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Programmatic Environmental Assessment

Post-Disaster Road, Bridge and Trail Replacement, Relocation and Upgrade in the State of Colorado

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FEMA



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Acronyms and Abbreviations

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BMP	Best Management Practice	PEA	Programmatic Environmental Assessment
CDNR	Colorado Department of Natural Resources	PDM	Pre-Disaster Mitigation Program
CDPHE	Colorado Department of Public Health and Environment	PPE	Personal Protective Equipment
CDOT	Colorado Department of Transportation	ROW	Right of Way
CEQ	Council on Environmental Quality	SEA	Supplemental Environmental Assessment
CFLHD	Central Federal Lands Highway Division	SFHA	Special Flood Hazard Areas
CFR	Code of Federal Regulations	SHPO	State Historic Preservation Office
CPW	Colorado Parks and Wildlife	SWPPP	Storm Water Pollution Prevention Plan
CWQ	Clean Water Act of 1977	THPO	Tribal Historic Preservation Office
DHS	Department of Homeland Security	USACE	U.S. Army Corps of Engineers
EA	Environmental Assessment	USC	U.S. Code
EO	Executive Order	USFWS	U.S. Fish and Wildlife Service
EPA	U.S. Environmental Protection Agency	USFS	U.S. Forest Service
ESA	Endangered Species Act		
ERFO	Emergency Relief for Federally Owned Roads		
FEMA	Federal Emergency Management Agency		
FHWA	Federal Highway Administration		
FWCA	Fish and Wildlife Coordination Act		
GPD	Grants Program Directorate		
HMA	Hazard Mitigation Assistance		
IA	Individual Assistance		
MBTA	Migratory Bird Treaty Act		
NEPA	National Environmental Policy Act		
NFIP	National Flood Insurance Program		
NHPA	National Historic Preservation Act of 1996		
NRHP	National Register of Historic Places		
NRCS	Natural Resource Conservation Service		
OSHA	Occupational Health and Safety Administration		
PA	Public Assistance		

SECTION ONE INTRODUCTION

1.1 OVERVIEW

The United States Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), the United States Department of Transportation, Federal Highway Administration (FHWA), Colorado Division, and the FHWA, Central Federal Lands Highway Division (CFLHD) propose to implement repair, replacement, upgrade and relocation of roads, bridges and other linear transportation facilities (e.g. bike lanes, paths, trails, etc.); that are damaged as a result of major disasters in the State of Colorado. Roads, bridges and trails, etc. may be built, upgraded, or repaired under FEMA funding programs, such as, but not limited to Individual Assistance (IA), Public Assistance (PA), Hazard Mitigation Assistance (HMA) and Grants Program Directorate (GPD) funding. FHWA may provide funding as part of the Emergency Relief (ER) program or Emergency Relief Federally Owned (ERFO) program, or other federal-aid categories. This Programmatic Environmental Assessment (PEA) has been prepared to analyze the potential environmental consequences associated with the proposed action and the no action alternative in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] 55 parts 4321 et seq., 2000), the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] 30 parts 1500 et seq., 2004), 44 CFR Emergency Management and Assistance Ch. I Part 10, and 23 CFR 771. This analysis is programmatic in nature and does not address individual site-specific impacts, which will be evaluated for individual projects prior to approval.

FEMA and FHWA are joint lead agencies for this PEA, and will be referred to collectively as “the Agencies” throughout this document. Other Federal agencies may use this document to demonstrate compliance with NEPA at their discretion and under their own authorities.

1.2 BACKGROUND

The September 2013 flooding in northeastern Colorado set records as rains swelled rivers and caused waters to widen banks or reroute flow patterns damaging roadways, bridges, trails, and other linear transportation facilities; making these features unusable. Although initially prepared following the 2013 flooding, this PEA also covers future disaster events, including disasters other than flooding, such as fires or tornados, which have similar impacts to the built environment.

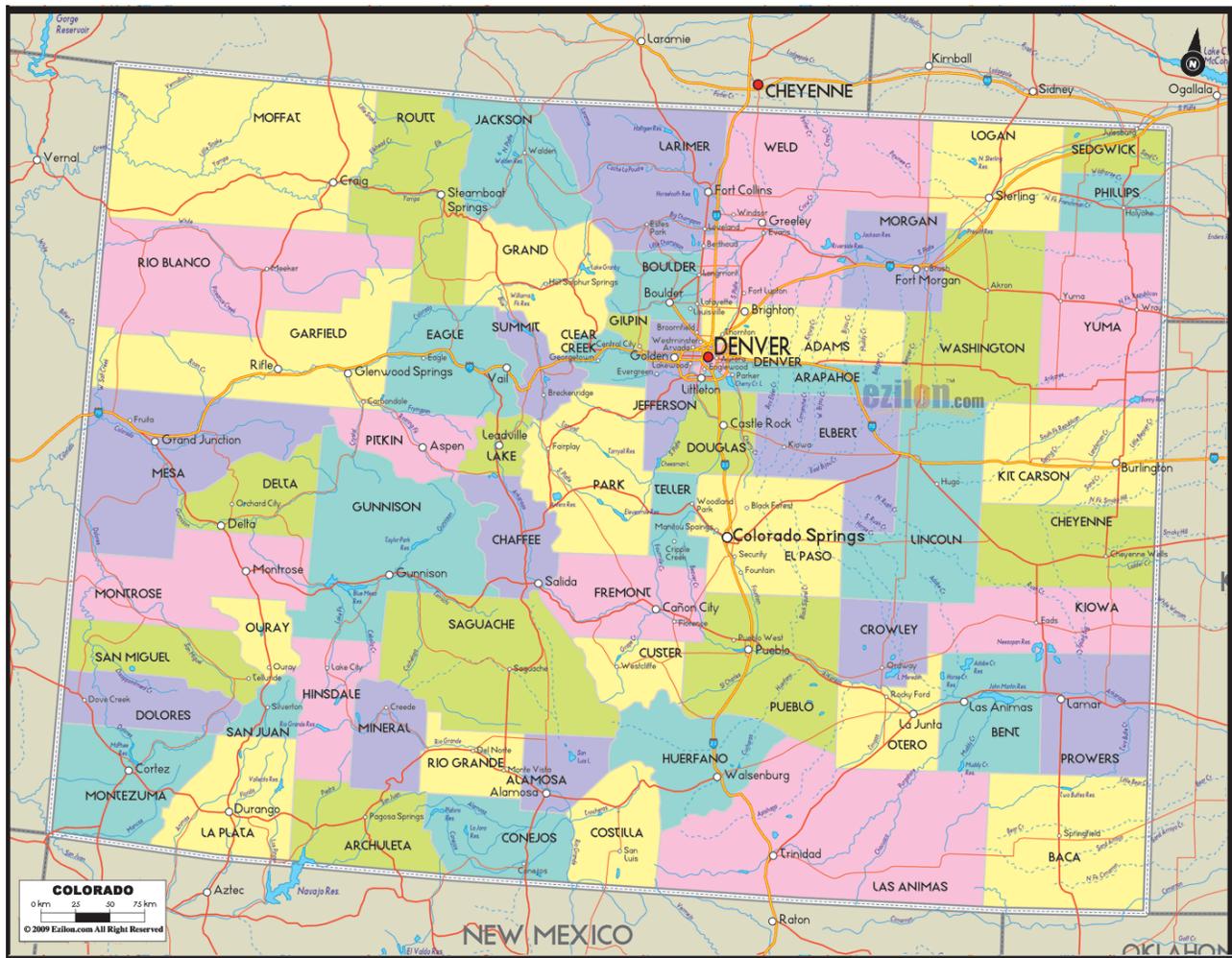
The NEPA and its implementing regulations direct the Agencies to take into consideration the environmental consequences of proposed actions during the decision-making process. The Agencies must comply with NEPA before making Federal funds available. The Agencies have determined through experience that the majority of the typical, recurring actions proposed for funding, and for which an Environmental Assessment (EA) is required, can be grouped by type of action or location. These groups of actions can be evaluated in a PEA for compliance with NEPA and its implementing regulations without the need to develop and produce a stand-alone EA for every action.

This PEA evaluates typical actions undertaken by the Agencies to provide permanent restoration or mitigation, activities that reduce disaster losses and protect life and property from future disaster damages, to previously maintained, roads, bridges, and trails, etc. on existing transportation infrastructure throughout the State of Colorado. These actions are required as a result of historic

and anticipated future disasters, including fires, tornados, avalanches, floods, or other major disasters throughout the State of Colorado. It applies to all proposed alternatives described in this document. This PEA also provides the public and decision-makers with the information required to understand and evaluate the potential environmental consequences of these actions and to consider these impacts in decision making. The purpose of this action is to help the Agencies fulfill and expedite the environmental review process.

The project area of this PEA encompasses the State of Colorado, including 64 Counties and the Southern Ute and Ute Mountain Indian Reservations (Figure 1).

Figure 1: Colorado Map



1.3 PROCESS FOR USE OF THE PEA

A PEA is utilized to cover a group of projects that are similar in scope, scale, magnitude, and the nature of impacts. The use of a PEA analysis can reduce or eliminate redundant and duplicative analyses and effectively address cumulative effects. In contrast to a project level EA which emphasizes impacts on the specific project site and immediate surroundings; a PEA is generally regional in scope, often covers numerous ecosystems and/or political boundaries, and focuses on a

range of actions with a limited magnitude of impacts. Environmental consequences captured in this PEA focus on multiple future actions, whereas a project-level EA focuses on a single action. For a project to qualify under the PEA the scope of the project and the nature of impacts must be evaluated within this document. Additional analysis and project specific mitigation may be required as context and intensity of proposed project-level impacts become apparent. All projects using this PEA must use the Road, Bridge and Trail Checklist (Appendix B) to document the project specific information and that the project is consistent with the PEA.

The Agencies will use this PEA to determine the level of environmental analysis and documentation required under NEPA for permanent road, bridge and trail repair activities for subsequent projects that use any of the proposed alternatives. If the description of the site-specific nature of the project and the levels of analysis are fully and accurately described in this PEA, the Agencies will take no further action other than what is necessary to support and document that conclusion. If a specific project is expected to (1) create impacts not described in the PEA; (2) create impacts greater in magnitude, extent, or duration than those described in the PEA; or (3) require mitigation measures to keep impacts below significant levels that are not described in the PEA; then a Supplemental Environmental Assessment (SEA) would be prepared to address the specific action. The SEA would be tiered from this PEA, in accordance with 40 CFR Part 1508.28. Actions that are determined during the preparation of the SEA to require a more detailed or broader environmental review will be subject to the stand-alone EA or other applicable process.

1.4 PURPOSE AND NEED

The purpose of the proposed project action is to restore safe, sustainable, and permanent transportation function and capacity to roads, bridges and trails, etc. in Colorado following disaster events.

Geography and climate have triggered many Colorado floods since settlers first came west. During these events residents and businesses lose access or are forced to take long detours. As a result deleterious impacts to regional and local economic development, roadway system linkage, recreational and social demands can result. Additionally, local governments may be unable to provide emergency services including fire, police, and ambulance, creating a potential threat to life, public health and safety. Intervention is needed to make roads safe and useable. In an effort to restore or mitigate roads, bridges, trails and other linear transportation facilities (e.g. bike lanes, paths, etc.), the Agencies may provide funds for expansion, enlargement, replacement, relocation or changes in materials and construction techniques.

SECTION TWO ALTERNATIVES

2.1 ALTERNATIVES NOT RETAINED

The Agencies considered and reviewed several alternatives in development of this PEA. One alternative was considered but eliminated from further review in this PEA because it falls under an alternative environmental review. This alternative is listed and described below.

Alternative A: Repair and Minor Mitigation

For FEMA, applicants may repair roads, bridges and trails, etc. to pre-disaster condition under FEMA's Public Assistance Program or make small mitigation upgrades under Hazard Mitigation Grant Programs. For FHWA, road agencies (the Colorado Department of Transportation [CDOT] or local road agencies) may repair roads, bridges and trails, etc. to pre-disaster conditions under the ER, ERFO or other Federal-aid programs. These types of projects may fall into a Statutory Exclusion or a Categorical Exclusion under NEPA and will be evaluated accordingly. No further review of these types of projects will be considered in this PEA.

