Draft Programmatic Environmental Assessment

Colorado Wildfire Mitigation Projects

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Programmatic Environmental Assessment Colorado Wildfire Mitigation Projects

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Acronyms and Abbreviations

BMP	Best Management Practice
CDNR	Colorado Department of Natural Resources
CDPHE	Colorado Department of Public Health and Environment
CDPW	Colorado Department of Parks and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CSFS	Colorado State Forest Service
DHS	Department of Homeland Security
EA	Environmental Assessment
ESA	Endangered Species Act
EO	Executive Order
FEMA	Federal Emergency Management Agency
FWCA	Fish and Wildlife Coordination Act
GPD	Grants Program Directorate
HMA	Hazard Mitigation Assistance
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1996
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PEA	Programmatic Environmental Assessment
PDM	Pre-Disaster Mitigation Program
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Officer
SMZ	Streamside Management Zone
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service

SECTION ONE
INTRODUCTION

1.1 BACKGROUND

Since the Europeans arrived in the West during the 19th century fire management has increased the quantity of vegetative ground and ladder fuels, resulting in surface fires that today move easily into the tree canopy and fuel destructive crown fires. High density, continuous fuels in many forests allow fires to spread to large areas in a relatively short period, making wildfires difficult and dangerous to control (USFS 2005).

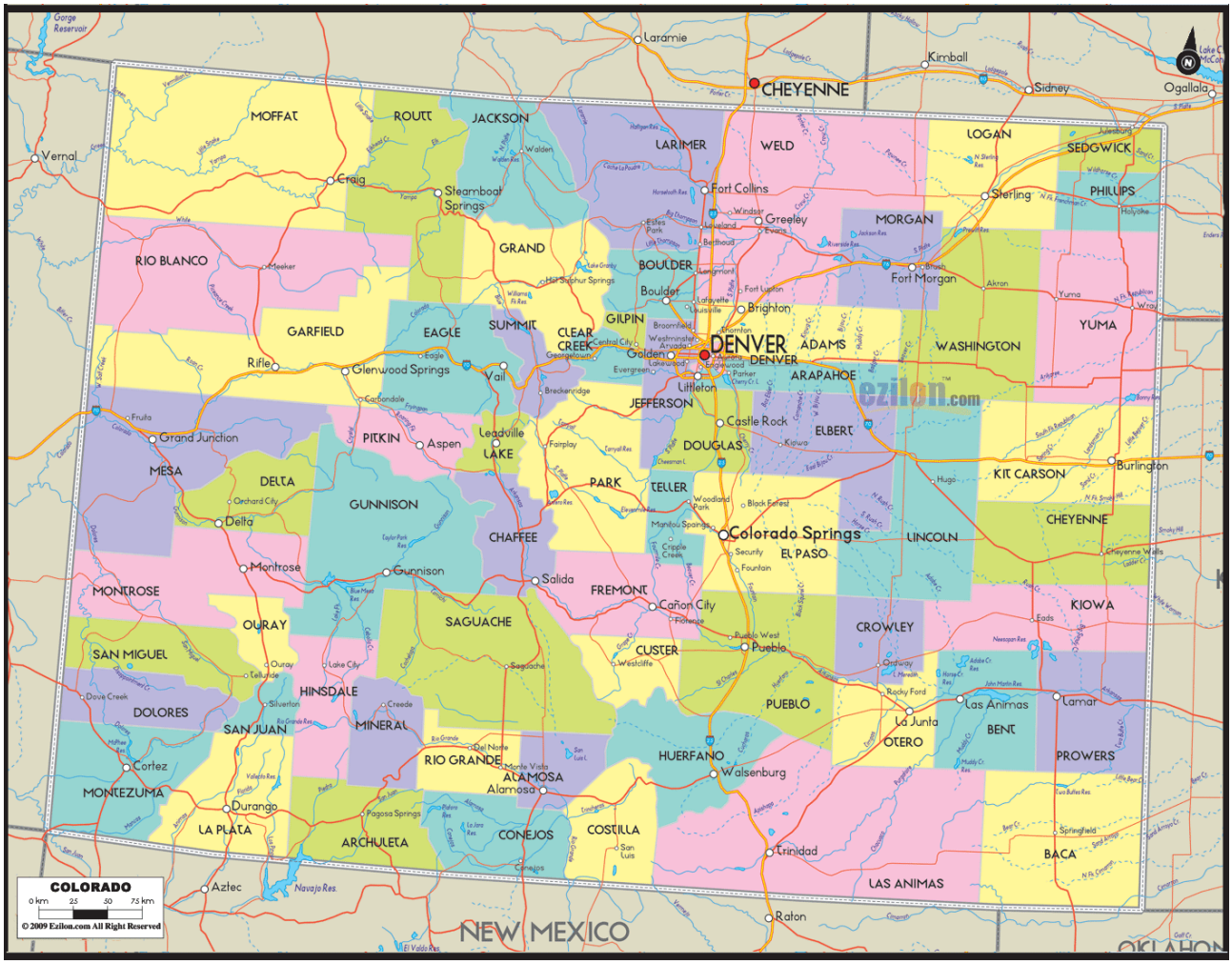
The risk of catastrophic wildfires in Colorado's forests is extremely high because of the fuel load and the recent decline in forest health, which is the result of dry conditions and mountain beetle infestations (CSFS 2008). Continued population growth into wildland-urban interface (WUI) areas and an increasing frequency of elevated fire weather conditions present major challenges to Colorado residents. Statistics from the Colorado State Forest Service from 1960- 2009 show increases in the number and size of wildfires for the last several decades.

The United States Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) proposes to fund the implementation of Wildfire Mitigation Measures as a result of a Presidential Declared Major Disaster in the State of Colorado or under other FEMA funding programs, such as, but not limited to Hazard Mitigation Assistance (HMA) and Grants Program Directorate (GPD) funding. 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 (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), and 44 CFR Emergency Management and Assistance Ch. I Part 10. 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 does not have authority to fund projects on Federal land owned by another Federal entity or projects with the purpose of addressing forest health conditions or ecological or agricultural issues related to land and forest management (e.g., insects, diseases, damage from extreme weather events affecting the forest-wide health, pest infestations).

FEMA will use this PEA to determine the level of environmental analysis and documentation required under NEPA for wildfire mitigation activities or 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, FEMA will take no further action. 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 Environmental Assessment (EA) 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).



