grading, slope and subgrade stabilization, drainage improvements, retaining walls,

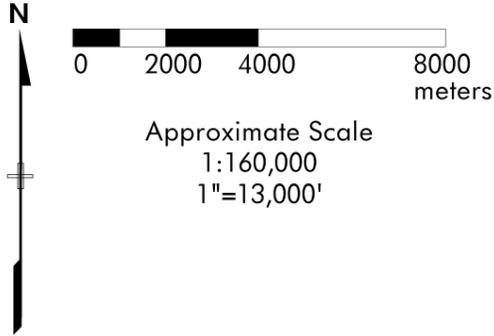
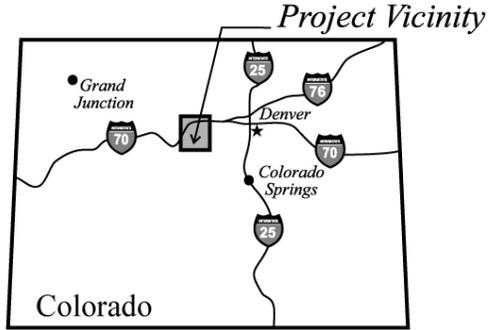
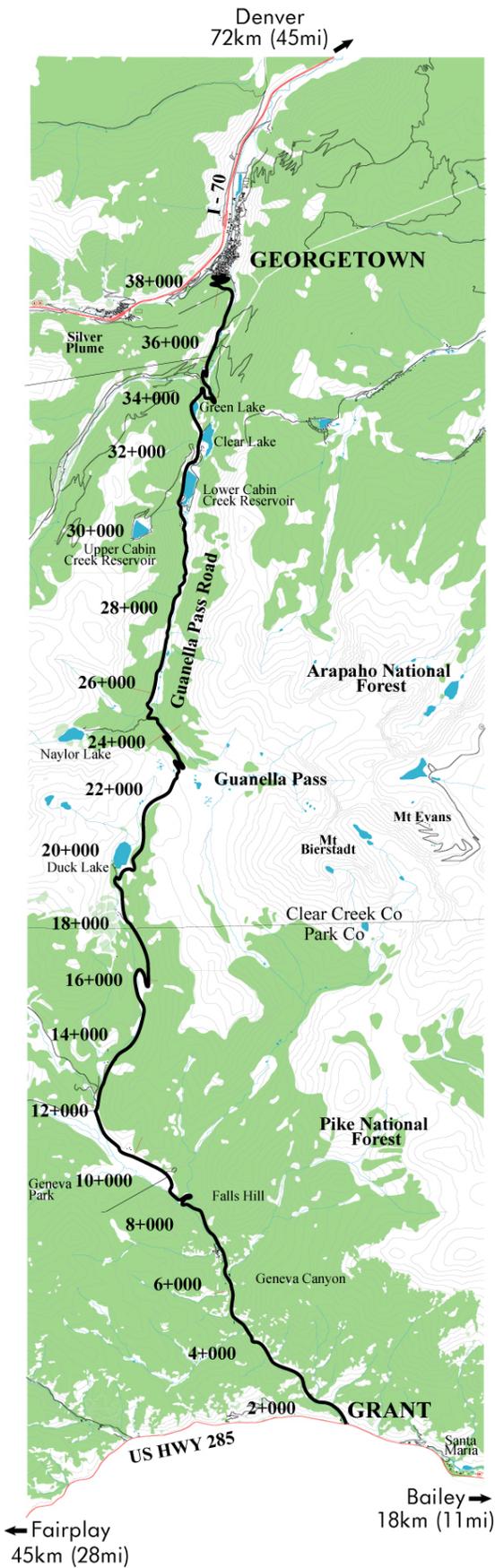


Figure S-1
Guanella Pass Vicinity Map

revegetation, placement of crushed aggregate base and driving surface, parking area and walkway construction, signs, striping, guard rail, and other safety related features necessary to meet current design practice. Maintenance of the road is and will continue to be the responsibility of the counties. All construction items will conform to the Americans with Disabilities Act (ADA).