2.2 ALTERNATIVES CONSIDERED

The following Alternatives are being considered for further evaluation in this PEA. These alternatives represent classes of actions that may be implemented individually or in combination with one another. Depending upon the action(s) the Agencies determine is necessary to maintain access to roads, bridges and trails, etc. and the individual characteristics of the specific site, there may be only one viable option to be implemented. Specific items of work common to Alternatives 2-5 (build alternatives) may include, but will not be limited to:

- Operating equipment within waterways as needed for retrieval of flood debris, roadway material and to allow repair, replacement and relocation of damaged facilities
- Placement of temporary structures, bridges, crossings, utilities, staging areas, access and safety features, as needed during construction
- Repair, replacement and relocation of damaged structures, bridges, roadways, trails and facilities ancillary to linear transportation systems such as utilities, bike lanes, paths, etc.
- Minor water channel modifications necessary to reestablish embankments and accommodate repair, replacement and relocation of facilities
- Repair, replacement and relocation of culverts, pipes and other drainage structures and crossings
- Repair, replacement and relocation of signals, signs, pavement marking, and safety features such as guardrail, etc.

A preferred alternative is not identified in this document because not all of the alternatives will be available at all site-specific locations. A project specific evaluation will determine which alternative (or combination of alternatives) will be implemented. Actions that could change stream hydrology are subject to evaluation and approval of a localized hydraulic study. The project sponsor/sub-grantee must obtain and comply with all appropriate permits and coordinate with the local floodplain administrator to obtain and comply with local floodplain development permits. The selected alternative (or combination of alternatives) will be documented in the Road, Bridge and Trail Checklist (see Appendix B).

Alternative 1: No Action

A No Action Alternative is required to be included in the environmental analysis and documentation in accordance with the CEQ regulations implementing NEPA. The No Action Alternative is defined as maintaining the status quo with no Agency involvement for any alternative. The No Action Alternative is used to evaluate the effects of not implementing the proposed road, bridge and trail replacement, repair, relocation, or upgrade action on a programmatic level; thus, this alternative provides a benchmark against which other alternatives may be evaluated.

"No action" means the proposed activity would not take place and the road, bridge or trail would remain in its existing condition. The facility may remain closed due to damage or loss of a bridge, trail and/or roadway. For the purpose of the environmental analysis, under the No Action Alternative, applicants and road agencies would have to rely on savings, insurance, loans, or other forms of assistance to restore their linear transportation routes.

Alternative 2: Replacement

This alternative applies to replacement of an existing structure, road or trail with a new structure, road or trail in the existing location. Changes to materials and dimensions are included in this alternative. This may include upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction. In the case of bridges, where a bridge no longer functions at its current size, a longer or wider bridge may be needed in the existing location to repair the bridge function, level of services and stability. Included in this alternative are upgrades to current codes and standards and construction of road approaches which are necessary to maintain the roadway system. Figures 2 and 3 have examples of bridge changes possible under this alternative. Applicable design codes will be followed for all construction design.

Figure 2 Bridge Length Adjustment

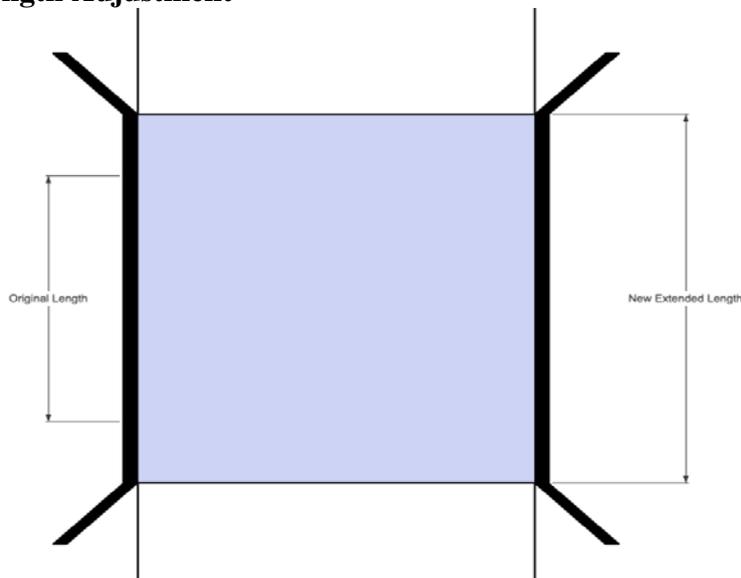
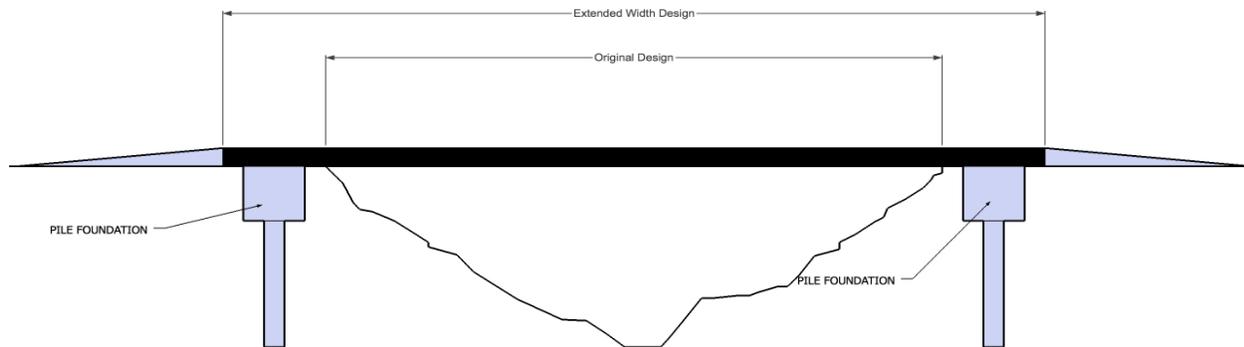


Figure 3 Bridge Width Adjustment**Alternative 3: Relocation**

This alternative includes the relocation of road and trail infrastructure to another location generally within the existing transportation corridor. Included in this alternative is the construction of new road and trail segments, culverts, tunnels and bridges which are necessary to use and maintain the facility. Changes to materials and dimensions are included in this alternative. This may include upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction. Road and/or trail relocations will contain a beginning and end point that ties to the original road segment. These segments may be either longer or shorter than the segments they are replacing. Bridges and roadways being replaced would be abandoned and/or removed. Purchase of land and right-of-way (ROW) or new transportation easements may be required. In the cases of road segments that provide sole access to properties, an alternate route may not be available. Applicable design codes will be followed for all construction design.

Alternative 4: New Structure Design

This alternative involves replacing an existing bridge or large culvert with a new structure that maintains the function of the original structure. New structures may include changes from low water crossings or culverts to bridges or the replacement of bridges with culverts or low water crossings. The new structure may be dissimilar in design and material of the original. This alternative is considered when materials such as silos that were used as culverts are no longer available. New structure design may include adjustments to the functional class of roadways as adjustments to load ratings and design vehicle are considered.

Applicable design codes will be followed for all construction design. Construction would occur to current codes and standards. Road and trail realignments may also occur in this alternative.

Alternative 5: Alternate Route

This alternative involves abandoning the damaged road, bridge or trails and re-routing the traffic patterns onto an existing alternative route. This alternative may not always involve new construction on the alternate route but would result in detour of traffic and modification to existing traffic patterns. The Agencies can provide funding under this alternative in the event the alternate

route requires improvements and upgrading to meet the transportation standards required for the alternate route to carry the increased demands of re-routed traffic.

The alternate route must provide for the same previous function and capacity as the restoration of the damaged roadway. In the cases of road segments that provide sole access, an alternate route may not be available.

SECTION THREE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 PHYSICAL RESOURCES

3.1.1 Affected Environment

Colorado has a diverse geology, ranging from the western mountains lifted and folded by tectonics and sculpted by glaciers to the eastern plains partly overlain by glacial till and dissected by wind and water. The 2007 state geological map included 324 distinct geological units.

Colorado's eastern plains contain more than 30,000 square miles of wind-blown (eolian) deposits. These eolian deposits consist of particles transported and deposited by the wind. Fine-grained particles (dust) form loess deposits. Coarser-grained deposits form sand dunes of varying shape.

Colorado has about a dozen glaciers. These are not remnants of the Pleistocene glaciers, but were formed about 500 years ago during the Little Ice Age. The maximum extent of the glaciers occurred about 1850. As the climate began warming again, the ice began to melt and the glaciers began retreating back into the cirques.

At 6,800 feet above sea level, Colorado has the highest average elevation in the United States. Thirty one percent (32,649 square miles) of the state is "mountainous", or greater than 8,000 feet. The vertical range in elevation is more than two miles, ranging from a low of 3,313 feet above sea level where the Arikaree River enters Kansas, to 14,440 feet at the crest of Mount Elbert near the center of the state. It is generally accepted that Colorado has 53 to 58 named peaks that are greater than 14,000 feet in elevation (depending on criteria used) and more than 700 peaks higher than 13,000 feet. The largely mountainous Continental Divide is the principal hydrological divide of the Americas. It extends from the Bering Strait to the Strait of Magellan, and separates the watersheds that drain into the Pacific Ocean from those river systems that drain into the Atlantic Ocean (including those that drain into the Gulf of Mexico and the Caribbean Sea), and along the northernmost reaches of the Divide, those river systems that drain into the Arctic Ocean. There are seven major river basins in Colorado: the Arkansas, Rio Grande, San Juan, Colorado, Green, Platte and Republican. Four major river systems – the Platte, Colorado, Arkansas, and Rio Grande – originate within the mountains of Colorado.

Five different physiographic provinces and three sub-provinces are found within Colorado: Colorado Plateau, Wyoming Basin, Southern Rocky Mountains, Middle Rocky Mountains, and the Great Plains which is divided into the Colorado Piedmont, High Plains, and Raton Basin.

Colorado's State soil is "Seitz soil" that consists of very deep, well drained, slowly permeable soils that were formed from igneous, sedimentary and volcanic rocks. Seitz soils are found on mountains, mainly in southwestern and central Colorado.

Colorado, especially the Front Range, is classified as having two types of soil existing together: expansive and hydro-compactable. Most soil in the Front Range can be classified as a swelling soil – a soil that contains a high percentage of certain types of clay that absorb vast quantities of water. This can cause the soil to expand 10% or more as moisture enters it, usually during winter snow melt and spring runoff, and then contract when the moisture evaporates during the hot summer months.

Land use in Colorado consists primarily of grassland/herbaceous areas (39.5%), Evergreen Forest (20.8%), and Small Grains (24.0%) according to the National Land Cover Statistics Database (USGS 2010) (Table 1). Residential development covers less than 1% of Colorado lands.

Table 1 - Land Cover of Colorado

Land Cover Classes	State Totals Units in Square Miles
Water	453
Perennial Ice/Snow	138
Low Intensity Residential	539
High Intensity Residential	76
Commercial/Industrial/Transportation	309
Bare Rock	1,111
Quarries/Mines	19
Transitional	89
Deciduous Forest	7,121
Evergreen Forest	21,663
Mixed Forest	798
Shrubland	16,878
Orchards/Vineyard	5
Grasslands/Herbaceous	41,073
Pasture/Hay	3,107
Row Crops	3,266
Small Grains	24,987
Fallow	2,291
Urban/Recreational Grasses	91

Affected Environment and Environmental Consequences

Woody Wetlands	14
Emergent/Herbaceous Wetlands	67
State Total	104,094

Source: USGS 2010

According to the Economic Research Service of the U.S. Department of Agriculture, there were 31,604,901 acres in Colorado classified as farmland and 36,700 farms. Prime farmland is found throughout the state. Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, feed, forage, fiber, and oilseed crops. Colorado had approximately 1,696,800 acres of nonfederal prime farmland recorded in 1997. This represents over 2 percent of the state's total land area or 4 percent of the nonfederal land in Colorado. Nationally, 64 percent of soils classified as prime farmland are being used for cropland. In Colorado, 93 percent of the soils classified as prime farmland are being utilized as cropland. There has been a gradual loss overall of prime farmlands in Colorado. Approximately 53,300 acres of prime farmland were converted urban or rural development between 1982 and 1997.

