

**BIOLOGICAL ASSESSMENT**  
for  
**GUNNISON BASIN FEDERAL LANDS TRAVEL MANAGEMENT PLAN**  
Grand Mesa, Uncompahgre and Gunnison National Forests  
Gunnison Ranger District

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**INTRODUCTION:**

The purpose of this biological assessment is to determine the likely effects of the preferred alternative of the proposed Gunnison Basin Federal Lands Travel Management (GTM) project on federally listed species (endangered, threatened, and proposed) in the planning area. The federal lands addressed are National Forest System lands on the Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG) that include the Gunnison and Paonia Ranger Districts and public lands managed by the Bureau of Land Management (BLM) Gunnison Field Office.

Section 7 of the Endangered Species Act of 1973, as amended, requires federal agencies to use their authorities to carry out programs to conserve endangered and threatened species, and to insure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of listed or proposed species, or result in the destruction or adverse modification of their critical habitats. A Biological Assessment must be prepared for federal actions that are “major construction activities” (also defined as a project significantly affecting the quality of the human environment as defined under NEPA) to evaluate the potential effects of the proposal on listed or proposed species. The contents of the BA are at the discretion of the federal agency, and will depend on the nature of the federal action (50 CFR 402.12(f)).

This biological assessment is prepared using direction from the Forest Service Manual 2672.4 (USDA Forest Service 1994, 1990). Discussions with wildlife biologists from the US Fish and Wildlife Service, Colorado Division of Wildlife, and staff with the USDA Forest Service have also provided information for this assessment. For the analysis of potential impacts of this project on Forest Service Sensitive and Management Indicator Species, please see the Biological Evaluation and MIS Assessment for the Gunnison Basin Federal Lands Travel Management Plan, November 2009. Because the existing condition (alt. 1) has never been assessed in light of T&E species in the analysis area, it is addressed to update the environmental baseline and as a comparison to the preferred alternative.

## DESCRIPTION OF NO ACTION AND PREFERRED ACTION ALTERNATIVES

### Alternative 1 — No Action

Under the No Action Alternative, roads and trails currently open would continue to be managed by the Forest Service and BLM as designated open to motorized travel. The No Action Alternative essentially represents the existing routes authorized by the 2001 Gunnison Travel Interim Restrictions. Figure 3 is an updated and revised version of the —green to yellow” map. The inventory of routes used to create the —green to yellow” map was updated using aerial photography, field inspections, user data, and resource specialist knowledge of routes. Several routes that existed prior to January 2001 were previously overlooked and were added to the inventory.

### Motorized Travel

Under the No Action Alternative, about 3,731 miles of road on public land under the jurisdiction of the Forest Service and BLM are within the scope of this travel management planning effort and would be open to motorized travel by the public. Of these road miles, about 85 percent are dirt roads better suited to higher-clearance vehicles (e.g., SUVs, four-wheel drives, and trucks) than passenger cars. There are an additional 212 miles of trail used by ATVs and OHVs<sup>1</sup> 50 inches or less in width and 396 miles of single-track trail<sup>2</sup> predominately used by motorcycles. There are about 1,680 miles of road on federal lands managed and maintained by other governmental entities and not within the scope of this travel management planning. These are expected to remain open to motorized travel by the public.

### Non-motorized Travel

Under existing conditions, based on the 2001 —green to yellow” inventory, there are about 1,105 miles of non-motorized trail. Some of the —green to yellow” trails are not maintained (e.g., drainage control, tree removal) or managed (i.e., signs, depicted on visitor use maps) by the Forest Service or BLM. Under this alternative, approximately 949 miles of trail would be managed for non-motorized use, with about 439 miles of trail outside of Wilderness and 510 miles within Wilderness. Based on the 2001 Gunnison Interim travel restrictions, almost all of these non-motorized trails outside of Wilderness would allow mountain bike, hiker, and horseback use. Many of these trail miles are not well suited for mountain bike use, but such use is procedurally allowed. There are about 117 miles of non-motorized trail outside of Wilderness that, under existing conditions, are managed for mountain bike use and are often depicted as mountain bike trails on various maps. Mountain bike use on the other 322 miles of managed trail outside of Wilderness may prove difficult because of terrain and maintenance standards. Based on the hierarchy of travel management, mountain bikes are allowed on motorized trails, including single track (396 miles), ATV trails (212 miles), and roads. Although non-motorized travelers may not find the same level of enjoyment or satisfaction sharing motorized trails and roads, those routes are open to their use.

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<sup>1</sup> On the MVUM, the Forest Service defines OHVs as ATVs and UTVs 50 inches or less in width.

<sup>2</sup> Running track of 24 inches cleared of branches and obstructions to about 42 inches wide.

### Administrative Routes

The No Action Alternative includes administrative roads and trails closed to public travel. Administrative routes have been established under previous agency decisions regarding resource management activities (i.e., timber roads or fire roads) or authorized use (e.g., oil and gas exploration roads, communication site access, and private in-holding access). A will not appear on an MVUM because they are closed to public travel. Under this alternative, there are approximately 240 miles of existing administrative roads.