3. Other Federal Actions Required

Other necessary federal actions required to implement the proposed action include:

U.S. Forest Service

- Letter of Consent (Federal Land Policy and Management Act 36 CFR 251) – To allow the FHWA to use NF lands for road purposes.
- Special Use Permit – To allow off-site construction related activities on NF lands.
- Mineral Material Permit – To allow the FHWA to take borrow material from NF lands.
- Timber Settlement Agreement – To allow the FHWA to harvest commercial timber on NF lands before disturbance. Harvesting would be conducted only to clear the area necessary for road construction.
- A federal land transportation easement deed transfer from the FS to the counties (who maintain the road).

U.S. Fish and Wildlife Service

- Section 7 Consultation (Endangered Species Act 50 CFR 402) – To ensure that the action taken would not jeopardize the continued existence of threatened or endangered species, or result in the destruction or modification of critical habitat.

U.S. Army Corps of Engineers

- 404 Permit (Clean Water Act 33 CFR 320) – to allow the FHWA to discharge dredged or fill material into waters of the U.S., including wetlands.

Colorado Department of Public Health and Environment

- 401 Certification – To certify that any activity requiring a federal license or permit that may result in any discharge into waters of the U.S. would not cause or contribute to a violation of state surface water quality standards.
- National Pollution Discharge Elimination System (NPDES) Permit – To allow discharge of storm water from projects 2 hectares (5 acres) or more in area to state waters. In March 2003, the permit would be needed for 0.4 hectares (1 acre) or more. A construction dewatering permit and an authorization for a temporary increase in turbidity also would be needed.

If a build alternative is selected, application for these permits will be made after publication of the ROD.

4. Reasonably Foreseeable Major Actions

In 1991, the CDOT began widening US Highway 285 to four lanes, starting at Parmalee Gulch Road and heading west. The project is currently in Phase V, which includes widening the highway from Eagle Cliff Road to Foxton Road (approximately 40 kilometers (25 miles) east of Guanella Pass Road). This work is scheduled to be completed in 2003. A feasibility study was completed in March of 2002 investigating the possibility of improving the road from Foxton Road to the Town of Fairplay. Based on the feasibility study finding that exiting traffic counts drop off dramatically just after Bailey, the CDOT proposed expanding US Highway 285 to four lanes to just west of Bailey, approximately 18 kilometers (11 miles) east of the intersection of Guanella Pass Road with US Highway 285, and no further. The CDOT project manager of the US Highway 285 reconstruction project, Mr. Kim Patel, indicated that only spot improvements were likely to be done to US Highway 285 between Bailey and Grant. Due to the uncertainty associated with the nature of improvements being made to US Highway 285 in the vicinity of Guanella Pass Road and because it has been indicated that any improvements performed in the area will be relatively minor in nature, the FHWA concluded that this was not a reasonably foreseeable action and therefore did not include the work to be done on US Highway 285 in its cumulative impact analysis.

The Pike-San Isabel NF is scheduled to implement a mandatory self-registration permit program for its wilderness areas, including the Mt. Evans Wilderness Area. This program should be in place by the year 2003, and will allow the FS to monitor area usage and provide educational and regulatory information to visitors.

The FS is currently building a section of the Continental Divide National Scenic Trail approximately six miles to the west of Guanella Pass. The trail, when completed, will run from Canada to Mexico. The section of the trail closest to Guanella Pass Road is scheduled for completion by the year 2007.

The FS, the counties, Georgetown, and other stakeholders have prepared a management strategy for the Guanella Pass Road Scenic and Historic Byway. The CMS prescribes general recommendations for the entire byway as well as specific desired conditions and action items for nine separate management zones within the byway. However, the CMS is only a guidance document, not a decision document, and no funding is attached to the CMS. Therefore, it is uncertain which, if any, of the recommendations will be implemented, and in what time frame.

5. Unresolved Issues

Georgetown has not yet signed a Forest Highway Cooperating Agency Agreement with the FHWA. This agreement is needed under the Forest Highway Program to identify the responsibilities of agencies that have ownership of the road. Prior to signing the cooperative agreement, Georgetown has requested that the FHWA provide additional right-of-way (ROW) acquisition information for the Town of Georgetown, a clear statement of FHWA liability for any potential damage to structures and resources within the National Landmark District, and a description of mitigation measures for construction impacts. The FHWA is currently working with representatives from the Town of Georgetown to address these concerns. The FHWA

anticipates having a signed Forest Highway Cooperating Agency Agreement by the release of the ROD. The other road owners, Park and Clear Creek Counties, have signed Forest Highway Cooperating Agency Agreements.