Colorado is the 8th largest state by land and has 103,730 square miles. Property is divided into private, federal, state, tribal and BIA, and water.

3.1.2 Environmental Consequences

3.1.2.1 *Alternative 1: No Action*

Under the No Action alternative, no federal action would be completed. Alternative 1 has potential to change land use if access is lost as a result of an abandoned bridge or impassable road. Loss in residential, commercial, agricultural, or recreational land use may occur. This could lead to vegetation reclaiming dirt roads.

3.1.2.2 *Alternative 2: Replacement*

Under this alternative, the existing transportation network would be maintained. The existing bridge footprint would be expanded to accommodate the change in channel width.

In some cases, slivers of new ROW may be required do to the additional width of the road, trail or bridge. There may be changes to land use, however these impacts are not expected to be significant. If the footprint extends outside of the right-of-way, into prime farmland or farmland of statewide significance, a quantification of the acreage of prime farmland removed will be completed. If the site contains these soils, the Agencies must prepare the appropriate sections of an AD-1006 Farmland Conversion Impact Rating Form for the site, coordinate with the Natural Resource Conservation Service (NRCS) to determine the overall impact of the conversion, and document the results of the Farmland Protection Policy Act finding. If the road footprint extends outside of the ROW into US Forest Service (USFS) land, a new or revised transportation easement will be required from the USFS. If the road footprint extends outside of the ROW into other state or federal lands, additional coordination and permitting will be required from the owner agency. For all ROW acquisitions, the Agencies will comply fully with federal and state

requirements including the Uniform Relocation Assistance and Real Property Acquisition Policies act of 1970, as amended (Uniform Act).

3.1.2.3 Alternative 3: Relocation

Construction of a new bridge, trail or road segments will likely result in changes to land use as the road will create a new footprint. For this alternative, there will be changes to land use due to ROW acquisition; however, these impacts are not expected to be significant as the road and trail relocations are expected to be relatively minor distances and/or lengths. If the footprint extends into prime farmland or farmland of statewide significance, a quantification of the acreage of prime farmland removed will be completed. If the site contains these soils, the Agencies must prepare the appropriate sections of an AD-1006 Farmland Conversion Impact Rating Form for the site, coordinate with the NRCS to determine the overall impact of the conversion, and document the results of the finding. If the road footprint extends into USFS lands, a new or revised transportation easement will be required from the USFS. If the road footprint extends outside of the ROW into other state or federal lands, additional coordination and permitting will be required from the owner agency. For all ROW acquisitions, the Agencies will comply fully with federal and state requirements including the Uniform Act.

3.1.2.4 Alternative 4: New Structure Design

For the new footprint additional road ROW may need to be purchased, however these impacts are not expected to be significant. If the road footprint extends into prime farmland or farmland of statewide significance, a quantification of the acreage of prime farmland removed will be completed. If the site contains these soils, the Agencies must prepare the appropriate sections of an AD-1006 Farmland Conversion Impact Rating Form for the site, coordinate with the NRCS to determine the overall impact of the conversion, and document the results of the finding. Working on or in any stream may require a Senate Bill 40 certification from the Colorado Department of Natural Resources (CDNR). If the road footprint extends into USFS lands, a new or revised transportation easement will be required from the USFS. If the road footprint extends into other state or federal lands, additional coordination and permitting will be required from the owner agency. For all ROW acquisitions, the Agencies will comply fully with federal and state requirements including the Uniform Act.

3.1.2.5 Alternative 5: Alternate Route

Portions of the existing road network would be abandoned, however it is assumed that the alternate routes provide for the same level of land access as the damaged bridge and/or road did prior to being damaged. If the alternate route requires improvements and upgrading to meet the transportation standards required for the alternate route to carry the increased demands of re-routed traffic some new ROW may be required. There may be changes to land use, however these impacts are not expected to be significant. If the road footprint extends into prime farmland or farmland of statewide significance, a quantification of the acreage of prime farmland removed will be completed. If the site contains these soils, the Agencies must prepare the appropriate sections of an AD-1006 Farmland Conversion Impact Rating Form for the site, coordinate with the NRCS to determine the overall impact of the conversion, and document the results of the Farmland Protection Policy Act finding. If the road footprint extends outside of the ROW into USFS land, a new or revised transportation easement will be required from the USFS. If the road footprint extends outside of the right-of-way into other state or federal lands, additional coordination and permitting will be required from the owner agency. For all ROW

acquisitions, the Agencies will comply fully with federal and state requirements including the Uniform Relocation Assistance and Real Property Acquisition Policies act of 1970, as amended (Uniform Act).

3.2 Transportation Facilities

3.2.1 Affected Environment

Colorado has 88,259 miles of highways, roads and streets and 8,260 bridges as of 2010. There were 5,024,145 registered motor vehicles in the state as of 2009 and 3,638,374 licensed drivers in the state as of 2010. Mobility in regional areas is critical for social, recreational and economic activities. Commuting is a part of daily life and truck transportation plays a vital role in Colorado's economy. Any impediment to freight movement hinders economic performance and growth.

3.2.2 Environmental Consequences

3.2.2.1 Alternative 1: No Action

Under the No Action alternative no Federal funding would be provided to repair damaged roads and bridges. Roads and trails would remain in disrepair and bridges would be isolated or abandoned unless actions to maintain or improve the road system would be provided by the State and/or local transportation agencies. This alternative may result in significant adverse impacts due to increased travel times and increasing traffic volumes as travel patterns change.

3.2.2.2 Alternative 2: Replacement

This alternative would maintain the existing transportation network and the existing traffic patterns and volumes. Short term impacts would be expected during construction as traffic delays and alternate routes would be required. No significant adverse long term impacts are expected to the transportation volume, capacity, and time of transit. The transportation facilities would be more resilient and less likely to experience substantial damage from future disasters.

3.2.2.3 Alternative 3: Relocation

This alternative would generally maintain the existing transportation network and maintain existing traffic patterns and volumes. In some cases travel times and distances may increase or decrease slightly as roadway typical sections, design speeds and alignments change. Relocation may include the construction of new bridges, tunnels or other transportation features not originally included in the transportation corridor. Short term impacts would occur during construction from traffic delays and detours. No significant long term impacts are expected to the transportation volume, capacity, and time of transit. Relocating roads and trails further from waterways would make the transportation facilities be more resilient and much less likely to experience substantial damage from future disasters.

3.2.2.4 Alternative 4: New Structure Design

This alternative has the potential for having impacts similar to Alternative 2 and 3.

3.2.2.5 Alternative 5: Alternate Route

This alternative would change the roadway network and would alter traffic patterns and volumes. This alternative may result in increased travel times and increased traffic volumes as travel patterns change in response to the abandoned roads. The number of additional cars spread over several alternate routes within counties is not expected to increase beyond the capacity of the road system; however, additional effort in maintaining the alternate routes may be required. Additional directional signing may be required while people learn the new routes. Relocating travel routes further from waterways would make the transportation facilities would be more resilient and much less likely to experience substantial damage from future disasters.

3.3 Safety and Occupational Health

3.3.1 Affected Environment

Safety and occupational health issues include one-time and long-term exposure to asbestos, lead, radiation, chemicals, and other hazardous materials; and injuries or deaths resulting from a one-time accident. Safety and occupational health concerns could impact personnel working on the project and in the surrounding area, as well as travelers using the project sites.

Project area roads, bridges and trails, etc. are damaged or isolated creating public safety issues due to disaster conditions such as fires, tornados, avalanches, floods, and other disasters. Many bridges in the project area were constructed prior to 1978 and have the potential to have lead-based paint on the steel structure. Lead exposure can result from paint chips or dust, or inhalation of lead vapors from torch-cutting operations. Lead exposure can adversely affect the human nervous system. Due to the size of children, exposure to lead based paint is especially dangerous to small children. Occupational Health and Safety Administration (OSHA) considers all painted surfaces in which lead is detectable to have a potential for occupational health exposure.

3.3.2 Environmental Consequences

3.3.2.1 Alternative 1: No Action

In the no action alternative, the road, bridge or trail is not repaired, leaving the roadway impassable. These damaged facilities are a safety concern as future disasters could further damage them. Damaged portions of the facilities could be washed, blown, or swept into other structures resulting in damage to other transportation features. The road bridge or trail may be abandoned or closed, but travelers may attempt to cross behind barriers. These roads and bridges, etc. may be particularly dangerous during winter weather conditions when visibility is more restricted. A No Action Alternative results in impassable roads and bridges for emergency, police and fire services causing the potential for significant delay. The No Action Alternative provides a significant adverse safety affect to motorists.

3.3.2.2 Alternative 2: Replacement

Alternative 2 would have no significant impact to public safety or occupational health. Roadways and bridges, etc. would be built to current codes and standards and bridges would be constructed to span the new channel width and approaches. Removal or repair of materials with painted surfaces may be required and construction workers are required to follow OSHA

regulations to avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate personal protective equipment (PPE) and be properly trained for the work being performed. All solid or hazardous wastes that might be generated by the activities of entities entering the State Highway ROW must be removed from the ROW and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). Standard construction traffic control measures will be used to protect workers and the travelling public.

3.3.2.3 Alternative 3: Relocation

Alternative 3 would have no significant impacts to public safety or occupational health. The new relocated road or bridge would be designed to handle the capacity of vehicles of the original pre-disaster road. Removal of materials with painted surfaces may be required and construction workers are required to follow OSHA regulations to avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate PPE and be properly trained for the work being performed. All solid or hazardous wastes that might be generated by the activities of entities entering the State Highway ROW must be removed from the ROW and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). Standard construction traffic control measures will be used to protect workers and the travelling public.

3.3.2.4 Alternative 4: New Structure Design

Alternative 4 would have no significant impacts to public safety or occupational health. Removal or repair of materials with painted surfaces may be required and construction workers are required to follow OSHA regulations to avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate PPE and be properly trained for the work being performed. All solid or hazardous wastes that might be generated by the activities of entities entering the State Highway ROW must be removed from the ROW and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). Standard construction traffic control measures will be used to protect workers and the travelling public.

3.3.2.65 Alternative 5: Alternate Route

Alternative 6 would have no significant impacts to public safety or occupational health. Alternative 6 would result in increased traffic on some roads as cars are re-routed along the alternate routes; however, the amount of additional traffic is expected to be minimal, within the capacity of the alternate route, and of no significant impact. Additional directional signing may be required while people learn the new routes.

If improvements are required for the alternate route, removal or repair of materials with painted surfaces may be required and construction workers are required to follow OSHA regulations to avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate PPE and be properly trained for the work being performed. All solid or hazardous wastes that might be generated by the activities of entities entering the State Highway ROW must be removed from the ROW and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster).

Standard construction traffic control measures will be used to protect workers and the travelling public.

3.4 Socioeconomics, Community Value, and Environmental Justice

3.4.1 Affected Environment

According to the U.S. Census, the population of Colorado in 2000 was 4,301,261, in 2010 was 5,029,196, with an estimated 5,268,367 in 2013. The five largest cities in Colorado at the time of the 2010 Census were: Denver with 610,345; Colorado Springs with 399,803; Aurora with 323,288; Lakewood with 141,928; and Fort Collins with 138,722. Grand Junction is the largest city on the western slope with 56,630, making it sixteenth largest city in the state.

The majority of the Census respondents (96.6%) identified themselves as being of one race. Of those who identified themselves as being of one race, 81.3% identified themselves as being White and 1.1% identified themselves as an American Indian or Alaska Native. The remaining respondents identified themselves as Black or African American (4.0%), Asian (2.8%), Native Hawaiian and Other Pacific Islander (0.1%) or some other race (7.2%).

There are two federally recognized American Indian tribes in Colorado: Southern Ute Indian Tribe of the Southern Ute Reservation and Ute Mountain Tribe of the Ute Mountain Reservation (Colorado, New Mexico and Utah)

According to 2010 US Census data, poverty levels in Colorado were 13.4 % for all people and 17.4% for children under age 18.

Colorado's economy broadened from its mid-19th century roots in mining when irrigated agriculture developed, and by the late 19th century, raising livestock had become important. Early industry was based on the extraction and processing of minerals and agricultural products. Current agricultural products are cattle, wheat, dairy products, corn, and hay.