1.2 PURPOSE AND NEED

The purpose of the Proposed Action is to protect the built environment in fire-prone areas of forests, ranges, and grasslands through wildfire hazard reduction. Fuel reduction in areas prone to wildfire reduces the severity of potential wildfires, increases the ability to control wildfires, and minimizes potential damage to property, public safety, and the natural environment.

Based on the continuing potential risk of catastrophic wildfires in the State of Colorado, FEMA may be requested to fund projects that reduce fuel levels to protect people, structures, and watersheds.

SECTION TWO
ALTERNATIVES

2.1 ALTERNATIVES NOT RETAINED

FEMA Mitigation Policy does not allow funding of the following types of projects; therefore, they were not retained as alternatives.

- Projects that do not protect homes, neighborhoods, structures, or infrastructure;
- Projects on federally owned land and land adjacent to Federal lands when the proposed project falls under the primary or specific authority of another Federal agency;
- Projects for hazardous fuels reduction in excess of 2 miles from structures;
- Projects to address ecological or agricultural issues related to land and forest management (e.g., insects, diseases, infestations, damage from extreme weather events affecting the forest-wide health);
- Irrigation of vegetation to avoid disease or drought-related infestation;
- Projects to protect the environment or watersheds;
- Projects for prescribed burning or clear-cutting activities;
- Projects for maintenance activities, deferred or future, without an increase in the level of protection;
- Projects for the creation and maintenance of fire breaks, access roads, and staging areas;
- Purchase of equipment to accomplish eligible work (e.g., chainsaws, chippers);
- Projects for vegetation irrigation systems installed on the ground and designed to moisten the surface; and
- Activities intended solely to remedy a code violation without an increase in the level of protection.
- Projects for the purchase of fire-related equipment (e.g., vehicles, fire trucks) or communications equipment;
- Development or enhancement of fire-suppression capability through the purchase of equipment or resources (e.g., water supply or sources, dry hydrants, cisterns not related to water hydration systems, dip ponds);

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 response action FEMA determines is necessary to reduce the wildfire hazard there may be only one viable option to be implemented. The following list of alternatives may not be available at all site-specific locations.

Eligible wildfire mitigation projects must clearly demonstrate mitigation of the risk from wildfire to residential and non-residential buildings and structures, including public and commercial facilities. Projects must be located in a Wildland-Urban Interface, must be adjacent to or intermingled with the built environment, and must provide protection to life and the built environment from future wildfires. No open burning will take occur as a result of the proposed projects. Appropriate Best Management practices will be implemented and all actions must comply with applicable federal, tribal, state and local regulations and requirements.

Additional information related to managing the Wildland-Urban Interface is available at http://csfs.colostate.edu/pages/wildfire.html.

2.2.1 Alternative 1 – No Action

The No Action Alternative provides a means to compare baseline conditions (taking no action) with the potential effects of the Proposed Action. Under the No Action Alternative, no implementation of any vegetation management treatments or protective measure would occur. Current management activities, including maintenance of existing facilities and methods of suppressing wildfires would continue. Existing fuel accumulations and the risk of catastrophic wildfires would not be reduced. Therefore, the risk to life and property from a wildfire would not change.

2.2.2 Alternative 2 – Vegetation Management

Land managers can implement practices (treatments) that will reduce the potential of the ignition of a wildfire and/or reduce the spread of a wildfire when they occur. However, wildfires are not completely preventable.

Alternative 2 consists of integrated vegetation management in which targeted trees and other fuels would be removed by hand and/or mechanical methods.

Mechanical removal could involve use of machines such as feller bunchers. Feller bunchers consist of a standard heavy equipment base with a tree-grabbing device furnished with a chain saw, circular saw, or shear. The machine places the cut tree on a stack suitable for a skidder or forwarder or other means of transport (yarding) for further processing (e.g., delimbing, bucking, loading, chipping). Other equipment such as chippers, tractor, brush hogs, skid loaders, and ATVs could also be used to remove vegetation. Mechanical removal and piling would not occur on steep slopes. Operation of off-road equipment is planned to occur only when the soils are frozen or dry.

Hand removal of undesired vegetation normally involves individual workers using chain saws to cut trees and shrubs, usually within 6 inches of the ground, followed by hand piling of the slash. Hand removal of undesired vegetation is frequently used on complex terrain, in areas that cannot be accessed by machinery, and adjacent to existing buildings. In areas with severe slopes, trees can be hand cut and removed via helicopters or cable-yarding systems.

All skid trails, landings, normally unused roads, and other disturbed areas would be reseeded with native species as needed. Noxious weeds would be treated according to the requirements of the Colorado Department of Agriculture Noxious Weed Management Program (CDA 2011).

All treatments would be implemented using Colorado State Forest Service (CSFS) Best Management Practices (BMPs) to ensure minimum risk of adverse impacts on physical, natural, socioeconomic, cultural, and historic resources. All treatment areas would be accessed using existing roads to the extent possible; the less accessible reaches of these areas would be accessed by walking. All streams would be crossed at existing stream crossings as no new stream crossings would be created. No project activities would occur in Streamside Management Zones (SMZs)/Exclusion Zones, which are buffers around streams and wetlands.

CSFS BMPs do not allow any treatment activities within 50 feet of a wetland or stream. The minimum SMZ is 50 linear feet from a water body or wetland. The size of the SMZ in each treatment area would be determined in the field.

Proposed treatments under this alternative are creating defensible spaces, constructing fuel breaks, and hazardous fuel reduction.

2.2.2.1 Defensible Space

A defensible space is created by removing the woody vegetation around a structure. The purpose of defensible space is to provide a buffer that limits the spread of a wildfire and an area in which firefighters can safely protect the structures through fire suppression activities.

The required radius of defensible space around a building is related to the degree of the hazard, and the radius that is needed for an effective defensible space may therefore vary from one jurisdiction or building to another. In addition, the topography, specifically slope steepness and direction, and the arrangement, amount, and flammability of the vegetation may require extending the perimeter. When the proposed perimeter extends beyond what is required, the effectiveness of the proposed defensible space must be demonstrated in the project Application.

Defensible space projects for residential structures, commercial buildings, public facilities, and infrastructure must be implemented in conformance with local code requirements for defensible space. FEMA recommends that projects use the design guidance in the *Homebuilder's Guide to Construction in Wildfire Zones* (FEMA P-737) or the *Wildfire Hazard Mitigation Handbook for Public Facilities* (FEMA P-754) if the latter presents a stricter standard.