6. Areas of Controversy

The areas of controversy for the Guanella Pass project are:

1. The FS is in favor of providing a hardened surface (asphalt pavement and macadam) for the entire length of the project in an effort to preserve and protect the water quality of adjacent streams and wetland/riparian areas. Many public comments have expressed concern regarding the increase in traffic and vehicle speeds that may be associated with the increased amount of hardened surface on Guanella Pass Road, as well as the visual impacts the hardened surface and associated striping might have on the rustic character of the area.
2. The Town of Georgetown is concerned about the impacts the construction activities associated with Guanella Pass Road would have on the residents, businesses, and infrastructure of the town.
3. The Town of Georgetown and many public comments received on the DEIS and Supplemental Draft Environmental Impact Statement (SDEIS) have indicated that the FHWA needs to further reduce the design and extent of the road improvements to further minimize environmental impacts and reduce projected traffic increases. It is the FHWA's position that Alternative 6 (the Preferred Alternative) is the minimum that can be built and no further reduction in design standards can be made. The FHWA contends that environmental impacts have been reduced to the greatest extent possible. Any reduction in projected traffic increases can be accomplished only by the land management agencies (FS, Clear Creek County, Park County, and Georgetown) implementing policies that serve to restrict use of the area.

B. NEEDS AND OBJECTIVES OF THE PROJECT

The purpose of the Guanella Pass Road improvement project is based on the need to balance transportation needs (including recreational access to FS lands) and roadway maintenance needs with the sensitive nature of the environment. These needs are presented and discussed in detail in **Chapter I.C: Purpose of and Need for the Project**. Table S-1 presents eight project objectives that describe the purpose of the project. The objectives were developed based on the needs identified by the Program Agencies with input from the local agencies (town and counties) and the public.

Table S-1: Objectives of the Guanella Pass Road Improvement Project

Transportation	
I.	Provide a roadway width and surface capable of accommodating year 2025* traffic volumes.
II.	Improve safety by providing consistent roadway geometry and providing reasonable protection from unsafe conditions.
III.	Accommodate and control access to Forest Service facilities located along the road.
Maintenance	
IV.	Reduce the anticipated maintenance costs to the counties (and town**) maintaining the road.
V.	Repair roadway drainage problems.
Environmental	
VI.	Repair existing unvegetated slopes.
VII.	Avoid, minimize, or mitigate adverse impacts to the environment by considering key issues identified through the public and agency involvement process.***
VIII.	Maintain the rural and scenic character of the road.
* Year 2015 traffic volumes (used in the DEIS) have been revised to year 2025 traffic volumes to show the 20-year traffic projections, based on the estimated project completion date.	
** Added after issuance of DEIS.	
*** Key Issues for this project were identified as: Social Environment, Water Resources, Visual Quality, Recreational Resources, Plants and Animals, and Construction Impacts.	

C. ALTERNATIVES CONSIDERED

Six alternatives are evaluated in this FEIS. Other alternatives and several realignment options were also considered, but were screened from the analysis prior to the environmental evaluation. These are discussed in **Chapter II.F: Other Alternatives Considered and Eliminated**. More details on the alternatives (including figures) are presented in **Chapter II: Alternatives**. The following alternatives are evaluated in this FEIS.

Alternative 1: No Action

Guanella Pass Road is left in its existing condition. The road width remains inconsistent, varying from 5.5 meters (18 feet) to 7.2 meters (24 feet). No improvements are made to existing drainage, surfacing, safety, slope stability, vegetation, or culvert problems. Alternative 1 addresses Project Objective VIII and partially addresses Project Objective VII.

Alternative 2: Reconstruct and Pave

Guanella Pass Road is reconstructed and paved with asphalt along its entire length. The roadway alignment generally follows the existing alignment with some horizontal and vertical improvements. The road is reconstructed and widened where necessary to achieve a consistent width of 7.2 meters (24 feet) to include one 3-meter (10 feet) lane and a 0.6-meter (2 feet) shoulder in each direction. Drainage, surfacing, safety, slope stability, vegetation, culvert, and small-stream crossing improvements are included.

Alternative 2 addresses Project Objectives I, II, III, IV, V, VI, and VII, and partially addresses Project Objective VIII.