According to the Bureau of Labor Statistics, in October 2013 the largest non-farm employment sector in Colorado was trade, transportation, and utilities (17.37%), followed by government (17.05%), professional and business services (15.76%), education and health services (12.37%), and leisure and hospitality (12.35%). Unemployment was 6.8% compared to 7.2% nationally.

3.4.2 Environmental Consequences

3.4.2.1 Alternative 1: No Action

Under the No-Action alternative impacted roads would not receive Federal assistance. There is no requirement for compliance with Executive Orders (EO) 12898 (Environmental Justice) and 13045 (Protection of Children From Environmental Health Risks and Safety Risks) since there are no federal actions. Alternative 1 has potential to result in significant adverse impact to socioeconomics of a community if the road or bridge is left impassable and the road closed. Families may be isolated from their homes. Farmers/ranchers may be isolated from their crop/pasture/hay lands. Workers may be isolated from their jobs. Businesses may not be able to

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send or receive goods. Travel route detours may be increased causing an increased expense to gasoline and vehicle maintenance.

For hauling of crops, livestock, goods, and machinery, cost of operations may increase as a result of long detours. Rural and mountain residences and lands are more likely to be negatively affected as a result of closed bridges and the longer detours. Access to community infrastructure and agricultural field operations may be lost if the road is left in disrepair, potentially resulting in significant social and economic loss. Minority populations may be disproportionately adversely affected if closed bridges occur within minority or tribal communities. Most Colorado Counties have higher populations in poverty than the national average and many are above 20%; Alamosa (22.7), Baca (20.5), Bent (32.4), Costilla (26.0), Crowley (48.1), Huerfano (22.0), Otero (23.9), Prowers (21.0), and Saguache (29.7) Counties. These counties in particular may be adversely affected if road or bridge closures occur.

3.4.2.2 Alternative 2: Replacement

During the construction period this alternative may provide some short term benefits by providing construction jobs and a multiple effect of increased expenditures in the local economy. There may be minor effects to populations during construction periods due to road detours however, these are not expected to be significant.

Efforts would be made during any construction to minimize short-term disruption to the local transportation system. Low income and minority populations may actually benefit during the construction process through the provision of construction jobs and multiplier effects of expenditures in the local economy. Any adverse impacts to low income or minority populations are expected to be short-term and not significant.

3.4.2.3 Alternative 3: Relocation

The original road, trail and/or bridge would be removed or abandoned. Construction of new road segments that are longer than the existing roadway could permanently increase travel distances and time. Extended travel distances and time increases fuel consumption due to longer commutes, and additional energy consumption associated with construction activities. In other cases, this alternative may also provide a shorter or modernized roadway and/or bridge which could reduce travel times and fuel consumption due to shorter commutes. In either case, however, these impacts are not expected to be significant, as the road relocations are expected to be located within the vicinity of the existing transportation corridor.

During the construction period this alternative may provide some short term benefits by providing construction jobs and a multiple effect of increased expenditures in the local economy.

In addition, this alternative would potentially impact agricultural production at some locations. The agricultural effects anticipated to result from where construction of new roads requires acquiring farmland and converting it into a permanent roadway. Agricultural land conversions may adversely impact low income and minority population, if done at a significant scale. It is not anticipated that the amount of land required for road or trail relocations would be significant.

3.4.2.4 Alternative 4: New Structure Design

Under this alternative impacts are expected to be the same as for Alternative 2.

3.4.2.5 Alternative 5: Alternate Route

This alternative would change the roadway network and would alter traffic patterns and volumes. Rerouting traffic may cause minor impacts that could affect timely access to medical services and access by emergency vehicles into residences. Extended travel distances and time may increase fuel consumption due to longer commutes. However, alternate routes are expected to be located in relatively close proximity to existing routes and maintain reasonable access to properties.

This alternative is not likely to cause adverse human health and environmental effects on the population in the project area or otherwise disproportionately affect minority or low-income populations or children.

3.5 Air Quality

3.5.1 Affected Environment

Colorado is currently in attainment or maintenance for air quality with the exception of the Denver-Boulder-Greeley-Ft. Collins-Loveland area which is listed as in nonattainment for 8-hour ozone under the National Ambient Air Quality Standards.

3.5.2 Environmental Consequences

3.5.2.1 Alternative 1: No Action

Under the No Action Alternative, areas near impassible roads may experience a reduction in localized vehicle emissions, while other areas may experience an increase due to re-routed traffic. Overall there may be an increase in vehicle emissions compared to pre-disaster conditions as detour routes are likely to be longer than the routes they replace.

3.5.2.2 Alternative 2: Replacement

Construction of roadways and bridges, etc. may include pre-cast concrete and some poured in place concrete. During construction there may be temporary increases in equipment exhaust emissions and fugitive dust. However, the temporary increase in equipment exhaust is expected to be negligible as long as the equipment is well maintained and idling is minimized. Asphalt paving emits volatile organic compounds (precursors to ozone) as it cures, but this is also expected to be negligible. All necessary best management practices (BMP) would be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

If fugitive dust were to become a problem it can be mitigated by periodic watering of active construction areas, particularly areas close to any nearby sensitive receptors (e.g., hospitals, senior citizen homes, schools). Impacts from fugitive dust are anticipated to be short-term and negligible.

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Where removal of an existing roadway, damaged bridge or other facility is required there would be some short term increase in fugitive dust and vehicular emissions. Mitigation of fugitive dust, if necessary can be accomplished by periodic watering of the demolition site.

A land development permit may be required from Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division. Projects that last less than 6 months and disturb less than 25 acres do not require a permit. Generator engines in place for more than one year would require a permit, though most projects should not require.

After construction there would be no change in air quality as this alternative would not change the length of the roadway, and therefore would not change the amount of vehicle emissions.

3.5.2.3 Alternative 3: Relocation

Generally the impacts to air quality from this alternative would be similar to those described for Alternative 2. Although the length of the roadway may either increase or decrease slightly, changing the amount of vehicle emissions, this change is expected to be minor.

3.5.2.4 Alternative 4: New Structure Design

The impacts to air quality from this alternative would be similar to those described for Alternative 2.

3.5.2.6 Alternative 5: Alternate Route

Generally, the impacts to air quality from this alternative would be similar to those described for Alternative 2. Although the length of the route may either increase or decrease, changing the amount of vehicle emissions, because the alternate route would generally be nearby this change is expected to be minor.

3.6 Noise

3.6.1 Affected Environment

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are designated as noise. Noise events that occur during the night (9 p.m. to 7 a.m.) are generally considered more annoying than those that occur during normal waking hours (7 a.m. to 9 p.m.). Noise events in the project vicinity are associated with climatic conditions (e.g., wind, thunder), transportation noise (e.g., traffic on roads, airplanes), and “life sounds” (e.g., people talking, children playing).

3.6.2 Environmental Consequences

3.6.2.1 Alternative 1: No action

Under this alternative roadways and bridges, etc. would continue to be damaged due to flooding. This would result in a natural shift in transportation patterns. Transportation noise along other roadway segments within the County may increase under this alternative due to increasing traffic on alternate roadways. Noise in the immediate area would decrease as inundated roads and bridges are abandoned. The potential exists that overall noise levels in the immediate area may

also decrease due to some migration of residents from the region. The noise as existing roads absorbed the increased traffic may increase for persons who live near the alternate routes. However, noise impacts are not expected to be significant.

3.6.2.2 Alternative 2: Replacement

The replacement of roadways and bridges, etc. is anticipated to carry a similar noise level to that which it had at pre-disaster damage levels. Noise from construction activities may have short term adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise impacts on residences can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours. Noise levels of construction equipment at the distance in which affected parties would likely be located will not be of a volume or duration deemed to be significant.

3.6.2.3 Alternative 3: Relocation

This alternative could introduce traffic noise to areas that previously were not affected by traffic noise. Because this alternative would realign portions of the road, FHWA funded projects would require a noise analysis per 23 CFR 772 to determine the noise impacts. As individual projects are evaluated a noise analysis would be done to determine the noise impacts. Projects would be designed in a manner that would avoid significant noise impacts.

3.6.2.4 Alternative 4: New Structure Design

Impact under this alternative would be similar to those described in Alternative 2. Noise impacts are expected to be short in duration and not significant.

3.6.2.5 Alternative 5: Alternate Route

No short term noise impacts would occur from construction activities under this alternative at the original location. Short term construction impacts may occur along the alternate route if the roadway needs upgrading or improvements. Transportation noise along other roadway segments within the county may increase under this alternative due to increasing traffic on alternate roadways. The noise of traffic on existing roads that absorb the re-routed traffic may increase for persons who live near the alternate routes. However, noise impacts of light traffic or automobiles more than 100 feet (30 meters) from residence are not expected to be significant. FHWA funded projects may require a noise analysis per 23 CFR 772 to determine the noise impacts.

3.7 Public Services and Utilities

3.7.1 Affected Environment

Utility lines often cross or run along roads, either overhead or underground, and may be repaired, replaced or relocated in concert with linear transportation projects. Public services and utilities include:

- Fire protection
- Law Enforcement
- Emergency Medical Services
- Schools

- Water
- Wastewater
- Sanitation
- Solid waste disposal
- Stormwater drainage
- Electric utilities
- Natural gas
- Telephone/Telecommunications

3.7.2 Environmental Consequences

3.7.2.1 Alternative 1: No Action

This alternative does not include any FEMA action. Alternative 1 does have the potential to affect public services and utilities because flood waters, debris, or other obstructions would continue to damage or obstruct roads and bridges, etc. which would adversely impact the ability of existing utilities to provide service. Fire, emergency, law enforcement, and school services would be delayed as a result of continued inaccessibility of the route due to closed roads or bridges. Depending on the length of detour required these services could be significantly impacted. In addition, utility repair crews may not be able to reach damaged utility lines, resulting in lengthy service outages.

3.7.2.2 Alternative 2: Replacement

During construction, delays in fire, emergency, law enforcement and school services would continue, but these would be short term impacts. Once replacement is completed public services would be restored to pre-disaster levels. Utilities that cross or run along roads may be temporarily interrupted, but this would be a short-term impact. No long term impacts would occur under this alternative.

3.7.2.3 Alternative 3: Relocation

This alternative could impact utilities due to roads and bridges being abandoned. Relocation of utilities may be required to maintain service. Relocations could produce short term disruptions to customers. Fire, emergency, law enforcement, and school services would not be significantly impacted as the route is not anticipated to be significantly longer than the routes pre-disaster function and capacity.

3.7.2.4 Alternative 4: New Structure Design

Impacts to utilities and public services under this alternative would be similar to those described in Alternative 2.

3.7.2.5 Alternative 5: Alternate Route

Fire, emergency, law enforcement, and school services may be delayed as a result of rerouting traffic onto alternate routes. Depending on the increase in the length of the route, these services could be significantly impacted. Impacts to utilities under this alternative would be similar to those described in Alternative 3.

3.8 Water Resources

3.8.1 Affected Environment

Water resources in Colorado are heavily regulated. Colorado has more than 105,344 river miles and more than 249,787 lake acres. There are seven major river basins in Colorado: the Arkansas, Rio Grande, San Juan, Colorado, Green, Platte and Republican. Four major river systems – the Platte, Colorado, Arkansas, and Rio Grande – originate within the mountains of Colorado. These systems drain fully one-third of the landmass of the lower 48 states. Around 80 percent of the state's population lives on the Eastern Slope of Colorado between Fort Collins and Pueblo, but about 80 percent of Colorado's precipitation falls on the Western Slope.

Sixty-three percent of Colorado's 4.3 million residents obtain at least part of their water from areas west of the Continental Divide via natural channels and a vast network of artificial conveyances such as tunnels, ditches, aqueducts, pipelines, and canals.

Colorado is divided into eight ground water regions: Kiowa-Bijou, Southern High Plains, Upper Black Squirrel Creek, Lost Creek, Camp Creek, Upper Big Sandy, Upper Crow Creek, and Northern High Plains. Groundwater provides 18% of public water supply and 85% of agricultural water supply in Colorado. 2,780,000 acre-feet of ground water are used annually in Colorado.