2.2.2.2 Fuelbreaks

Fuelbreaks are created by selectively removing vegetation from an area. Fuel breaks normally provide quick access for fire suppression and serve as a line of defense from which personnel and equipment can be deployed. Fuel breaks also aid firefighters by slowing the spread of a wildfire under normal conditions and by allowing fire suppression activities to be carried out under safer conditions.

Under the Proposed Action, fuel breaks would be created by thinning tree stands along existing roads to maximize the protection that roads provide—reducing the spread of a wildfire and providing evacuation routes. The fuel breaks would be created on both sides of the road and would generally be 300 to 340 feet wide (excluding the road width) with an uphill distance of 100 to 150 feet and a downhill distance of 150 to 240 feet.

2.2.2.3 Hazardous fuels reduction

Hazardous fuels reduction includes thinning vegetation, removing ladder fuels, reducing flammable vegetative materials, and replacing flammable vegetation with fire-resistant vegetation for the protection of life and property. Vegetation may include excess fuels or flammable vegetation.

Hazardous fuels reduction projects would be conducted not more than 2 miles from homes and other structures to reduce stem density, basal area, canopy continuity, and ladder fuels by removing trees and shrubs (live and dead) from the forest stand, thereby helping to reduce the spread of a wildfire both horizontally and vertically. Hazardous fuels reduction can also increase the health of remaining trees, which creates a more fire-resistant forest. Healthy trees are more resistant to insect attacks and diseases, which can kill trees.

2.2.2.4 Project Schedule and Equipment

All project activities would be conducted during time periods when the ground is frozen or dry.

Logging systems used to implement the Proposed Action would be limited to ground-based systems and mastication/chipping systems. Ground- based systems (chain saws, tractors) would be used to sever and remove trees from the treatment areas and mastication/chipping would be used to eliminate slash (branches, treetops) onsite. Equipment required for activities (tractors, chippers) would be fitted with high flotation/low ground pressure tires or tracks to reduce or eliminate ground disturbance.

2.2.3 Alternative 3 - Structural Protection through Ignition-Resistant Construction

Structural protection through ignition-resistant construction involves the use of noncombustible materials, technologies, and assemblies on new and existing buildings and structures that are in conformance with local fire-related codes and standards. Property owners must have previously created defensible space and agree to maintain the defensible space.

The types of structural protection are discussed further in the following subsections.

2.2.3.1 Roof assemblies

Installation of roof coverings; roof sheathing; roof flashing; roof skylights; roof, attic, and wall vents; and roof eaves and gutters that conform to any of the following ignition-resistant construction standards: (1) construction materials are fire-resistant in accordance with nationally recognized testing standards, (2) construction materials are noncombustible, and (3) construction materials constitute an assembly that has a minimum 1-hour -fire-resistant rating.

2.2.3.2 Wall components

Installation of wall components such as the fascia, windows, window glazing, doors, window frames, and insulation that conform to any of the following ignition-resistant construction standards: (1) construction materials are fire-resistant in accordance with nationally recognized testing standards, (2) construction materials are noncombustible, (3) construction materials constitute an assembly that has a minimum 1-hour-fire-resistant rating, and (4) protection of fuel tanks (e.g., propane, gasoline).

2.2.3.3 External water hydration and thermal insulation systems

Purchase and installation of external, structure-specific water hydration and thermal insulation systems (foam, fire-retardant, and water sprinkler systems) with a dedicated delivery system and dedicated self-contained foam or retardant in sufficient volume to protect the structure. For water sprinklers, a cistern is acceptable if a dry hydrant with a fire department connection or other water source (e.g., lake, river, swimming pool) is available. FEMA will consider the project when only assurance is provided in the operations and maintenance plan that a system (e.g., geographic information system) will be maintained to identify property addresses with wildfire sprinkler systems and will be made available to the appropriate fire department.

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 in Colorado today. 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 8000 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. Colorado has 58 named peaks that are greater than 14,000 feet in elevation and more than 700 peaks higher than 13,000 feet.

Five different physiographic provinces and three subprovinces are found within Colorado: Colorado Plateau, Wyoming Basin, Southern Rocky Mountains, Middle Rocky Mountains, and the Great Plains which is divided into the Colorado Peidmont, 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
Woody Wetlands	14
Emergent/Herbaceous Wetlands	67
State Total	**104,094**

According to the Economic Research Service (ERS) 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 states 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 by FEMA and the potential for a catastrophic wildfire would not change. Alternative 1 has potential to significantly affect land use if a wildfire occurs, particularly loss in agricultural land use and recreational land use. Wildfire could adversely affect soils by removing existing vegetation and exposing soils to potential erosion from future heavy precipitation events. There is also a likelihood of rapid fire growth and spread in some areas due to steep topography, fast burning or flashy fuel components, and other topographic features that contribute to channeling winds and the promotion of extreme fire behavior.

3.1.2.2 Alternative 2: Vegetation Management

Alternative 2 would involve the use of some heavy equipment, but the equipment would have large tires or tracks and would be used only when the ground is frozen or dry. Therefore, soil disturbance would be minimal. Alternative 2 would not adversely affect geology because the treatments would not extend deep enough to disturb geologic resources.

Post-project impacts on soils are difficult to predict because the actual impacts would depend on whether the project area experiences a wildfire. If the project area does not experience a wildfire, Alternative 2 would have no impact on soils. If a wildfire occurs and the advancement of the wildfire is slowed or stalled by the vegetation management activities to the extent that firefighters are able to contain the fire, Alternative 2 would have a significant beneficial effect on the soils in the areas that would have burned if the vegetation management had not been implemented. The beneficial effects would extend to adjacent areas that otherwise would have burned. Although the exact area of benefit cannot be quantified, the size of recent wildfires in Colorado suggests that several thousand acres could benefit. The unburned areas would retain existing vegetation and during future heavy precipitation events would not experience increased runoff and associated soil erosion, which would adversely affect soils.

Land use (such as recreation and agriculture) could be maintained or the impact reduced through Alternative 2 if a wildfire did occur.

3.1.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Alternative 3 would not impact physical resources as the project would be conducted on an existing structure.

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.