Alternative 3: Reconstruct to Existing Surface Type

Guanella Pass Road is reconstructed and resurfaced to its existing surface type. Those portions of Guanella Pass Road that are currently paved are resurfaced with an asphalt surface and those portions of the road that are currently dirt/gravel are resurfaced with a gravel surface. The roadway alignment generally follows the existing alignment, with the same horizontal and vertical improvements as in Alternative 2. The road is reconstructed to a consistent width of 7.2 meters (24 feet) to include one 3-meter (10 feet) lane and a 0.6-meter (2 feet) shoulder in each direction. Drainage, surfacing, safety, slope stability, vegetation, culvert, and small-stream crossing improvements are included. Under Alternative 3, the road is reconstructed with 52 percent gravel surface and 48 percent paved.

Alternative 3 addresses Project Objectives I, II, III, V, and VI, and partially addresses Project Objectives IV, VII, and VIII.

Alternative 4: Partially Reconstruct and Pave

Four sections of Guanella Pass Road are reconstructed and paved with asphalt to the same standard as Alternative 2, with a consistent width of 7.2 meters (24 feet). The four improvement segments are shown in Figure II-3 of **Chapter II: Alternatives**. Drainage, surfacing, safety, slope stability, vegetation, culvert, and small-stream crossing improvements are included along the four sections. The remainder of the road is left unchanged. Under Alternative 4, 51 percent of the road is reconstructed and paved, 15 percent is left unchanged with a gravel surface, and 34 percent is left unchanged with a paved surface.

Alternative 4 partially addresses Project Objectives I, II, III, IV, V, VI, VII, and VIII.

Alternative 5: Partially Reconstruct and Pave/Partially Rehabilitate

Guanella Pass Road is reconstructed and paved to a consistent width of 7.2 meters (24 feet) in the same manner and locations as Alternative 4, and the remainder of the route is rehabilitated. The rehabilitated sections receive the following improvements: a pavement overlay or gravel overlay consistent with the existing surface type, drainage improvements, and revegetation of existing barren slopes to the extent possible without changing the existing slope angle. The rehabilitated sections of Guanella Pass Road are not widened, but match the existing roadway widths. Under Alternative 5, 51 percent of the road is reconstructed and paved, 15 percent is rehabilitated with a gravel surface, and 34 percent is rehabilitated with asphalt pavement.

Alternative 5 addresses Project Objectives III and V, and partially addresses Project Objectives I, II, IV, VI, VII, and VIII.

Alternative 6: The Preferred Alternative

During the comment period for the DEIS, several major issues were identified. The majority of commentors agreed with the need for repair or maintenance of the road, but not to the extent described by the build alternatives in the DEIS. The commentors indicated that a new alternative should be developed that emphasizes rehabilitation or minimal improvements to Guanella Pass

Road. A new alternative was developed by the FHWA in cooperation with Clear Creek County, the Town of Georgetown, Park County, the FS, and the CDOT. These agencies participated in numerous work group sessions to coordinate a response to public comments and develop a new alternative, Alternative 6, for public consideration. These work group sessions were held from early February through early May 2000 and were open to the public for observation. Alternative 6 was presented in the SDEIS in November of 2000.

Alternative 6 includes a change in the functional classification of the roadway from a rural collector road to a rural local road. The change in functional classification allows a lower design speed with sharper roadway curves and a narrower roadway width than what was originally proposed in the DEIS. The roadway is constructed to a consistent width of 6.6 meters (22 feet) to include travel lanes 2.7 meters (9 feet) wide and shoulders 0.6 meter (2 feet) wide. In addition, the new functional classification allows for the use of a smaller design vehicle, which enables the design of a roadway containing sharper switchback curvature. Each of these changes in the design criteria permits Alternative 6 to follow more closely the existing roadway. Road surface, safety, drainage, access control, slope stability, and revegetation improvements are proposed for inclusion in the roadway reconstruction and rehabilitation areas. Under Alternative 6, 63 percent of the road is rehabilitated, 18 percent undergoes light reconstruction, and 19 percent undergoes full reconstruction.

Several alternative surface types have been proposed to replace the existing gravel surfacing for approximately 30 percent of the route. These surface types are evaluated in this document, and macadam has been selected as the preferred surface. Although the decision on surface type will not be made until publication of the ROD, “macadam” will generally be used in this document to reduce usage of the potentially confusing term “alternative surface type”.