There are nine principle aquifers within the state that are categorized as follows: unconsolidated Quaternary age alluvial aquifers associated with the major river systems; poorly consolidated or unconsolidated sediments; consolidated sedimentary rock aquifers; and volcanic and crystalline rock aquifers.

The South Platte River basin drains an 18,924 square mile area. The Arkansas River basin drains a 28,273 square mile area. The Colorado River basin watershed encompasses an area of approximately 9,830 square miles. The Colorado portion of the drainage basin encompasses an area of approximately 6,765 square miles. The White River basin drains approximately 3,770 square miles. The Gunnison River basin of southwestern Colorado encompasses approximately 8,000 square miles. The Republican/ Arikaree River basin in eastern Colorado encompasses an area of 8,775 square miles. The San Juan River encompasses about 26,000 square miles of Colorado, New Mexico, and Arizona. The Dolores River basin encompasses an area of just over 5,300 square miles.

3.8.1.1 Wild and Scenic Rivers

Colorado has one river classified a wild and scenic river under the National Wild and Scenic River System (16 U.S.C. 1271 et seq.) designation: Cache La Poudre River with 30 miles designated as Wild and 46 miles as Recreational.

3.8.1.2 Floodplains

Executive Order (EO) 11988 requires federal agencies to consider the effect of their actions on the floodplain, evaluate alternatives to taking action in the floodplain and to provide opportunity for public comment if there is no practicable alternative. Colorado has 245 participating and 16 non-participating entities in the National Flood Insurance Program (NFIP). Under requirements established in 44 CFR Section 60.3, participating communities shall require permits for all development, including **temporary** development, in the Special Flood Hazard Areas (SFHA). Development is defined as “any man-made change to improved and unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials” and includes both permanent and **temporary** actions such as stream crossings and conveyance structures (public and private), sediment removal, channel restoration or relocation, etc. Effective January 14, 2011, the State of Colorado adopted the enhanced Colorado Floodplain Damage Prevention Ordinance, which requires higher standards for floodplain management. These standards are intended to prevent loss of life and property, as well as economic and social hardships that result from flooding. The Ordinance is available at: http://cwc.state.co.us/water-management/flood/documents/comodelordinance_12_7_12.pdf.

3.8.1.3 Wetlands

EO 11990 requires federal agencies minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. To meet these objectives, the order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. Colorado has lost approximately half of its naturally occurring wetlands since settlement. Wetlands provide flood control, recharge groundwater, stabilize stream flows, improve water quality, and provide habitat for wildlife; however, these positive attributes have not always been recognized. Though, the Federal Clean Water Act (CWA) requires that impacts to wetlands be avoided, then minimized, and finally mitigated if no practicable alternative exists for some wetland filling projects, wetlands continue to be impacted and lost as roads are expanded, land is developed and due to cumulative impacts from numerous activities such as draining, changes in land management and landowner preference for open water ponds.

3.8.2 Environmental Consequences

3.8.2.1 Alternative 1: No Action

In the no action alternative, the road, bridge and/or trail would not be repaired, leaving the facility impassable. No work would occur in water, thus there would be no direct impact to water due to project work. However, sedimentation from erosion may increase if banks are left unrepaired. Damaged structures may cause a flow impediment, potentially causing significant impacts to stream and floodplain hydraulics and function.

3.8.2.2 Alternative 2: Replacement

Existing roads, trails and bridges may be expanded within the existing ROW. Fill material may be needed around bridge piers and supports thus impacting waters of the U.S. Discharge into surface water may provide a temporary alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity.

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The design of highway drainage features requires a hydrologic analysis to determine the magnitude and frequency of flows and a hydraulic analysis to locate and size drainage facilities. During construction FEMA would mitigate impacts by requiring the applicant to apply BMPs to reduce sediment and fill material from entering the water. The applicant may be required to prepare a storm water pollution prevention plan (SWPPP). The applicant may also be required to obtain a Section 404 permit from the U. S. Army Corps of Engineers (USACE) and a Section 401 Water Quality Certification permit from CDPHE Water Quality Control Division or the Environmental Protection Agency (EPA). Discharges of water encountered during excavation or work in wet areas may require a Construction Dewatering Discharge Permit. The applicant is responsible for complying with any conditions outlined within these permits.

Because bridges are location-dependent and usually located within a floodplain, the scope of work of this alternative may have some impacts to the floodplains. Construction of the bridge and associated road approaches may result in alteration of the course or magnitude of floodwater. Expanding the bridges will take more of the structure out of the floodplain and reduce impediments and upstream flooding. Road and trail repair and other changes within floodplains may also have some impact. If changes to the roads or bridges, etc. are anticipated to impact the floodplain/floodway, FEMA projects will initiate the Eight-step Process as outlined in 44 CFR Part 9 to determine if the project poses a significant impact. A hydrology and hydraulics report may be required to evaluate changes to stream hydraulics in detail. Compliance with local floodplain ordinances will also be required.

While this alternative is not expected to significantly impact wetlands because actions are limited to existing roadways, etc., certain sites could result in some fill being placed in a wetland. Wetland boundaries would be determined in accordance with the latest regulatory guidance from the USACE or the United States Fish and Wildlife Service (USFWS), as appropriate. In these situations FEMA projects would implement the Eight-step Process to evaluate effects. FHWA projects would prepare a wetland finding as necessary. This alternative would have little if any impact on increasing impervious surfaces, reduce groundwater recharge, and adversely affect water quality through the transmission of sediment, debris, oils, and hazardous substances into surface waters. During construction the Agencies would mitigate these impacts by requiring the applicant to apply BMPs to reduce transport of sediment, debris, oils, concrete waste and hazardous substances into wetlands or waterways.

For any work completed within the designated section of the Cache La Poudre River that is listed wild and scenic the Agencies would confer with the regulatory agency overseeing that section.

The results of the analyses and consultation discussed above would be documented in a memorandum to this PEA or in a SEA.

3.8.2.3 Alternative 3: Relocation

This alternative would generate impacts similar to those described for Alternative 2.

3.8.2.4 Alternative 4: New Structure Design

This alternative would generate impacts similar to those described for Alternative 2.

3.8.2.5 Alternative 5: Alternate Route

Improvement to existing roads should have minimal impacts to waters of the US. The impacts would be similar to Alternative 2, but are expected to be of a smaller magnitude.

3.9 Biological Resources

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species designated by the USFWS-. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the Endangered Species Act (ESA) and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

3.9.1 Affected Environment

3.9.1.1 Vegetation

Colorado contains parts of six major eco-regions and is divided into approximately 60 ecosystems (Table 4). The most prominent is the Southern Rockies, which occupies most of the state's central and western portions and the Great Plains-Palouse Dry Steppe in the eastern half of the state. Other eco-regions include the Intermountain Semi-Desert and Desert, the Nevada-Utah Mountains and the Colorado Plateau. Forests are found in all eco-regions of the state, but the Southern Rockies contain the most forested area and the greatest variety of forest types.

Many ecosystems in North America have evolved with fire as a natural and necessary contributor to habitat vitality and renewal. Many plant species in naturally fire-affected environments require fire to germinate. Natural wildland fuels and fuel patterns have been displaced or changed by the planting, cultivating and production of crops and the grazing of domestic livestock.

Table 2: Colorado ecosystems

Central Mixedgrass Prairie	Colorado Plateau Blackbrush-Mormon-tea Shrubland
Colorado Plateau Hanging Garden	Colorado Plateau Mixed Bedrock Canyon and Tableland
Colorado Plateau Mixed Low Sagebrush Shrubland	Colorado Plateau Pinyon-Juniper Shrubland
Colorado Plateau Pinyon-Juniper Woodland	Inter-Mountain Basins Active and Stabilized Dunes
Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	Inter-Mountain Basins Big Sagebrush Shrubland
Inter-Mountain Basins Big Sagebrush Steppe	Inter-Mountain Basins Greasewood Flat
Inter-Mountain Basins Interdunal Swale Wetland	Inter-Mountain Basins Juniper Savanna
Inter-Mountain Basins Mat Saltbush Shrubland	Inter-Mountain Basins Mixed Salt Desert Scrub
Inter-Mountain Basins Montane Sagebrush Steppe	Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland
Inter-Mountain Basins Playa	Inter-Mountain Basins Semi-Desert Grassland
Inter-Mountain Basins Semi-Desert Shrub-Steppe	Inter-Mountain Basins Shale Badland
Inter-Mountain Basins Wash	North American Alpine Ice Field
North American Arid West Emergent Marsh	Northern Rocky Mountain Avalanche Chute Shrubland

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Rocky Mountain Alpine Bedrock and Scree	Rocky Mountain Alpine Dwarf-Shrubland
Rocky Mountain Alpine Fell-Field	Rocky Mountain Alpine-Montane Wet Meadow
Rocky Mountain Aspen Forest and Woodland	Rocky Mountain Cliff, Canyon and Massive Bedrock
Rocky Mountain Dry Tundra	Rocky Mountain Dry-Mesic and Mesic Montane Mixed Conifer Forest and Woodland
Rocky Mountain Foothill Limber Pine-Juniper Woodland	Rocky Mountain Gambel Oak-Mixed Montane Shrubland
Rocky Mountain Lodgepole Pine Forest	Rocky Mountain Lower Montane Riparian Woodland and Shrubland
Rocky Mountain Lower Montane-Foothill Shrubland	Rocky Mountain Ponderosa Pine Savanna
Rocky Mountain Subalpine Dry-Mesic and Mesic Spruce-Fir Forest and Woodland	Rocky Mountain Subalpine Mesic Meadow
Rocky Mountain Subalpine-Montane Fen	Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
Rocky Mountain Subalpine-Montane Riparian Shrubland	Rocky Mountain Subalpine-Montane Riparian Woodland
Southern Rocky Mountain Juniper Woodland and Savanna	Southern Rocky Mountain Montane-Subalpine Grassland
Southern Rocky Mountain Pinyon-Juniper Woodland	Southern Rocky Mountain Ponderosa Pine Woodland
Southwestern Great Plains Canyon	Western Great Plains Cliff, Outcrop, and Shale Barren
Western Great Plains Closed Depression Wetland	Western Great Plains Big River Floodplain
Western Great Plains Foothill and Piedmont Grassland	Western Great Plains Riparian Woodland, Shrubland and Herbaceous
Western Great Plains Saline Depression	Western Great Plains Sand Prairie
Western Great Plains Sandhill Shrubland	Western Great Plains Shortgrass Prairie
Western Great Plains Tallgrass Prairie	Wyoming Basins Low Sagebrush Shrubland

3.9.1.2 Wildlife

Colorado hosts about 750 species of fish, mammals, birds, reptiles, and amphibians. Big game hunted in Colorado includes black bear, deer, elk, antelope, moose, bighorn sheep, mountain goat, mountain lion and turkey. Smaller game species hunted include sharp-tailed grouse, prairie chickens, sage grouse, mountain grouse, partridge, rabbit, squirrel, prairie dog, and pheasants. Hunted waterfowl includes ducks, geese, and swans. Bobcat, raccoon, coyote, otter, beaver, swift fox, and wolverine are trapped.

Across the state, Colorado Parks and Wildlife (CPW) manages more than 348 State Wildlife Areas, totaling more than 684,252 acres. In addition, CPW leases approximately 550,000 acres of State Trust Lands. CPW also manages fifteen properties that house State Fish Units - hatcheries or fish rearing operations.

3.9.1.3 Protected Species

There are 50 species listed as Endangered (E), Threatened (T), Candidate (C), or Proposed (P) (see Table 3) by the USFWS under ESA that historically occurred, occur or may potentially occur within Colorado. Six of these species, Preble's Meadow Jumping Mouse, Mexican Spotted Owl, Southwestern Willow Flycatcher, Colorado Pikeminnow, Whooping Crane, and Razorback Sucker have designated critical habitat in Colorado. Critical habitat designations have also been

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included with the proposed New Mexico Meadow Jumping Mouse, Gunnison Sage Grouse, White River beardtongue, and Graham beardtongue.

Out of nearly 750 fish and wildlife species in Colorado, 74 are listed as species in need of conservation and protected by CDPW.

Table 3. Threatened, Endangered and Candidate Species in Colorado.