Railroads that originally allowed settlers to come west now transport goods and people throughout the state. There are 14 freight railroads with a total of 2,776 rail miles in Colorado. In 2011, Colorado ranked 9th nationally in originated rail tons of coal. Cement, farm products, petroleum and coal products, and food products are the remaining main exports. Passenger rail uses rails owned by the freight companies. Colorado has ten scenic and historic trains for tourists.

3.2.2 Environmental Consequences

3.2.2.1 Alternative 1: No Action

Under the No Action alternative no work would be conducted. If a wildfire occurred there is potential that roads or railways could be blocked, damaged or destroyed. This could be detrimental for single ingress/egress roadway areas and could prevent evacuations or prevent firefighters from entering into an area. This alternative may result in significant adverse impacts due to increased travel times and increasing traffic volumes if travel patterns change.

This alternative may result in a significant adverse impact for railways, as happened with the 2012 Waldo fire, as wildfires can sever north/south transportation, causing coal trains to and from Texas to re-route 600+ miles via Kansas City. East/west freight trains have detour options on parallel lines, but are limited by load capacities, speed, tunnel limitations, clearances and crew availability. While the two Amtrak trains have well established detour routes, the smaller tourist operators, if severed, are basically shut down, severely impacting the economy until returned to operation.

3.2.2.2 Alternative 2: Vegetation Management

Vehicle traffic would be generated by movement of equipment (chippers) to the project area and the work crews traveling to and from work sites. The amount of traffic generated would be minimal and would not interfere with local residents or other people traveling in the vicinity the project area.

Alternative 2 would reduce the risk of a wildfire encompassing roads or railroads. Thus, the potential for roads or railways to be blocked by a wildfire would be reduced.

3.2.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

This alternative would maintain the existing road and rail. A slight increase in traffic may occur during the project. This alternative would have no change to impacts on transportation if a fire occurs.

3.3 Safety and Occupational Health

3.3.1 Affected Environment

The Hayman Fire was the largest wildfire in Colorado state history, part of the 2002 Colorado wildfires. In 2012 forest fires in Colorado twice broke the record for most destructive fire and led to federal disaster declarations. In 2013 Colorado forest fires, fueled by high heat and winds, again broke the record for the most destructive causing 2 deaths and destroying 16,000 acres and more than 500 buildings.

The risk of catastrophic wildfires in Colorado's forests is extremely high due to the heavy fuel loading (closely spaced trees and shrubs and dead material on the forest floor). Flash flooding following large wildfires can contribute sediment and debris to area waterways, which can damage structures, roads, and utilities critical to the safety and well-being of citizens in and down gradient of the project area. During recent wildfires and associated flooding in Colorado, thousands of people have required evacuation because of safety concerns. Some fatalities have occurred.

Home construction includes various materials, some considered combustible, while others such as metal roofs, are considered more fire resistant. Backyard debris, leftover building materials and equipment, is sometimes stored within or adjacent to vegetation adding to the risk.

Safety and occupational health issues include one-time and long-term exposure. Examples include short/long term exposure to environmental conditions, such as smoke inhalation, 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.

3.3.2 Environmental Consequences

3.3.2.1 Alternative 1: No Action

In the no action alternative, the potential for fire still exists. People living in the WUI would remain at risk if a catastrophic fire occurred in the area of these developments. People and structures down gradient of the burn area would remain at risk from sediment and debris flows if a major precipitation event occurred prior to revegetation of the burn area. Structures at risk would include houses, roads, bridges, railroads, water intakes, and water treatment facilities.

Wildfires can generate substantial amounts of fine particulate matter, which can affect the health of people breathing the smoke-laden air. Therefore, the health of people downwind from a wildfire, especially young children and people with lung disease or asthma, could be adversely

affected. At close range, wildfires can generate substantial amounts of carbon monoxide, which can pose a health concern for frontline firefighters.

3.3.2.2 Alternative 2: Vegetation Management

Alternative 2 is designed to reduce the rate of spread and intensity of a wildfire within the treatment areas, which would improve the safety of residents and firefighters and make it easier to bring a wildfire under control. Wildfires cannot be prevented, but if they can be more readily controlled and contained, the chance that a small wildfire will grow into a catastrophic fire is greatly reduced. Reducing the intensity and frequency of wildfires lowers the risk for people living in the urban/forest interface because wildfires would threaten fewer houses.

3.3.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Alternative 3 would increase the ignition resistance to structures, thus reducing the potential for a structure to catch fire.

3.4 Socioeconomics, Community Value, and Environmental Justice

3.4.1 Affected Environment

According to the U.S. Census, the population of Colorado in 2010 was 5,029,196 with an estimated 5,187,582 in 2012. This represents an approximately 9.7% increase from 2000 (902,195). 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 number 16 for population 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).

Poverty levels Colorado were 12.5 % for all people and 16.6% for children under age 18.

Tourists and residents are drawn to WUI areas for their natural beauty and abundance of recreational opportunities. Many recreational areas are comprised of campgrounds, group sites, picnic sites, and boat ramps. Unlike the past, where development was concentrated first in ranches and mining camps, and then later in small towns, homes now occur throughout all of the nonfederal portions of Colorado.

3.4.2 Environmental Consequences

3.4.2.1 Alternative 1: No Action

Under the No-Action alternative no assistance from FEMA would occur. Alternative 1 has potential to result in significant adverse impact to economics of a community if a wildfire occurs. The potential negative economic impacts would affect residents with homes in the burned area most severely, but indirect effects could extend to everyone in the state.

Economic values at risk to wildfire go beyond property values and include displaced people and animals, damaged infrastructure and roads, and even damage to historical or culturally significant sites. Additionally, the effect of wildland fires on employment can impact an area‘s economy. Fires could impact major employers in the state, possibly leaving people without work in either the short term or the long term. Wildfires can mar the landscape in addition to placing people in danger, affecting the tourism sector of Colorado’s economy. Agricultural lands, which are an important part of County economies, are also susceptible to wildfire. Wildland fire impacts on agriculture could adversely affect the ability of residents to earn a living from this industry.

Under the No Action Alternative, all populations within a project area would continue to be at risk of a catastrophic wildfire. The No Action Alternative would not have a disproportionately high and adverse human health or environmental effect on minority or low income populations, and meets the requirements of Executive Order (EO) 12898.