For Alternative 6, the current paved sections of the road will be resurfaced using asphalt pavement with chip seal. Most of the current gravel sections will have either a gravel/dust suppressant surface or a macadam surface. There is one current gravel section where paving with an asphalt pavement with chip seal is proposed: the section of road 3.0 kilometers (1.8 miles) long near the Park County and Clear Creek County line (Shelf Road - stations 16+140 to 19+140). A gravel section in Park County between stations 1+770 and 5+500 (3.7 kilometers [2.3 miles] long) and another gravel section in Clear Creek County between stations 22+450 and 30+220 (7.8 kilometers [4.8 miles] long) would be surfaced with macadam at the request of the maintaining agencies (Park County and Clear Creek County) and the FS to reduce costs associated with maintenance of the road and to reduce sedimentation and gravel runoff into the sensitive wetland ecosystems. Additional information on the exact locations of the surface types in particular sections of the road can be found in **Chapter II.B.6a: Surfacing Options**.

Alternative 6 has been selected as the preferred alternative based on environmental studies addressed in this FEIS and consultation with the public, Town of Georgetown, Clear Creek and Park County Commissioners, State of Colorado, FS, U.S. Fish and Wildlife Service, USACE, EPA, and local tribes. The preferred alternative best balances efforts to address the Purpose and Need for the action while at the same time minimizing social, economic, and environmental impacts. Alternative 6 addresses Project Objectives I, III, and V, and partially addresses Project Objectives II, IV, VI, VII, and VIII.

D. KEY ISSUES

An extensive public and agency involvement process was completed for the Guanella Pass Road improvement project. A detailed description of the scoping activities that were performed is included in **Chapter VII: Project Coordination**. This scoping process identified the following six key issues for this project:

- Social Environment
- Water Resources
- Visual Quality
- Recreational Resources
- Plants and Animals
- Construction Impacts

Social Environment includes community character, traffic volumes, population and demographics, the local economy, cultural (historical and archaeological) resources, and traditional cultural properties. Water Resources include water quality, wetlands, and riparian communities, and other waters of the U.S. Visual Quality includes views from the road and views of the road. Recreational Resources include recreational activities on FS lands, pedestrian activities, and cycling. Plants and Animals include threatened, endangered, and sensitive (TES) species of animals and plants as well as non-TES animal species. Construction Impacts include noise, vibration, traffic delays, and material hauling resulting from construction activity. Objective VII of this project is to avoid, minimize, or mitigate adverse impacts to the environment by considering these key issues identified through the public and agency involvement process.

E. MAJOR ENVIRONMENTAL IMPACTS

Chapter III: Affected Environment and Environmental Consequences describes the environmental setting of the study area and the impacts (beneficial and adverse) the proposed project may have on the environment. A summary of these impacts is provided below.

1. Beneficial Impacts

Major beneficial impacts, which vary according to alternative, include:

- Improving existing safety deficiencies
- Improving operational efficiency for roadway users
- Decreasing roadway maintenance costs
- Improving stream crossings for fish passage

- Improving recreational access
- Repairing existing erosion problem areas
- Reducing sedimentation runoff by replacing gravel surfaces with a more stable alternative
- Improving driving experience for forest users
- Enhancing visual experience in revegetated areas
- Improving drainage
- Improving control of access to adjacent land.

2. Adverse Impacts

Major adverse impacts (before mitigation), which vary according to alternative, include:

- Increasing potential for vehicle and wildlife conflicts
- Filling of wetland and riparian areas
- Removing and further fragmenting wildlife habitat
- Affecting community character including the visual impact of the alternatives on the Georgetown-Silver Plume National Historic Landmark District
- Creating construction impacts such as noise and traffic delays
- Creating visual impacts by changing the roadway width and surface type and adding retaining walls
- Disturbing sites of potentially hazardous material.

Mitigation of these adverse impacts is discussed in **Chapter IV: Mitigation**.

3. Environmental Impacts Summary

A summary of the environmental impacts of the studied alternatives is presented in Table S-2. **Chapter III: Affected Environment and Environmental Consequences** provides a detailed discussion of these impacts.

F. MITIGATION OF IMPACTS

The FHWA is committed to mitigating environmental impacts that result as part of the Guanella Pass Road improvements. The mitigation efforts that are necessary as part of the Guanella Pass Road improvements will include the treatment of impacts to the following resources or activities:

- Cultural Resources
- Traditional Cultural Properties
- Water Quality
- Wetland and Riparian Communities
- Visual Quality
- Recreational Resources
- Plants and Animals
- Federally Listed and Other Sensitive Species
- Construction
- Hazardous Materials
- Section 4(f) Resources

Resources not listed above require no mitigation efforts. Details on mitigation commitments can be found in **Chapter IV: Mitigation**.