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Arapahoe Snowfly	<i>Capnia Arapahoe</i>	C	Typically found in cold, clean, well-oxygenated streams and rivers.
Arkansas darter	<i>Etheostoma cragini</i>	C	Prefers shallow, clear, cool water, sand or silt bottom streams with spring-fed pools and abundant rooted aquatic vegetation. During late summer low-water periods when streams may become intermittent, Arkansas darter populations in Colorado persist in large, deep pools.
Black footed Ferret	<i>Mustela nigripes</i>	E	Most of this species has been block-cleared in Colorado.
Bonytail chub	<i>Gila elegans</i>	E	Large, fast-flowing waterways of the Colorado River system.
Canada lynx	<i>Lynx canadensis</i>	T	Dense subalpine forest, willow corridors along mountain streams, avalanche chutes. Occurs at elevations between 8,000 and 14,000 feet.
Clay-loving wild buckwheat	<i>Eriogonum pelinophilum</i>	E	Endemic to the rolling clay (adobe) hills and flats immediately adjacent to the communities of Delta and Montrose, Colorado
Colorado Butterfly plant	<i>Gaura neomexicana</i> <i>var. coloradensis</i>	T	Moist areas of floodplains
Colorado hookless Cactus	<i>Sclerocactus glaucus</i>	T	Exposed stretches of gravelly clay, including alluvial benches above floodplains and on mesa slopes
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E	Swift flowing muddy rivers with quiet, warm backwaters.
DeBeque Phacelia	<i>Phacelia submutica</i>	T	Grows on barren patches of shrink-swell clay of the Wasatch Formation at about 5,000 to 6,200 feet elevation in the southern Piceance Basin oil and gas fields of Mesa and Garfield Counties, western Colorado.
Dudley Bluffs Bladderpod	<i>Lesquerella congesta</i>	T	Barren white outcrops exposed along drainages by erosion from downcutting of streams in the Piceance Basin in Rio Blanco County, Colorado
Dudley Bluffs Twinpod	<i>Physaria obcordata</i>	T	Steep side slopes of barren white outcrops exposed along drainages by erosion from down cutting of streams in the Piceance Basin in Rio Blanco County, Colorado.
Graham beardtongue	<i>Penstemon grahamii</i>	P	Restricted to calcareous soils derived from oil shale barrens
Gray Wolf	<i>Canis lupus</i>	E	USFWS does not consult on the gray wolf as they consider it not to occur in Colorado.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	C	Sagebrush ecosystem, usually inhabiting sagebrush-grassland or juniper sagebrush-grassland communities. Meadows surrounded by sagebrush may be used as feeding grounds.
Greenback Cutthroat Trout	<i>Oncorhynchus clarki stomias</i>	T	South Platte basin

Affected Environment and Environmental Consequences

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Grizzly Bear	<i>Ursus arctos horribilis</i>	T	USFWS does not consult on the grizzly bear as they consider it not to occur in Colorado.
Gunnison Sage Grouse	<i>Centrocercus minimus</i>	P	Require a variety of habitats such as large expanses of sagebrush with a diversity of grasses and forbs and healthy wetland and riparian ecosystems. It requires sagebrush for cover and fall and winter food.
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	C	Level to gently sloping grasslands and semi-desert and montane shrublands, at elevations from 6,000 to 12,000 feet (1,830 to 3,660 meters). Gunnison's prairie dogs occupy grass-shrub areas in low valleys and mountain meadows within this habitat.
Humpback chub	<i>Gila cypha</i>	E	Deep, fast-moving, turbid waters often associated with large boulders and steep cliffs
Knowlton's Cactus	<i>Pediocactus knowltonii</i>	E	On rolling, gravelly hills in a piñon-juniper-sagebrush community at about 1,900 m (6,200-6,300 ft).
Least tern*	<i>Sterna antillarum</i>	E	Bare sand and gravel bars along rivers and waste sand piles along several rivers in Nebraska.
Lesser prairie-chicken	<i>Tympanuchus pallidicinctus</i>	P	Found throughout short- and mid-grass prairies
Mancos Milk-vetch	<i>Astragalus humillimus</i>	E	Cracks or eroded depressions on sandstone rimrock ledges and mesa tops
Mesa Verde Cactus	<i>Sclerocactus mesae-verdae</i>	T	Sparsely vegetated low rolling clay hills formed from the Mancos or Fruitland shale formations at 1,500-1,700 m (4,900-5,500 feet)
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	T	Old-growth forests in western North America, where it nests in tree holes, old bird of prey nests, or rock crevices
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	P	Lives only along the banks of southwestern streams.
North America wolverine	<i>Gulo gulo luscus</i>	P	Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season
North Park Phacelia	<i>Phacelia formosula</i>	E	Ravines and bare slopes of eroding rock originating from the Coalmont Formation.
Osterhout milkvetch	<i>Astragalus osterhoutii</i>	E	Grows in high-selenium soils
Pagosa Skyrocket	<i>Ipomopsis polyantha</i>	E	Grows on weathered Mancos Shale outcrops at about 7,000 feet elevation in the vicinity of Pagosa Springs in southwestern Colorado
Pallid sturgeon*	<i>Scaphirhynchus albus</i>	T	Pallid sturgeons evolved and adapted to living close to the bottom of large, silty rivers with natural a hydrograph. Their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars.
Parachute beardtongue	<i>Penstemon debilis</i>	T	Only on oil shale outcrops on the Roan Plateau escarpment in Garfield County, Colorado.
Pawnee Montane Skipper	<i>Hesperia leonardus montana</i>	T	Only in the South Platte Canyon River drainage system in Colorado, in portions of Jefferson, Douglas, Teller, and Park Counties
Penland alpine fen Mustard	<i>Eutrema penlandii</i>	T	Limestone outcrops in the Hoosier Ridge and Hoosier Pass areas of Summit County
Penland Beardtongue	<i>Penstemon penlandii</i>	E	Alkaline shale that weathers into barren clay containing selenium
Piping plover*	<i>Charadrius melodus</i>	T	Bare sand and gravel bars along rivers and waste sand piles along several rivers in Nebraska.

Affected Environment and Environmental Consequences

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	T	Heavily vegetated riparian habitats.
Razorback sucker	<i>Xyrauchen texanus</i>	E	Deep, clear to turbid waters of large rivers and some reservoirs over mud, sand, or gravel.
Rio Grande Cutthroat trout	<i>Oncorhynchus clarkii virginalis</i>	C	Rapidly flowing water. Backwaters or banks adjacent to fast waters provide holding areas during the day. These suckers move to swifter water at night.
Schmoll milk-vetch	<i>Astragalus schmolliae</i>)	C	Found primarily growing in red loess on mesa tops in old growth. pinyon-juniper woodlands between 6,500 and 7,500 feet in elevation.
skiff milkvetch	<i>Astragalus microcymbus</i>	C	Found on sparsely vegetated slopes within open sagebrush habitat.
Sleeping Ute milkvetch	<i>Astragalus tortipes</i>	C	This species is found only on the lower slopes of Sleeping Ute Mountain and grows in gravels over Mancos shale.
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	Dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs. In most instances, the dense vegetation occurs within the first 10 to 13 feet above ground.
Uncompahgre Fritillary Butterfly	<i>Boloria acrocneema</i>	E	Patches of snow willow in alpine meadows at elevations above the tree line
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T	Along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. Stable wetland and seepy areas associated with old landscape features within historical floodplains of major rivers. It also is found in wetland and seepy areas near freshwater lakes or springs.
Western Prairie Fringed Orchid*	<i>Platanthera praeclara</i>)	T	Occur most often in mesic to wet unplowed tallgrass prairies and meadows but have been found in old fields and roadside ditches
White River beardtongue	<i>Penstemon scariosus albifluvis</i>	P	Grows on raw shale barrens and oil shale barrens. Soils are xeric, calcareous, fine-textured, whitish or reddish clays overlain by a white shale chips and channers.
Whooping crane*	<i>Grus americana</i>	E	Mid-river sandbars and wet meadows along the Platte River in Nebraska. This species does not occur in CO, but occurs downstream and is affected by water depletions.
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>)	C	Prefer open woodlands with clearings and a dense shrub layer. They are often found in woodlands near streams, rivers or lakes.

Water depletions in the North Platte, South Platte and Laramie River Basins may affect the species and/or critical habitat associated with the Platte River in Nebraska.

ENDANGERED (E) - Any species that is in danger of extinction throughout all or a significant portion of its range.

THREATENED (T) - Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

PROPOSED (P) – Any species of that is proposed in the Federal Register to be listed under section 4 of the Act.

CANDIDATE (C) - Those taxa for which the Service has sufficient information on biological status and threats to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships, however, none of the substantive or procedural provisions of the Act apply to candidate species

3.9.2 Environmental Consequences

3.9.2.1 Alternative 1: No Action

Under the No Action Alternative, no localized or regional effects to threatened or endangered species are expected. This alternative does not include any Federal action. Therefore, the

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Agencies would not be required to consult with USFWS to comply with the ESA, Migratory Bird Treaty Act (MBTA), Fish and Wildlife Coordination Act (FWCA), or state laws. A damaged decaying roadway, bridge or other structure left in the stream may cause a flow impediment, potentially causing significant impacts to stream and floodplain hydraulics and function which would have negative impacts to fish habitat and passage.

3.9.2.2 Alternative 2: Replacement

The actions under this alternative may have the potential to affect sensitive biological resources, natural waterways or wetlands due to construction activities; a review of available information on the potential for species and critical habitat occurrence in the area will be conducted. This alternative consists of performing work on roads and bridges, etc. in existing alignments. If the project includes extension of a bridge, this may remove the structure from the waterway, thus reducing impacts to species. Embankment work and in-water work may occur. This work would require a Senate Bill (SB) 40 permit from CPW for impacts to riparian areas.

Because migratory birds nest on many substrates (e.g., ground, shrubs, trees, bridges, box culverts), should the proposed work occur during the breeding season (May 1st to August 15th), the USFWS recommends: the required cutting of trees or shrubs occur between August 16th and April 30th to remove potential nesting surfaces prior to project commencement; the removal of swallow nests as they are built, but prior to egg laying, from the bridge structures that are to be removed; and/or netting of the affected bridge structures to prevent swallow nesting prior to the breeding season.

The Agencies will review the project and make a determination of affect. If the Agencies determine that the project has the potential to affect sensitive biological resources such as threatened and endangered (T&E) species and/or their critical habitat or migratory birds it will initiate the review process under Section 7 of the ESA, MBTA, or FWCA, the results of this consultation with USFWS would be documented in a memorandum to this PEA or in a SEA.

3.9.2.3 Alternative 3: Relocation

This alternative is expected to have effects similar to that discussed under Alternative 2 and will be treated the same.

3.9.2.4 Alternative 4: New Structure Design

This alternative is expected to have effects similar to that discussed under Alternative 2 and will be treated the same.

3.9.2.65 Alternative 5: Alternate Route

This alternative consists of performing work on existing roadways. If improvements are needed on the alternative routes to accommodate increased traffic, this alternative is expected to have effects similar to that discussed under Alternative 2 and will be treated the same. Otherwise, the actions under this alternative are not expected to affect sensitive biological resources.

3.10 Cultural Resources

3.10.1 Affected Environment

To preserve historical and archaeological sites in the United States of America the National Historic Preservation Act (NHPA) was established in 1966. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices (SHPO).

The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation and is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. To be eligible for listing, a property must meet one of four eligibility criteria and have sufficient integrity.

Colorado has a rich cultural history. Throughout the state Native Americans have left petroglyphs, abandoned villages, and many other items from their life and travels through the state. Spanish explorers, trappers and hunters, and gold miners made their way through the state and settled in Colorado. Westward expansion brought European settlers to the area, for mining, ranching and farming. Colorado has over 1500 listings on the National Register.

Colorado has six roads and 61 bridges listed on the National Register. CDOT has information on the eligibility of bridges on the State Highway system. Off the State Highway system, there are many bridges over 50 years old that are eligible or have not been evaluated for listing.

3.10.2 Environmental Consequences

3.10.2.1 *Alternative 1: No Action*

The No Action Alternative does not include construction, and thus no new direct impacts to historic resources from construction would occur. A historic bridge, roadway or trail may be abandoned and fall into disrepair.