3.4.2.2 Alternative 2: Vegetation Management

Alternative 2 would have little direct effect on the economy of communities within Colorado. The creation of defensible space and thinning of trees would help prevent and control the spread of a wildfire in the project area. If a wildfire occurred, the proposed vegetation management would likely limit the extent and magnitude of the wildfire. Thus, Alternative 2 could have a beneficial impact on residents, as well as the county and the State because funds would not be needed to fight a major wildfire and associated property damages would not occur.

No disproportionately high and adverse impacts to low-income or minority populations would result from Alternative 2. Therefore, Alternative 2 would comply with EO 12898.

3.4.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Alternative 3 might increase the economy of the community during renovation. If a wildfire occurred, the renovations would likely limit the extent of structural damage, thus, providing a beneficial impact on residents. The county and the State would still expend funds to fight a major wildfire and associated property damages would not occur.

No disproportionately high and adverse impacts to low-income or minority populations would result from Alternative 3. Therefore, Alternative 3 would comply with EO 12898.

3.5 Air Quality

3.5.1 Affected Environment

Colorado is currently in attainment for air quality with the exception of the Denver, Colorado metropolitan area which is listed as in nonattainment for ozone (O) under the National Ambient Air Quality Standards.

Wildfires can generate substantial amounts of fine particulate matter, which can affect the health of people breathing the smoke laden air. Fine particulates are of special concern because of their potential to adversely affect human respiratory systems, especially in young children, the elderly, and people with lung disease or asthma. Wildfires can also generate substantial amounts of carbon monoxide near the fire, which can be of concern for frontline firefighters.

3.5.2 Environmental Consequences

3.5.2.1 Alternative 1: No Action

With no action fuel loads in the project area would continue to accumulate and the potential for wildfires, including catastrophic wildfires, would increase. Catastrophic wildfires would result in high emission rates of air pollutants from smoke, especially high concentrations of particulate matter. If a wildfire occurred during unfavorable meteorological conditions (e.g., gusting winds from a thunderstorm), as is the often the case, the meteorological conditions would compound the adverse effects on air quality.

If no wildfire occurred in the project area, the No Action Alternative would have no effect on the emission of greenhouses gases. If a wildfire occurred over a large area, under the No Action Alternative large quantities of greenhouses gases could be released and adversely affect air.

3.5.2.2 Alternative 2: Vegetation Management

During the removal of vegetation, machinery would generate low levels of particulate matter emissions and low levels of vehicle exhaust emissions. These emissions represent a temporary minor impact on air quality in the treatment areas.

Vegetative management has the potential for a long-term beneficial effect on air quality in the project area by reducing the risk of a wildfire and the associated emission of greenhouse gases. Alternative 2 is not anticipated to affect global climate change.

3.5.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

During upgrade and reconstruction, machinery would generate low levels of particulate matter emissions and low levels of vehicle exhaust emissions. These emissions represent a temporary minor impact on air quality in the treatment areas.

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 the No Action Alternative, no construction or vegetation management-related activities would occur, and there would be no effect on noise levels in the project area.

3.6.2.2 Alternative 2: Vegetation Management

Operation of chainsaws and chippers during the creation of defensible space and thinning treatments would increase noise levels in the vicinity of the treatment areas. Noise associated with the operation of the equipment would be limited to daylight hours. Therefore, noise impacts would be temporary and limited to the duration of the proposed vegetation management activities.

3.6.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Operation of building equipment during renovations would increase noise levels in the vicinity of the treatment structure. Noise associated with the operation of the equipment would be limited to daylight hours. Therefore, noise impacts would be temporary and limited to the duration of the proposed vegetation management activities.

3.7 Public Services and Utilities

3.7.1 Affected Environment

Outside of the built environment, there are usually no utilities and few public services. Public services and utilities within the built environment include:

- Fire protection
- Law Enforcement
- Emergency Services
- Water
- Wastewater
- Sanitation
- Solid waste disposal
- Stormwater drainage
- Schools
- 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 fires could continue to damage infrastructure which adversely impacts the ability to provide service.

3.7.2.2 Alternative 2: Vegetation Management

No public services or the response time of emergency responders would be directly affected during the vegetation management treatments in the project area. However, if Alternative 2 prevented a catastrophic wildlife, potential damage to utilities would be prevented and emergency responders would be available to respond to other emergencies. In addition, when wildfires are controlled quickly, a smaller area is burned, which results in less sediment and debris being transported downstream during future precipitation events. For the same reasons, Alternative 2 would also help protect and maintain municipal water supplies for communities that obtain their water from the treated watershed.

3.7.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

While this alternative has the potential to protect public service structures, there would be no change to the potential of a wildfire to affect public services and utilities because fires could continue to damage infrastructure such as utility lines, which adversely impact the ability to provide service.

3.8 Water Resources

3.8.1 Affected Environment

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.

63 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 into the following: 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.

3.8.1.1Wild and Scenic Rivers

Colorado has one river classified under the wild and scenic river designation: Cache La Poudre River with 30 miles designated as Wild and 46 miles as Recreational.

3.8.1.2 Floodplains

Colorado has 245 participating and 16 non-participating entities in the National Flood Insurance Program. Colorado floodplains have various designations depending on streams and locations.

3.8.1.3 Wetlands

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 positives attributes have not always been recognized. Though, the Federal Clean Water Act requires mitigation 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

Fuel loads throughout the state would continue to increase, along with the risk of a catastrophic wildfire. If such a wildfire occurred, the fire would destroy most of the existing vegetation in the burned area and without the existing vegetation, the burned area would be more susceptible to soil erosion during future heavy precipitation events. Flash flooding after a catastrophic wildfire contributes heavy loads of sediment and debris to reservoirs, streams, and wetlands in the affected watershed. Historically, increased loading of sediment and debris has increased water treatment costs for water suppliers in affected watersheds. Accelerated erosion of soils in a watershed can also damage other facilities and structures along affected streams, including bridges, roads, campgrounds, and residences.

Under the No Action Alternative, groundwater might be negatively affected if soil percolation is reduced due to a wildfire. Under the No Action Alternative, the risk of a catastrophic wildfire would remain. As a result, flash flooding could adversely affect wetlands by contributing heavy loads of sediment and debris to wetland basins. Floodplains could be adversely impacted by erosion and high stream flows.