**Table S-2
Summary of Environmental Impacts**

	Alternative 1 (No-Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred Alternative)
Amount of Reconstruction, Rehabilitation, and Paving	0% reconstruction 0% rehabilitation 48% paved 52% dirt/gravel	100% full reconstruction 0% rehabilitation 100% paved 0% gravel	100% full reconstruction 0% rehabilitation 48% paved 52% gravel	51% full reconstruction 0% rehabilitation 86% paved 14% dirt/gravel	51% full reconstruction 49% rehabilitation 86% paved 14% gravel	37% reconstruction (18% light, 19% full) 63% rehabilitation 56% paved, 14% gravel 30% alternative surface type (macadam preferred)
1. Social Environment						
Community Character	Anticipated change in community character directly proportional to the increase in traffic volume. Traffic will increase with or without the road project, although traffic will increase more under the build alternatives. See Traffic Volume section below.					
Roadway Width (includes travel lanes and shoulders)	5.5-7.2 meters (18-24 feet)	7.2 meters (24 feet)	7.2 meters (24 feet)	Reconstructed areas: 7.2 meters (24 feet) No-Action Areas: 5.5-7.2 meters (18-24 feet)	Reconstructed areas: 7.2 meters (24 feet) Rehabilitated Areas: At least 7.2 meters (24 feet)	6.6 meters (22 feet)
Traffic Volume	56% increase over 1995 traffic volume at the summit in 2025.	40-80% increase over year 2025 No-Action traffic volumes at the summit.	35% increase over year 2025 No-Action traffic volumes at the summit.	40-80% increase over year 2025 No-Action traffic volumes at the summit.	40-80% increase over year 2025 No-Action traffic volumes at the summit.	20% increase over year 2025 No-Action traffic volumes at the summit.
Population and Demographics	No impact anticipated.					
Local Economy	Potential enhancements to the local economies such as increased taxable retail sales, increased employment, expanded recreational services, and more year-round visitor activity. Enhancement proportional to increase in traffic volume. See Traffic Volume section above.					
Land Use and Consistency with Local Plans	No impact.	An increase in demand for services such as food and gas is expected, and may lead to changes in land use development. Improved access to private land resulting from alternatives may encourage development.				Residential and commercial land use development and local plan management will need to be monitored by the local agencies to maintain the road's functional classification as a rural local road.
Cultural Resources	No impact.	No direct impacts to the cultural resources are anticipated for any build alternative. May impact the visual quality of the Georgetown-Silver Plume National Historic Landmark District (GSPNHLD).				No direct impacts to the cultural resources are anticipated for any build alternative. Alternative 6 may impact the visual quality of the GSPNHLD. However, the impact is to a lesser extent than Alternatives 2-5, because Alternative 6 consists of a narrower roadway width.
Traditional Cultural Properties	No impact anticipated.					
2. Water Resources						
Water Quality	Continued sedimentation impact to existing water resources.	Will improve existing conditions that degrade water quality, such as eroding roadway ditches, shoulders, and embankments. Impacts to water quality are proportional to the amount of hardened surfacing, opportunity to correct existing erosion problems, and potential erosion from new disturbance. Alternative 2 provides the most effective remedy of the build alternatives, followed by Alternative 6 and then by Alternatives 5, 4, then 3. See Table III-9 – Comparison of Alternatives by Water Quality-Related Roadway Characteristics for more information on water quality related characteristics.				
Wetland and Riparian	Continued sedimentation impact to existing wetlands.	Drainage improvements to the roadway are expected to enhance wetland areas by controlling sedimentation, runoff, and erosion potential. The amount of positive impact is proportional to the amount of sediment reduction as described above.				
Total Direct Wetland Impact hectares (acres)	Not quantified, but continued impacts occur due to sedimentation and maintenance activities on gravel portions of road.	2.96 (7.32)	2.96 (7.32)	0.76 (1.87)	0.76 (1.87)	0.28 (0.71)