3.10.2.2 *Alternative 2: Replacement*

This alternative has the potential to affect historic or cultural resources. Destruction or alteration of any site, structure or object of prehistoric or paleontological importance may occur during construction. Physical change could affect unique cultural values. There could be effects on existing religious or sacred uses of a site or area. Bridges may be of cultural significance or archeological resources may be present. For non-tribal lands FEMA will determine if a project meets the programmatic allowances. If so, FEMA would consider the project to be in compliance with Section 106 of NHPA and no further review would occur. If a project does not fall within an allowance, FEMA will make a determination of affect and consult with SHPO. For FHWA projects, FHWA will follow the standard Section 106 consultation process. Additional archaeological surveys of ground disturbing activities may be required depending on consultation with Tribal Historic Preservation Office (THPO) and SHPO.

For tribal lands, the Agencies will work with the THPO to develop a meaningful determination of effect within the context of tribal cultural resource interests.

3.10.2.3 *Alternative 3: Relocation*

Impacts are similar to those listed under Alternative 2.

3.10.2.4 *Alternative 4: New Structure Design*

Impacts are similar to those listed under Alternative 2.

3.10.2.5 *Alternative 5: Alternate Route (Transfer of Function)*

Impacts are similar to those listed under Alternative 2.

3.11 Cumulative Impacts

The CEQ regulations (40 CFR 1500-1508) implementing the procedural provisions of NEPA of 1969, as amended (42 USC 4321) defines cumulative effects as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action (40 CFR 1508.7)”. Based on these regulations, if the alternative does not have direct or indirect effects there can be no cumulative effects resulting from the project because there would be no impacts added to past, present, or reasonably foreseeable actions.

CEQ regulations also describe cumulative impacts as impacts that “can result from individually minor but collectively significant actions taking place over a period of time.” On a programmatic level and combined with other actions affecting the roads and resource areas within Colorado, including closed roads, alternatives could lead to cumulative impacts depending on the scale (number of projects) or geography (localized area) in which the actions are performed.

3.11.1 Summary of Cumulative Impacts

Individual projects proposed under this PEA are not anticipated to cause significant impacts, even when combined with other actions. Other than the “No Action Alternative”, project impacts that are implemented at an individual or cumulative scale, such as to produce significant impacts generally can be reduced below the level of significance by mitigating for individual impacts using the mitigation measures as addressed in Section 4. The Road, Bridge and Trail Checklist (Appendix B) will be used to define any significant individual or cumulative impacts requiring mitigation on a project specific basis. A SEA will be completed, for any projects that are anticipated to occur at a scale or localized area such that impacts cannot be addressed under Mitigation Measures listed in Section 4.

3.12 Section 4(f) of the Department of Transportation Act of 1966

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Projects requiring FHWA approval must comply with Section 4(f) of the Department of Transportation Act of 1966. Section 4(f) evaluations will be completed during the project specific analyses.

SECTION FOUR MITIGATION MEASURES

Project impacts that are implemented at an individual or cumulative scale such as to produce significant impacts can generally be reduced below the level of significance through avoidance, minimization, or by mitigating for individual impacts using mitigation measures as described below. The Road, Bridge and Trail Checklist (Appendix B) will be used to define any significant individual or cumulative impacts requiring mitigation on a project specific basis. If impact avoidance cannot be achieved, specific mitigation measures including agency consultation will be undertaken by the Agencies to reduce any potentially significant impacts to less than significant levels.

1. The absence of cultural properties in the area does not mean they do not exist, but rather may reflect the absence of any previous cultural resource inventory in the area. If during the course of any ground disturbance related to this project, cultural materials are inadvertently discovered, the project would be immediately stopped and the SHPO/THPO and the relevant Agency notified.
2. If projects extend outside of the previously disturbed road footprint and wetland areas will be impacted, the Agencies will evaluate individual and cumulative impacts and implement avoidance, minimization and/or mitigation measures as necessary to reduce impacts below level of significance.
3. For projects in which soil erosion potential is determined to be significant, a project erosion control plan to minimize soil loss, including the use of Best Management Practices, to isolate the construction site and minimize adverse effects of soil loss and sedimentation on soil and water resources will be implemented.
4. Construction noise levels will be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Impact to noise levels will be minimized by limiting construction activities that occur during early morning or late evening hours.
5. To avoid impacts to cultural resources from material borrow source, borrow material source will be reviewed and approved by SHPO or THPO prior to use.
6. To mitigate for impacts to floodplain, a hydrology and hydraulics study will be completed to ensure the flow of flood waters. The project must not serve as a dam or otherwise impede water movement thus aggravating flooding upstream of the roadway.
7. To mitigate for fugitive dust during construction periodic watering of active construction areas, particularly in areas close to sensitive receptors (e.g. hospitals, senior citizen homes, and schools) will be implemented.

MITIGATION MEASURES

8. All waste material associated with the project must be disposed of properly and not placed in identified floodway or wetland areas or in habitat for threatened or endangered species. All hazardous material resulting from demolition activities, including asbestos and lead paint will be disposed of in hazardous waste landfill.
9. The Agencies will implement avoidance measures per consultation with the US Fish and Wildlife Service for any road, bridge or trail relocation projects that have the potential to affect biological resources, including Threatened and Endangered Species.
10. The Agencies will consult with US Fish and Wildlife Service and/or Natural Resources Conservation Service for any project which extends outside of the road right of way and has the potential to affect land use, including Fish and Wildlife Service easements, prime farmland, or farmland of state/local significance.
11. The Agencies will consult with the State/Tribal Historic Preservation Office on project specific activities for any project that has the potential to affect previously undisturbed areas or historic properties.
12. To minimize any potential to occupation health and safety, construction workers and equipment operators are required to wear appropriate PPE and to be properly trained for the work being performed, including removal and disposal of asbestos and lead-based paint for demolition projects.

**SECTION FIVE
SUMMARY OF IMPACTS**

Resource Area	Alternative 1: No Action	Alternative 2: Replacement	Alternative 3: Relocation	Alternative 4: New Structure Design	Alternative 5: Alternate Route	Permits and Conditions Required
Air Quality	No localized or regional effects to air quality are expected	Temporary increases in equipment exhaust emissions and fugitive dust. Negligible impact as long as the equipment is well maintained and idling is minimized.	Similar to alternative 2.	Similar to alternative 2.	Similar to alternative 2.	Fugitive dust can be mitigated by periodic watering of active construction areas. BMPs should be followed. A Land Development Permit may be required from CDPHE. No permit is required for projects that disturb less than 25 acres and last less than six months. Concrete batch plants may require a permit. Asphalt plants will require a permit. Generator engines in place for more than one year will require a permit and reporting requirements are in place for generators over 1200HP and run more than six months.
Socio economics	Has potential to result in significant adverse impact to socioeconomic of the community if the bridge is left impassable.	There may be minor effects during construction periods; however, these are not expected to be significant. These effects could include extended travel times due to construction delays or the need to use an alternate route.	Similar to alternative 2.	Similar to alternative 2.	This alternative may have disproportionately high and adverse human health and environmental effects on the population in the project area, including minority or low-income populations in certain location	None Identified
Public Services and Utilities	Depending on the length of detour required due to damaged bridges these services could be significantly impacted.	Fire, emergency, law enforcement, and school services would not be impacted as the route will be repaired to its pre-disaster function and capacity.	Fire, emergency, law enforcement, and school services would not be significantly impacted as the route is not anticipated to be significantly longer than the routes pre-disaster function and capacity.	Fire, emergency, law enforcement, and school services would not be impacted as the route will be repaired to its pre-disaster function and capacity.	Fire, emergency, law enforcement, and school services could be impacted as the route has potential to increase travel times to homes and other structures. Utilities may have to be moved.	None identified.

Resource Area	Alternative 1: No Action	Alternative 2: Replacement	Alternative 3: Relocation	Alternative 4: New Structure Design	Alternative 5: Alternate Route	Permits and Conditions Required
Transportation	This alternative may result in significant adverse impacts due to increased travel times and increasing traffic volumes as travel patterns change in response to closed bridges.	No significant adverse impacts are expected to the transportation volume, capacity, and time of transit.	No significant adverse impacts are expected to the transportation volume, capacity, and time of transit. In some cases travel times and distances may increase slightly.	No significant adverse impacts are expected to the transportation volume, capacity, and time of transit.	Similar to Alternative 1.	A state Access Permit, issued by CDOT, would be required for all requests for new or modified access to all state highway roadways. Owners of any existing accesses adversely affected by the project would be notified of the proposed changes.
Water Resources	Minor effects may occur as roads remain inundated and gravel, embankments continue to erode around the bridge abutment into the surrounding waters.	Bridges are location dependent so will have some impact to water resources. No impact is expected to wetlands or floodplains. Review of site specific impacts will be completed. Any significant wetland or floodplain impacts will be mitigated. Discharge into surface water may provide a temporary alteration of surface water quality. Work may occur within the designated section of the Cache La Poudre River that is listed wild and scenic.	Bridges are location dependent so will impact to water resources. No impact is expected to wetlands or floodplains. Review of site specific impacts will be completed. Any significant wetland or floodplain impacts will be mitigated. Construction of a new bridge and adjoining roadways may have significant temporary impacts. Work may occur within the designated section of the Cache La Poudre River that is listed wild and scenic.	Similar to Alternative 2	Improvement to existing roads should have minimal impacts to waters of the US.	The applicant may be required to obtain a Section 404 from the U. S. Army Corps of Engineers and a permit from CDPHE Water Quality Control Division. Discharges of water encountered during excavation or work in wet areas may require a Construction Dewatering Discharge Permit. The applicant is responsible for complying with any conditions outlined within the permits. Discharges of stormwater runoff from construction sites disturbing one acre or more - or certain types of industrial facilities, such as concrete batch plants - requires a CDPS Stormwater Construction Permit. Local floodplain development permits.

Resource Area	Alternative 1: No Action	Alternative 2: Replacement	Alternative 3: Relocation	Alternative 4: New Structure Design	Alternative 5: Alternate Route	Permits and Conditions Required
Biological Resources	No potential to affect sensitive biological resources	<p>Work completed in the existing ROW is not expected to affect sensitive biological resources.</p> <p>Embankment and in-water work may affect biologically sensitive or Threatened & Endangered species.</p>	The actions under this alternative may affect undisturbed areas, FEMA will coordinate with FWS based on project specific activities. Any determination of “likely to adversely affect” Endangered /Threatened species or critical habitat will require site specific re-evaluation of the alternative activities and incorporation of avoidance measures.	Same as Alternative 2	The actions under this alternative are not expected to affect sensitive biological resources.	<p>It may be necessary to obtain a Senate Bill 40 certification from the Colorado Department of Natural Resources.</p> <p>FEMA may be required to coordinate with USFWS based on project specific activities.</p> <p>If the project sites occur within 0.5 mile of occupied eagle nests implementation of the National Bald Eagle Management Guidelines would be applied as necessary.</p> <p>USFWS recommends any required cutting of trees or shrubs, or swallow nest removal from bridges occur between August 16 and April 30</p>
Cultural Resources	No potential to affect cultural resources /historic properties.	<p>Roads and Bridges may be of historic value.</p> <p>This action is not likely to affect archeological resources provided the project remains within the right of way, all equipment is confined to previously disturbed areas, and material is obtained from a SHPO approved source.</p>	This alternative has the potential to affect cultural resources.	Similar to Alternative 2.	Similar to Alternative 2.	<p>If any cultural resources are found during construction, all activities will cease and the applicant will notify FEMA. Work will not resume until FEMA consults with SHPO/THPO regarding specific measures.</p> <p>FEMA will consult with THPO for projects under their jurisdiction.</p> <p>For non-tribal projects that do not meet programmatic allowances, FEMA will consult with SHPO based on project specific activities and location. Affect to cultural resources within the project location will be avoided or minimized.</p>

Resource Area	Alternative 1: No Action	Alternative 2: Replacement	Alternative 3: Relocation	Alternative 4: New Structure Design	Alternative 5: Alternate Route	Permits and Conditions Required
Physical Resources	This may result in significant impacts to land use if the amount of land area that is abandoned due to closed bridges occurs in the same general area or County.	No significant impacts are anticipated provided that the road remains within the right-of way. If the road extends outside the right –of way, no significant impacts to land use are anticipated, however, prime farmland, FWS or other ownership properties may be affected.	Construction of new bridges and road segments will likely result in changes to land use as the road will create a new footprint. However, these changes in land use are not expected to be significant, as the road relocations are expected to be relatively minor distances and lengths.	Similar to Alternative 2	No changes in land use are anticipated.	<p>If prime farmland is disturbed AD-1006 Farmland Conversion Impact Rating Form would be completed and submitted to NRCS.</p> <p>If USFWS or other ownership properties are affected, site specific consultation will be required and additional permits may be needed.</p>
Noise	Noise impacts would shift to other road routes due to bridge closures. Noise in the immediate area would likely decrease. Impacts are not expected to be significant	Noise impacts during construction would be short term.	Similar to alternative 2.	Similar to alternative 2.	Similar to alternative 2.	<p>Short term construction noise can be minimized by recommended mufflers on equipment and minimizing construction activities during early morning or late evening hours.</p>
Safety and Occupational Health and Hazardous Waste	Damaged bridges provide a significant adverse safety affect to motorists.	No significant impact to public safety or occupational health. Some spot work painting on bridges may be required which has the potential to release lead.	No significant impact to public safety or occupational health.	No significant impacts to public safety or occupational health.	No significant impacts to public safety or occupational health.	<p>Construction workers and equipment operators are required to wear appropriate personnel protective equipment and to be properly trained for the work being performed.</p> <p>For any spot work painting construction workers are required to follow OSHA regulations to avoid release of lead from paint.</p>

SECTION SIX PUBLIC INVOLVEMENT

6.1 INITIAL PUBLIC NOTICE

The following initial public notice was published in the *Denver Post* on March 9 and 10, 2014.