3.8.2.2 Alternative 2: Vegetation Management

Vegetation management activities implemented under Alternative 2 would not include the storage of or other alterations to stream flows that would affect the quantity of water in streams downstream of the project area. Additionally, standard Best Management Practices (BMP) to

reduce sedimentation and erosion, and the 50-foot buffer around wetlands and streams would prevent any impacts on these waters.

Post-project impacts on water resources under with Alternative 2 are difficult to precisely predict. Most of the potential effects depend on whether the Proposed Action prevents the ignition or controls the spread of a wildfire. If a wildfire is not prevented or the spread of a wildfire controlled, Alternative 2 would have no effect on water quality. However, if Alternative 2 helps prevent or control a wildfire, especially a catastrophic wildfire, significant degradation in the water quality of the receiving streams would be prevented. Retention of the existing vegetation would also prevent an increase in runoff rates and erosion. Therefore, with Alternative 2, the risk of damage to facilities and structures along the receiving streams would not increase, and water treatment costs to water supplies would not change.

If designated floodplains are present in the project area, or would be affected by Alternative 2 the Eight-Step Decision-Making Process would be required for the Proposed Action.

Vegetation management BMPs require a 50-buffer around wetlands. Therefore, no project activities would occur within wetlands and no wetlands would be affected by Alternative 2. Therefore, the Eight-Step Decision-Making Process is not required for Alternative 2.

3.8.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Renovations for structural protection would not impact waters of the US.

If changes to the structure are anticipated to impact the floodplain/floodway FEMA will initiate the Eight-step Process as outlined in CFR 44. Chapter I. Part 9 to determine if the project poses a significant impact.

This alternative is not expected to impact wetland because actions are limited to existing structures.

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 US Fish and Wildlife Service (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 2). 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
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 bison, black bear, deer, elk, antelope, moose, sheep, goat, mountain lion, wolf, and turkey. Smaller game species hunted include sharp-tailed grouse, prairie chickens, sage grouse, mountain grouse, partridge, and pheasants. Hunted waterfowl includes ducks, geese, and swans. Bobcat, fisher, otter, swift fox, and wolverine are trapped.

Across the state, Colorado Department of Park and Wildlife (CDPW) manages more than 348 State Wildlife Areas, totaling more than 684,252 acres. In addition, CDPW leases approximately 550,000 acres of State Trust Lands. CDPW 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 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 included with the proposed New Mexico Meadow Jumping Mouse, Gunnison Sage Grouse, White River beardtongue, 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	*Capnia Arapahoe*	C	Typically found in cold, clean, well-oxygenated streams and rivers.
Arkansas darter	*Etheostoma cragini*	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	*Mustela nigripes*	E	Most of this species has been block-cleared in Colorado.
Bonytail chub	*Gila elegans*	E	Large, fast-flowing waterways of the Colorado River system.
Canada lynx	*Lynx canadensis*	T	Dense subalpine forest, willow corridors along mountain streams, avalanche chutes. Occurs at elevations between 8,000 and 14,000 feet.

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	E	Endemic to the rolling clay (adobe) hills and flats immediately adjacent to the communities of Delta and Montrose, Colorado
Colorado Butterfly plant	*Gaura neomexicana var. coloradensis*	T	Moist areas of floodplains
Colorado hookless Cactus	*Sclerocactus glaucus*	T	Exposed stretches of gravelly clay, including alluvial benches above floodplains and on mesa slopes
Colorado pikeminnow	*Ptychocheilus lucius*	E	Swift flowing muddy rivers with quiet, warm backwaters.
DeBeque Phacelia	*Phacelia submutica*	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	*Lesquerella congesta*	T	Barren white outcrops exposed along drainages by erosion from downcutting of streams in the Picaence Basin in Rio Blanco County, Colorado
Dudley Bluffs Twinpod	*Physaria obcordata*	T	Steep side slopes of barren white outcrops exposed along drainages by erosion from down cutting of streams in the Picaence Basin in Rio Blanco County, Colorado.
Graham beardtongue	*Penstemon grahamii*	P	Restricted to calcareous soils derived from oil shale barrens
Gray Wolf	*Canis lupus*	E	USFWS does not consult on the gray wolf as they consider it not to occur in Colorado.
Greater sage-grouse	*Centrocercus urophasianus*	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	*Oncorhynchus clarki stomias*	T	South Platte basin
Grizzly Bear	*Ursus arctos horribilis*	T	USFWS does not consult on the grizzly bear as they consider it not to occur in Colorado.
Gunnison Sage Grouse	*Centrocercus minimus*	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	*Cynomys gunnisoni*)	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	*Gila cypha*	E	Deep, fast-moving, turbid waters often associated with large boulders and steep cliffs .
Knowlton's Cactus	*Pediocactus knowltonii*	E	On rolling, gravelly hills in a piñon-juniper-sagebrush community at about 1,900 m (6,200-6,300 ft).
Least tern	*Sterna antillarum*	E	Bare sand and gravel bars along rivers and waste sand piles along several rivers in Nebraska.
Lesser prairie-chicken	*Tympanuchus pallidicinctus*	P	Found throughout short- and mid-grass prairies
Mancos Milk-vetch	*Astragalus humillimus*	E	Cracks or eroded depressions on sandstone rimrock ledges and mesa tops
Mesa Verde Cactus	*Sclerocactus mesae-verdae*	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)

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Mexican Spotted Owl	*Strix occidentalis lucida*	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	*Zapus hudsonius luteus*	P	Lives only along the banks of southwestern streams.
North America wolverine	*Gulo gulo luscus*	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	*Phacelia formosula*	E	Ravines and bare slopes of eroding rock originating from the Coalmont Formation.
Osterhout milkvetch	*Astragalus osterhoutii*	E	Grows in high-selenium soils
Pagosa Skyrocket	*Ipomopsis polyantha*	E	Grows on weathered Mancos Shale outcrops at about 7,000 feet elevation in the vicinity of Pagosa Springs in southwestern Colorado
Pallid sturgeon	*Scaphirhynchus albus*	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	*Penstemon debilis*	T	Only on oil shale outcrops on the Roan Plateau escarpment in Garfield County, Colorado.
Pawnee Montane Skipper	*Hesperia leonardus montana*	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	*Eutrema penlandii*	T	Limestone outcrops in the Hoosier Ridge and Hoosier Pass areas of Summit County
Penland Beardtongue	*Penstemon penlandii*	E	Alkaline shale that weathers into barren clay containing selenium
Piping plover	*Charadrius melodus*	T	Bare sand and gravel bars along rivers and waste sand piles along several rivers in Nebraska.
Preble's Meadow Jumping Mouse	*Zapus hudsonius preble*	T	Heavily vegetated riparian habitats.
Razorback sucker	*Xyrauchen texanus*	E	Deep, clear to turbid waters of large rivers and some reservoirs over mud, sand, or gravel.
Rio Grande Cutthroat trout	*Oncorhynchus clarkii virginalis*	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	*Astragalus schmolliae*)	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	*Astragalus microcymbus*	C	Found on sparsely vegetated slopes within open sagebrush habitat.
Sleeping Ute milkvetch	*Astragalus tortipes*	C	This species is found only on the lower slopes of Sleeping Ute Mountain and grows in gravels over Mancos shale.
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	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	*Boloria acrocnema*	E	Patches of snow willow in alpine meadows at elevations above the tree line