**Table S-2
Summary of Environmental Impacts**

	Alternative 1 (No-Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred Alternative)
3. Visual Quality						
Visual	No change from the existing visual character. Dusty conditions along the gravel sections continue to lower the visual quality. Unvegetated slopes are not repaired.	Changes to visual character are proportional to the amount of widening and the amount of reconstruction. See the Amount of Reconstruction, Rehabilitation, and Paving section above. Changes to visual character expected from the minor realignments for all build alternatives. The changes in visual character are related to the view from the road for the driver and also the view of the road. Retaining walls used to stabilize slopes for Alternatives 2-5 will detract from the visual quality of the roadway.			The amount of roadway widening under Alternative 6 is less than Alternatives 2-5. The narrower roadway width for Alternative 6 reduces the amount of retaining wall needed, and therefore reduces the impact of retaining wall on the visual character of the road. The reclassification of the road to a rural local road, the lower design speed, and the new design vehicle allow Alternative 6 to more closely follow the existing alignment. These design changes allow Alternative 6 to maintain more of the existing rustic character of the road. The visual impact from the minor realignments is less for Alternative 6 because of the reduced cross section. Alternative 6 provides the greatest amount of rehabilitation of the build alternatives and better maintains the character of the road.	
		Unvegetated slopes are repaired, enhancing the visual quality of the roadway corridor. High traffic volumes on gravel roads result in very dusty conditions, thus lowering the visual quality along the roadway. The extent to which dust becomes a factor is dependent on the amount of reconstruction, rehabilitation, and paving, and the increase in traffic for each alternative. Alternative surface types for gravel sections of the road will help to reduce air-borne dust and retain some of the rustic character of the road. In addition, a coarse chip seal may be used to give the paved sections a more rustic character. See Chapter II.B.6a: Surfacing Options for more information. Retaining wall, slope treatment, and guardrail designs will be incorporated into all build alternatives with the intent of maintaining the rustic character of the roadway. See Chapter II.G.1: Retaining Wall Design and Slope Treatments and II.G.3: Guardrail Design and Materials for more information.				
4. Recreational Resources						
Recreational Activities	Recreational use is expected to increase proportional to the increase in traffic volume. See Traffic Volume section above. Increased recreational use creates more pressure for dispersed use of the forests. A detrimental impact on the recreational experience for some users may occur as a result of more users. Increased recreational use increases the need for parking in Georgetown and along the road. Potential winter closure of Guanella Pass Road may impact the recreational use of the area by moving the concentration of activity closer to the closure parking areas. See Chapter II.E.3: Winter Closure for additional information. Areas farther away from the parking lots will likely see a decrease in winter recreational use. Recreationalists will be farther away from their destinations and this may create a perceived inconvenience.					
Pedestrian and Bicyclists	No changes made to improve the existing conditions. Dust, narrow road width, poor sight distance, and increasing traffic will continue to adversely affect pedestrians and bicyclists.	Improved sight distance and additional roadway width along the reconstructed sections of the road improves safety for pedestrians and bicyclists. Dust reduction is directly proportional to the increased length of paved sections. Pedestrians and bicyclists may be negatively impacted due to the increase in traffic volumes for each alternative. See Traffic Volume section above.			Alternative 6 traffic volumes will be less than Alternatives 2-5. See Traffic Volume section above. The roadway width is narrower than Alternatives 2-5, and this may make it more difficult to share the road with pedestrians and bicyclists. Dust levels will remain high on the gravel portions of the roadway, but this can be reduced by dust suppressants.	
5. Plants and Animals						
Wildlife – Direct Effects (proportional to habitat loss)	No impact.	Full reconstruction alternatives would have the most impact.	Alternatives 4 and 5 have about half as much reconstruction as Alternatives 2 and 3.		Alternative 6 has less construction than Alternatives 2-5.	
Wildlife – Indirect Effects (proportional to traffic volume and speed)	Least impact.	Most impact.	Less effect than Alternatives 2, 4, or 5.	Impact similar to Alternative 2.		Less impact than Alternatives 2-5 due to lower traffic volume and lower speed.
Total Boreal Toad Habitat Disturbance hectares (acres)	0 (0)	3.98 (9.7)	3.98 (9.7)	2.13 (5.22)	2.13 (5.22)	1.70 (4.18)
Canada Lynx Findings (preliminary recommendations)	May affect, likely to adversely affect. Potential effects are mainly related to traffic volume and speed, and would be highest under Alternatives 2, 4, and 5, less under Alternative 3, then Alternative 6, and least under Alternative 1.					