PUBLIC NOTICE OF INTENT TO PREPARE A PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

The Federal Emergency Management Agency (FEMA) and the Federal Highway Administration (FHWA) announce their intent to prepare a Programmatic Environmental Assessment (PEA) for proposed projects to repair, replace and relocate roads and bridges that have been damaged by major disasters throughout the State of Colorado. This analysis would be programmatic in nature and not address site-specific impacts, which would be evaluated prior to project approval. The PEA is in response to the 2013 floods, but will also apply to future disasters including floods, tornados, fires, etc.

The PEA is intended to address numerous individual sites where the repair, replacement, restoration and/or relocation of roads and bridges will be required, as appropriate. Sites are located both on and off the federal aid system, and on federal lands managed by other federal agencies (OFA). Work will be accomplished within the existing road right of way (ROW) to the extent practicable, but there likely will be locations where work outside the ROW to meet existing codes and standards, and/or to address conditions that have changed since the original construction, will be warranted. Agencies may provide funds for expansion, enlargement and other upgrades, along with replacement, relocation or changes in materials.

Some specific items of work may include, but will not be limited to:

- Operating equipment within waterways as needed for retrieval of flood debris, roadway material and to allow repair, replacement and relocation of damaged facilities
- Placement of temporary structures, bridges, crossings, utilities, staging areas, access and safety features, as needed during construction
- Repair, replacement and relocation of damaged structures, bridges, roadways, utilities and ancillary facilities such as paths, trails, and bike lanes
- Minor water channel modifications necessary to reestablish embankments and accommodate repair, replacement and relocation of facilities
- Repair, replacement and relocation of culverts, pipes and other drainage structures and crossings
- Repair, replacement and relocation of signals, signs, pavement marking, and safety features such as guardrail, etc.

The majority of the proposed project funding will be provided by FHWA or FEMA, but some funding may be provided by other federal, state and local sources. All federally-funded projects will be completed in compliance with applicable federal, tribal, state and local laws, regulations, etc.

This notice of intent to prepare a PEA for these actions is pursuant to the National Environmental Policy Act (PL 91-190) and associated environmental statutes, as implemented in FEMA's regulations 44 CFR Part 10 or FHWA's regulations 23 CFR 771. This PEA will address the purpose and need of the proposed projects, project alternatives considered, affected environment, environmental consequences, and impact mitigation measures. Once completed, the draft PEA will be available for public review and comment. Notice is also published in accordance with the National Historic Preservation Act, as implemented in 36 CFR Part 800; and Executive Order 11988, Floodplain Management and Executive Order 11990, Wetlands Protection, as implemented in 44 CFR Part 9; since these actions may have the potential to affect historic, cultural and archaeological resources, floodplains and wetlands.

A comment period related to the proposed actions described above will remain open for 15 days following publication of this notice. Comments will be accepted by the affected public; local, state, and federal agencies; and other interested parties in order to consider and evaluate environmental impacts of the proposed projects. In addition to this initial comment period, the draft PEA will be available for public review and comment upon completion.

Interested persons may obtain more detailed information about the proposed PEA from or provide written comments to Stephanie Gibson, FHWA – Colorado Division, Environmental Program Manager, Stephanie.Gibson@dot.gov and/or Steven Hardegen, FEMA Region VIII, Regional Environmental Officer, Steven.hardegen@fema.dhs.gov.

6.2 FINAL PUBLIC NOTICE OF AVAILABILITY

Final Notice of Availability of the PEA for public review and comment was published in the Denver Post on Sunday, April 6, 2014.

6.3 PUBLIC COMMENTS

No substantive comments were received during the initial public comment period.

SECTION SEVEN

REFERENCES

Colorado Department of Public Health and Environment (CDPHE).

[http://www.cdphe.state.co.us/regulations/wqccregs/61_2011\(09\).pdf](http://www.cdphe.state.co.us/regulations/wqccregs/61_2011(09).pdf). Accessed September 6, 2013.

Colorado Department of Transportation. Environmental Clearances Information Summary

[http://www.coloradodot.info/programs/environmental/resources/guidance-standards/Environmental Clearance Info Summary -Dec.10.pdf](http://www.coloradodot.info/programs/environmental/resources/guidance-standards/Environmental%20Clearance%20Info%20Summary%20-%20Dec.10.pdf) Accessed September 24, 2013.

Colorado Department of Transportation (DOT) Transportation Facts.

<http://www.coloradodot.info/library/FactBook/FactBook2011> Accessed August 19, 2013.

Colorado Parks and Wildlife (CPW), formally Colorado Division of Wildlife (CDOW).

<http://ndis.nrel.colostate.edu/index.html>. Accessed September 3, 2013.

Colorado State Forest Service (CSFS). Publications. <http://csfs.colostate.edu/pages/pub-csfs2.html>.

Accessed September 10, 2013.

Colorado State Forest Service (CSFS).2011b. "Colorado's Forest Types." Colorado State

University. Available at <http://csfs.colostate.edu/pages/forest-types.html>. Accessed

September 6, 2013.

Colorado State University (CSU). 2009. "Plant Conservation Initiative Focuses on Rare Plants."

Available at <http://today.colostate.edu/story.aspx?id=1921>. Accessed December 2, 2011.

Council on Environmental Quality (CEQ). 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.

Economic Research Service, United States Department of Agriculture. 2010. State Fact Sheets:

Colorado. <http://www.ers.usda.gov/statefacts/co.htm> Accessed August 19, 2013.

National Conference of State Legislature. Federally Recognized Tribes. <http://www.ncsl.org/issues-research/tribal/list-of-federal-and-state-recognized-tribes.aspx> Accessed August 26, 2013.

Natural Resource Conservation Service. <http://www.nrcs.usda.gov/> Accessed September 5, 2013.

U.S. Bureau of Labor Statistics (BLS). Colorado Economy at a Glance.

<http://www.bls.gov/eag/eag.co.htm>. Accessed January 21, 2014.

U.S. Census Bureau (USCB). 2011Colorado QuickFacts from the U.S. Census Bureau –

2010 Census. <http://quickfacts.census.gov/qfd/states/08/08057.html>. Accessed August 19,

2013.

U.S. Environmental Protection Agency (EPA). 2011a. "Currently Designated Nonattainment Areas for All Criteria Pollutants (Green Book)." Available at

<http://www.epa.gov/oar/oaqps/greenbk/ancl.html>. Accessed August 19, 2013.

- U.S. Environmental Protection Agency. Region 8: Air Planning Unit. <http://www.epa.gov/region8/air/planningsec/index.html> Accessed August 19, 2013.
- U.S. Environmental Protection Agency (EPA). 2011b. Watershed Assessment, Tracking, and Environmental Results. Colorado Water Quality Assessment Report. Available at http://iaspub.epa.gov/waters10/attains_state.control?p_state=CO. Accessed November 15, 2011.
- U.S. Fish and Wildlife Service (USFWS). 2011b. Natural Resources of Concern. IPaC – Information, Planning, and Conservation Online System. Available at <http://ecos.fws.gov/ipac/>. Accessed September 6, 2013.
- U.S. Forest Service (USFS). 2005. Harris Park Fuel Management Project Environmental Assessment. U.S. Forest Service, Denver, CO.
- U.S. Geological Survey (USGS). 2010. National Land Cover Statistics Database. http://landcover.usgs.gov/states_regions_2.php?rec=25 Accessed August 19, 2013.
- U.S. Park Service. National register of Historic Places. <http://www.nps.gov/nr/> Access September 6 & 24, 2013.

SECTION EIGHT LIST OF PREPARERS

This EA was prepared by:

- Laurie Conner – FEMA Region VIII Environmental Specialist
- Stephanie Gibson – FHWA Colorado Division Environmental Program Manager
- Steven Hardegen – FEMA Region VIII Regional Environmental Officer
- Richard Myers – FEMA Region VIII Deputy Regional Environmental Officer
- Thomas Parker – FHWA Central Federal Lands Highway Division Environmental Protection Specialist

APPENDIX A
Agency Correspondence

Appendix B
Road, Bridge and Trail Checklist

POST-DISASTER ROAD, BRIDGE & Trail CHECKLIST	Date:	Project Code:
Assessment under the Post-Disaster Road, Bridge and Trail Replacement, Relocation, and Upgrade Programmatic Environmental Assessment (PEA) and Finding of No Significant Impact (FONSI) (FEMA and FHWA, February 2014)		
Disaster Description and Date:		
Project Name and Location:		
Project Description:		
Name and Date of Hydraulic Study (attach a copy to this checklist):		

I. PEA Alternative Used (Check all that apply)

- Alternative 2 - Replacement
- Alternative 3 - Relocation
- Alternative 4 – New Structure Design
- Alternative 5 – Alternate Route

II. Evaluation

ENVIRONMENTAL IMPACT ASSESSMENT:				
Document impacts to human, socio economic, or natural environment for environmental setting or circumstances.				
Setting/Resource/Circumstance	Are Impacts Consistent with Descriptions in PEA? (Yes/No)	Are There Additional Impacts? (Yes/No)	Date Reviewed	Are Site Specific Study Documents Attached? (Yes/No)
Geology, Soils and Land Use				
Transportation Facilities				
Safety and Occupational Health				
Socioeconomics and Environmental Justice				
Air Quality				
Noise				
Public Services and Utilities				
Water Resources				
Biological Resources				
Cultural Resources				
REGULATORY CHANGES:				
Document changes to laws, regulations, and/or guidelines since signature of PEA FONSI:				

IMPACTS ASSESSMENT:

For items checked as having additional impacts: assess the affected natural and socio-economic environment, impacts and new issues/concerns which may now exist:

MITIGATION:

List specific mitigation measures for each resource impacted (both impacts from PEA or additional impacts):

III. Public/Agency Involvement (if any)

Document any public meetings, notices, & websites, and/or document agency coordination. For each provide dates, and coordination:

IV. Permits

List required permits and status of permit:

V. Attachments Listed

List maps, studies, background data, permits, etc.

VI. Conclusion and Recommendation

- The project is consistent with the alternatives and impacts as described in the PEA.
- The project generally is consistent with the alternatives and impacts as described in the PEA, but includes some minor impacts not described in the PEA which are documented in this checklist.
- The project requires a Supplemental Environmental Assessment because (1) creates impacts not described in the PEA; (2) creates impacts greater in magnitude, extent, or duration than those described in the PEA; or (3) requires additional mitigation measures that are not described in the PEA to keep impacts below significant levels.

Applicant or Road Agency Signature

Date

Federal Emergency Management Agency or
Federal Highway Administration Signature

Date