Common Name	Scientific Name	Federal Status	Habitat Requirements/Notes
Ute Ladies'-tresses	*Spiranthes diluvialis*	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	*Platanthera praeclara*)	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	*Penstemon scariosus albifluvis*	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	*Grus americana*	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	*Coccyzus americanus*)	C	Prefer open woodlands with clearings and a dense shrub layer. They are often found in woodlands near streams, rivers or lakes.

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 FEMA action. Therefore, FEMA would not be required to consult with USFWS to comply with the ESA, MBTA, FWCA, or state laws. A wildfire could significantly impact biological resources, sensitive species, threatened or endangered species or their habitats, migratory birds, or natural waterways and wetlands

3.9.2.2 Alternative 2: Vegetation Management

Potential impacts on threatened and endangered species are generally project-specific impacts that depend on the threatened and endangered species that have the potential to occur within each location of proposed vegetation management activities. Therefore, consultation will be completed on a project specific basis. Information that will be provided for each project will include the identification of which of the species have the potential to occur in the project area, the potential impacts to each of the species that have the potential to occur in the project area, and conservation measures that have been identified and agreed to by USFWS.

Federally Listed Species

Water depletions within the Platte River basin may affect Whooping crane (*Grus americana*); Least tern (*Sternula antillarum)*; Piping plover (*Charadrius melodus*; Pallid sturgeon (*Scaphirhynchus albus)*; and Western prairie fringed *orchid (Platanthera praeclara)* and/or their

critical habitat associated with the Platte River in Nebraska. Because a proposed project will only involve the thinning of existing vegetation with a 50 foot buffer around all rivers and wetlands or upgrades to existing structure, it does not have the potential to contribute to flow depletions within the Platte River in Nebraska. Therefore, FEMA has determined the proposed project would have **No Effect** on these five species.

Because a proposed project will only involve the thinning of existing vegetation with a 50 foot buffer around all rivers and wetlands or upgrades to existing structure, it does not have the potential to contribute to flow depletions within the Colorado River basin. Therefore, FEMA has determined the proposed project would have **No Effect** on Colorado pikeminnow (*Ptychocheilus lucius*); Humpback chub (*Gila cypha*); Bonytail chub (*Gila elegans)*; and Razorback sucker (*Xyrauchen texanus*).

For the remaining listed species, FEMA will make project specific determinations of affect and consult with USFWS as appropriate. If FEMA determines that the project has the potential to affect other sensitive biological resources such as T&E species and/or their critical habitat or migratory birds it will initiate an expedited review process. FEMA would notify USFWS of the project location and the project description. USFWS would respond after receiving this information to notify FEMA if additional consultation is required. If USFWS determines that additional consultation is required under Section 7 of the ESA, Bald and Golden Eagle Act (BGEA), Migratory Bird Treaty Act (MBTA), or Fish and Wildlife Coordination Act (FWCA), the results of this consultation would be documented in a memorandum to this PEA or in a SEA. If USFWS determines that no additional consultation is required, FEMA would consider the project to be in compliance with Section 7 of the ESA, BGEA, MBTA, and FWCA.

Because migratory birds nest on many substrates (e.g., ground, shrubs, trees, bridges), should the proposed work occur during the breeding season (May 1st to August 15th), the Service recommends the required cutting of trees or shrubs occur between August 16th and April 30th to remove potential nesting surfaces prior to project commencement. 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.

3.9.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

Where this alternative consists of performing work around existing structures, FEMA determines the scope of work would have no effect to sensitive species, threatened or endangered species or their habitats, migratory birds, or natural waterways and wetlands.

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.

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 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. Colorado has over 1500 listing on the National Register.

3.10.2 Environmental Consequences

3.10.2.1 Alternative 1: No Action

Under the No Action Alternative, no localized affects to cultural resources are expected, though there is the potential for a fire to damage or destroy a cultural resource.

3.10.2.2 Alternative 2: Vegetation Management

This alternative has little potential to affect historic structures. It does have limited potential to affect archeological resources.

- Defensible spaces around known historic structures will be created, and tree stands thinned, using only hand clearing methods with minimal impacts
- Only hand clearing will occur within 500 feet of known historic structures,
- Staging and landing areas will be located in previously disturbed areas, and
- Existing roads will be used and no new roads will be created
- Low-impact equipment will be used for clearing and hauling to the extent practicable,
- Existing historic buildings will not be directly affected
- Thinning would increase the tree canopy spacing, but these impacts would be modest and widely spaced and would not significantly alter the historic landscape, should it be present
- Project activities would be restricted to time periods when the ground is frozen or dry.

3.10.2.3 Alternative 3: Structural Protection through Ignition-Resistant Construction

This alternative has the potential to affect cultural resources. During new construction, destruction or alteration of archeological resources may occur. Renovation of existing structures could affect historic properties.

For any action on 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 tribal lands, FEMA will work with the THPO to develop a meaningful determination of affect within the context of tribal cultural resource interests. Additional archaeological surveys of ground disturbing activities may be required depending on consultation with THPO and SHPO. If any adverse effects are identified, FEMA will consult as appropriate.

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."

3.11.1 Summary of Cumulative Impacts

Individual projects proposed under this Programmatic Environmental Assessment 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. A Supplemental Project Specific Environmental Assessment 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.

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. If impact avoidance cannot be achieved, agency consultation and implementation of specific mitigation measures will be required.