**Table S-2
Summary of Environmental Impacts**

	Alternative 1 (No-Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred Alternative)
Fish Habitat	No changes made to improve the existing conditions. Sedimentation problems continue.	Drainage improvements will greatly reduce sedimentation problems. Fish habitats likely to improve after construction. However, pre-existing water quality issues will continue to pose a threat to the fish habitats. With the installation of natural bottom culverts, fish passage will improve after construction. Alternative 2 provides the most effective solution to improving the existing conditions, followed by Alternative 6 and then by Alternatives 5, 4, and 3. The impacts to fish habitat are proportional to the amount of hardened surfacing, opportunity to correct existing erosion problem areas, and potential erosion from new disturbance.				
6. Construction Impacts						
General Construction	Maintaining agencies will have to perform construction and/or repair activities above and beyond normal maintenance periodically as the road continues to deteriorate.	Construction impacts such as increased traffic delays, construction noise, and habitat disruption are the same for Alternatives 2 and 3. Construction impacts are less for Alternative 5 and Alternative 4 due to the decreased amount of reconstruction associated with these alternatives. Alternative 6 has the least impact because it has the least reconstruction. Haul loads through the project area are proportional to the amount of reconstruction proposed for each of the build alternatives. Road damage along haul routes is expected for all of the build alternatives. Traffic delays are expected for each of the build alternatives.				
Construction Cost (2002 dollars)	\$0 (Does not include County construction costs to maintain the road as it continues to deteriorate.)	\$46.1 million	\$44.6 million	\$29.2 million	\$35.9 million	\$28.9 million
7. Other Resources						
Air Quality	No change from the existing air quality conditions. Dust in gravel sections continues to impact air quality.	Dust is reduced directly proportional to the increased length of hardened surfacing (pavement or macadam), improving the air quality. See Amount of Reconstruction, Rehabilitation, and Paving section above. The greatest improvement is seen under Alternative 2, followed by Alternatives 4, 5, and 6. No long-term improvements are seen under Alternative 3. Dust suppressants will help to decrease the air-borne dust problem on the gravel road sections of Alternatives 3-6.				
Noise (at projected year 2025 traffic volumes)	No residential noise impacts requiring noise abatement are expected. The decibel increase is associated with future projected traffic.					
	0-3 dB(A) increase over existing levels at 60 m (200 ft) from road.	3-5 dB(A) increase over existing levels at 60 m (200 ft) from road.	1-3 dB(A) increase over existing levels at 60 m (200 ft) from road.	3-5 dB(A) increase over existing levels at 60 m (200 ft) from road.	3-5 dB(A) increase over existing levels at 60 m (200 ft) from road.	1-3 dB(A) increase over existing levels at 60 m (200 ft) from road.
Hazardous Material	No impact.	Disturbance to hazardous material sites 3, 7-9, 12, and 13. Potential impacts to Equator tunnel and Silverdale/Ocean Wave tunnel.		Disturbance to hazardous material sites 12 and 13.	Disturbance to hazardous material sites 7-9, 12, and 13.	
Section 4(f) Impacts Hectares (acres)	0 (0)	0.13 (0.33)	0.13 (0.33)	0.01 (0.03)	0.03 (0.07)	0.03 (0.07)
Utilities	No impact.	Power poles and underground telephone lines would need to be moved under all build alternatives.				
Floodplain	No further impacts over current conditions anticipated.					
Farmlands	No impact anticipated.					
Environmental Justice	No impact anticipated.					
Services	The demand for local services, including police, fire, ambulance, search and rescue, and trash removal, is expected to increase proportional to the increase in traffic volume for each alternative.					
Relocation	No impact anticipated.					
Maintenance Cost (estimated over 20 years)	\$9.3 million	\$4.8 million	\$7.5 million	\$6.6 million	\$5.9 million	\$6.0 million
Secondary Impacts	Increased traffic will create a demand for commercial services such as restaurants, shopping, and gasoline, as well as for community services such as public restrooms and trash removal. The demand for parking in Georgetown will increase directly proportional to increased traffic volumes. The increased use of the road may reduce the perception of the corridor as a tranquil environment as private landowners develop properties for recreational or other uses.					

THIS PAGE INTENTIONALLY LEFT BLANK