1. The project sponsor must obtain and comply with all applicable permit and approvals required by federal, state, tribal and local regulatory agencies.

2. FEMA 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. 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 FEMA notified.

3. FEMA will consult with the US Fish and Wildlife Service on a project-specific basis for any actions that have the potential to affect biological resources, including Threatened and Endangered Species.

4. All project activities must be conducted in accordance with CSFS Forestry Best Management Practices to Protect Water Quality in Colorado, which include maintaining a 50' buffer around streams and wetlands.

5. For projects in which soil erosion potential is determined to be significant, a project erosion control plan, including the use of Best Management Practices, will be implemented to isolate the construction site and minimize impacts of soil loss and sedimentation on soil and water resources.

6. To avoid impacts to migratory birds and raptors, all tree removal would need to be completed outside nesting season and otherwise in compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

7. To avoid unnecessary ground disturbance, all project activities would be conducted during time periods when the ground is frozen or dry.

8. All disturbed areas including skid trails, landings, staging areas, etc. would be restored using native, weed-free seed, mulch, etc.

9. Standard BMP for equipment maintenance, noise and dust abatement, worker protection, fire safety, etc. must be implemented during project activities.

10. 10. All waste material associated with the project must be disposed of properly and not placed in identified floodway or wetland areas.

SECTION FIVE
PUBLIC INVOLVEMENT

5.1 INITIAL PUBLIC NOTICE OF INTENT

The following initial public notice was published in the Denver Post on February 16th and 17th.

NOTICE OF INTENT TO PREPARE A PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA) FOR WILDFIRE MITIGATION

The Federal Emergency Management Agency (FEMA) announces its intent to prepare a Programmatic Environmental Assessment (PEA) for Wildfire Mitigation projects throughout the State of Colorado.

Due to the increase in the quantity of vegetative ground and ladder fuels, surface fires today move easily into the tree canopy and fuel destructive crown fires. The purpose of this action is to reduce the wildfire hazard in the urban interface communities. Fuel reduction in areas prone to wildfire reduces the severity of potential wildfires, increases the ability to control wildfires, and minimizes potential damage to property, public safety, and the natural environment. Much of the proposed project funding will be provided to projects under FEMA's Public Assistance and Hazard Mitigation Assistance programs, along with other FEMA programs, as appropriate. All projects will be evaluated by FEMA to ensure they meet all applicable federal, tribal, state and local requirements for these types of activities.

FEMA hereby publishes this notice of intent to prepare a PEA for these actions, pursuant to the National Environmental Policy Act (PL 91-190) and associated environmental statutes, as implemented in FEMA's regulations 44 CFR Part 10. 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.

This statewide PEA will address the purpose and need of the proposed projects, project alternatives considered (including the 'No Action' alternative), affected environment, environmental consequences, and impact mitigation measures. The proposed action(s) being considered for funding include eligible vegetation management measures necessary to reduce hazardous fuels in order to create defensible space around structures and to protect life and property beyond defensible space perimeters, but proximate to at-risk structures. No open burning will occur as a result of the proposed projects. Appropriate Best Management practices will be implemented and all actions must comply with applicable federal, tribal, state and local regulations and requirements. Once completed, the draft PEA will be available for public review and comment.

A public comment period related to the alternatives as outlined in this 'Notice of Intent' or other possible alternatives will remain open for 15 days following publication of this notice. In addition to this initial comment period, a final comment period will be opened for notice of availability of the Draft PEA.

Interested persons may provide comments or obtain more detailed information about the alternatives by contacting Daniel Jones, FEMA Region VIII, Environmental Specialist, Denver Federal Center, PO Box 25267 Denver, CO 80225, (303) 231-1887, daniel.jones5@fema.dhs.gov. Comments will be accepted from the affected public; local, state, tribal and federal agencies; and other interested parties in order to consider and evaluate environmental impacts of the proposed projects.

5.2 FINAL PUBLIC NOTICE OF AVAILABILITY

The following notice of availability was published in the Denver Post on April 6, 2014.

NOTICE OF AVAILABILITY OF THE DRAFT PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR WILDFIRE MITIGATION PROJECTS THROUGHOUT COLORADO

The Federal Emergency Management Agency (FEMA) announces the availability of a draft Programmatic Environmental Assessment (PEA) for proposed wildfire mitigation projects throughout the State of Colorado. This notice of availability for comment 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. 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. All projects will be evaluated by FEMA to ensure they meet all applicable federal, tribal, state and local requirements for these types of activities.

The purpose of this action is to reduce the wildfire hazard in the urban interface communities. Fuel reduction in areas prone to wildfire reduces the severity of potential wildfires, increases the ability to control wildfires, and minimizes potential damage to property, public safety, and the natural environment. This statewide PEA will address the purpose and need of the proposed projects, project alternatives considered (including the 'No Action' alternative), affected environment, environmental consequences, and impact mitigation measures. The proposed action(s) being considered for funding include eligible vegetation management measures necessary to reduce hazardous fuels in order to create defensible space around structures and to protect life and property beyond defensible space perimeters, but proximate to at-risk structures. No open burning will occur as a result of the proposed projects. Appropriate Best Management practices will be implemented and all actions must comply with applicable federal, tribal, state and local regulations and requirements.

A public comment period related to the alternatives as outlined in the draft PEA will remain open for 15 days following publication of this notice. The draft PEA will be available for public review

on the Colorado Division of Homeland Security and Emergency Management website at http://dhsem.state.co.us/emergency-management/mitigation-recovery/recovery/recovery-programs and the FEMA Online Library at http://www.fema.gov/media-library/assets/documents/92895

Interested parties may submit comments or request a hard copy of the draft PEA and other information by contacting Daniel Jones, FEMA Region VIII, Environmental Specialist, Denver Federal Center, PO Box 25267 Denver, CO 80225, daniel.jones5@fema.dhs.gov. Comments will be accepted from the affected public, local, state, tribal and federal agencies; and other interested parties in order to consider and evaluate environmental impacts of the proposed projects.

If no substantive comments are received, the draft PEA and associated Finding of No Significant Impact (FONSI) will become final and be published by FEMA. Substantive comments will be addressed as appropriate in the final documents.

5.3 PUBLIC COMMENTS

No comments were received on the draft PEA during the initial public review period.

SECTION SIX
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SECTION SEVEN
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