### Dispersed Camping Access

Motor vehicle access for dispersed camping would be allowed within 300 feet of roads designated as open for public travel as long as use does not result in resource damage.

### Alternative 5 – Preferred Alternative

The primary focus of the Gunnison Travel decision is to determine which routes in the analysis area will be available to motorized travel and to eliminate user created routes or other system routes no longer needed to provided the public with a well managed system that fulfills current and future access and travel management needs. Making route-by-route decisions regarding motorized use or elimination of routes no longer needed to desired affects the number of non-motorized routes existing in the analysis area and therefore is discussed below. The preferred alternative does discuss “possible future routes” but this decision is not authorizing those routes but simply recognizing additional non-motorized routes may be needed in the future. The potential construction of future new routes is considered a “future federal actions”, subject to additional NEPA will be required before implementation. Effects to T&E species will also be addressed at that time.

Route-by-route decisions are provided in the enclosed CD. A summary of these decisions is provided below.

### Motorized Travel

Under the Preferred Alternative, about 2,334 miles of road on federal lands managed and maintained by the Forest Service and BLM are proposed to be open for public travel. Of these miles of road, about 78 percent (1,818 miles) are better suited for higher-clearance trucks and SUVs rather than passenger cars. There would be about 59 miles of existing road converted to and managed as Jeep trails. There are about 149 miles of motorized trail that would be designated open for use by ATVs and OHVs 50 inches or less in width and about 351 miles of single-track trail managed and open to motorcycle use.

As with the other alternatives, there would continue to be about 1,680 miles of road on federal lands managed and maintained by other governmental entities such as state, county, and federal highways. These would be open to the public for motorized travel. Not all of these public roads are open to non-licensed motorized vehicles. Additionally, there are about 1,340 miles of road on private lands that are not within the scope of this travel management plan.

### Non-motorized Travel

The Preferred Alternative would implement a travel management plan that would result in about 409 miles of non-motorized trails outside of Wilderness that would be managed as system trails. Some of these trails or segments of trails were open to motorized travel under the 2001 Gunnison Interim Travel Restrictions but would be restricted to non-motorized travel under the Preferred Alternative. There are also about 96 miles of trails on NFS lands that were identified on the 2001 Gunnison Interim Travel Restriction —“green to yellow” inventory maps that would no longer be managed and maintained as system trails. Hikers and horseback riders could continue to travel on these trails since there are no regulations for NFS lands to restrict hikers and horseback riders to designated trails, but they would not be managed or maintained for such use. Mountain bike use would be allowed on 279 miles of non-motorized trails outside of Wilderness (about 68 percent). On the other 130 miles of non-motorized trail, mountain bike use would not be allowed leaving those system trails open to hikers and horseback riders only. Mountain bike use is not allowed on those trails because it was deemed inappropriate for reasons relating to safety, resource protection, consistency with overall planning direction, or appropriate use. Based on the hierarchy of travel management, mountain bikes are allowed on motorized trails, including single track (351 miles), ATV trails (149 miles), and roads. Although non-motorized travelers may not find the same level of enjoyment or satisfaction sharing motorized trails and roads, those routes are open to their use and are often required to complete popular loop rides (e.g., Brush Creek road, Cement Creek road, Gothic road, and Spring Creek road, to name a few).

As with the No Action Alternative, 510 miles of trail would remain in Wilderness. Use of these routes is limited to foot travel and horses. There would be a few system trails (about 5.5 miles) where horseback riding is not allowed for safety reasons.

### Administrative Routes

In the Preferred Alternative, approximately 343 miles of administrative routes would be closed to public travel. This is similar to the miles of administrative roads in the original Proposed Action but more than under existing conditions. These would be retained for the purposes of managing natural resources, providing permitted access for special projects, or providing access to private lands.

Table 1. Summary of Alternative 5 – Preferred Alternative							
	Motorized Routes					Non-motorized Routes Outside of Wilderness	
	All Public Roads on Federal Lands (miles)	Roads on Federal Lands Managed by Forest Service and BLM (miles)	Jeep Trail (miles)	ATV/OHV* (miles)	Motorcycle (miles)	Total Trails (miles)	Mountain Bike Use Not Allowed (miles)
Alternative 5	4,014	2,334	59	149	351	409	130

\* OHVs – ATVs and UTVs 50 inches or less in width

### Possible New Routes

Under this alternative, there are plans for new routes, some of which do not currently exist on the ground. This alternative would not authorize the construction of routes, but it has made the determination that new routes would be useful to help meet the purpose and need. Possible routes will be subject to additional NEPA are considered future federal actions. Listed below are some of the possible new routes considered under this alternative:

- Kebler Wagon Trail (approximately 23 miles), part of the Carbondale to Crested Butte bike trail;
- Lower Loop Extension trail (about 5.5 miles), non-motorized use in the Slate River Valley near Crested Butte;
- Snodgrass West trail (approximately 1.6 miles), opportunity for an advanced mountain bike downhill trail;
- Brush Creek connector (approximately 1.3 miles), non-motorized trail from Mt. Crested Butte to the east side connecting with Brush Creek trails;
- Farris Creek trail, a new motorized trail to by-pass a private land closure (approximately 0.2 mile) that would allow motorized access into Farris Creek trails, Strand trails, and connection to Double Top trails;
- Left Hand Trail realignment (approximately 0.4 mile), a new motorized trail segment intended to by-pass private land; and
- Slaughterhouse connector trail (approximately 0.8 miles), a motorized trail connection from Kentucky Ridge to the Slaughterhouse Gulch road that would help facilitate an alternative ATV route from Taylor Park campgrounds and store to Tincup without using the Tincup road (#765).

### Seasonal Use Restriction Changes

Seasonal closures or resource protection closures (e.g., saturated soil conditions, mud season, wildlife winter range, wildlife security, breeding/rearing habitat, etc.) will remain in effect. There would be minimal changes in spring mud season closures on Forest Service roads under this

alternative. The purpose of mud season restrictions is to protect the road from undue damage due to rutting and to reduce the need for extra grading maintenance. Roads with mud season restrictions would typically not be open for public travel until roadbed conditions were dry. The end dates of closures reflect, on average, the occurrence of dry roadbed conditions. Since these roads are gated, the Forest Service can make the determination as to when dry roadbed conditions exist. The gates would be opened at earlier dates if suitable dry roadbed conditions exist.

Approximately 15 miles of road on NFS lands with existing seasonal road restrictions would be eliminated under this alternative, and about 67 miles of road would have new seasonal restrictions applied where there were none prior. In total, approximately 335 miles of road will have seasonal restrictions on NFS lands (Table 2).

Under this alternative, the Forest Service would seasonally restrict motorized and mechanized travel on approximately 60 miles of trail. The purpose of these restrictions are to enhance wildlife conditions by reducing motorized intrusions during the later fall hunting seasons or to prevent disturbances during spring migration and breeding seasons. Such closures are expected to create less stress on wildlife and in turn provide for a non-motorized, quiet hunting opportunity. Those routes with new seasonal restrictions are listed below:

Table 2. Seasonal restriction on routes in the Gunnison Travel Management analysis area.	
Roads	Trails
Minnesota Creek road #710	Brush Creek trail #457
Mainline road #784 and Talus spurs 1A and 1B	Calf Creek Plateau trail #458
Lujan road #785	Deer Lakes Cut-off trail #458.0A
Big Meadows road #790	Cannibal Plateau trail #464
Radio Tower roads #810	Rosebud trail #423
Red Mountain road #829	Doctor Park trail #424
Almont Powerline roads #860	Cement Mountain trail #553
Powerline road #862	Deer Creek trail #568
Flat Top road #863	
Flat Top Bench road #955	
Virginia Creek road #814	
See Appendix C for a full listing of proposed seasonal restrictions and closures.	

The BLM proposes to apply seasonal closures on motorized travel for sage-grouse to specific areas of key sage-grouse habitat rather than specific routes. This proposed area closure is expected to help protect sage-grouse breeding and early nesting habitat and encompasses about 191,000 acres around Gunnison (see Appendices G and H in the FEIS)). This area would be closed to all motorized use from March 15 to May 15 each year. In this same area, non-motorized travelers would be encouraged to not travel before 9:00 AM from March 15 to May 15 each year to avoid disturbing sage-grouse on the breeding grounds. Formal closures may be a future option if voluntary restrictions on non-motorized travel are not adequately protecting breeding sage-grouse. The BLM would continue existing seasonal restrictions on travel during the spring mud season to prevent road damage due to wet roadbed conditions.

### Dispersed Camping Access

The Forest Service and the BLM would have slightly different plans for motor vehicle access for the purposes of dispersed camping.

The BLM would allow motorized travel off designated roads only on existing routes (i.e., a recognizable travel footprint or ~~two-track~~ trail) within 300 feet of designated roads open for public travel for the purposes of dispersed camping and general recreation. This would prohibit the creation of any new routes off the designated roads under the guise of dispersed camping. If no existing route is available, vehicles may pull off the designated road up to 30 feet of the edge of the roadway to park or camp.

The Forest Service would allow motorized travel for the purposes of dispersed camping within the 300-foot corridor as an exception to the 2005 Travel Rule that restricts all motorized travel to designated routes. Motorized travel within this 300-foot corridor along each designated road would be solely for the purposes of dispersed camping (36 CFR 212.51). The Forest Service would actively work to educate and inform the public of the need to utilize existing camp sites, minimize vegetative damage, restrict off-road travel within the 300-foot corridor, and discourage new dispersed camping sites if other existing sites are available.

Under this alternative, the Forest Service would eliminate the 300-foot corridor exemption for dispersed camping access along the 12 corridors listed below. Along these corridors, motorized travel for dispersed camping would only be allowed on designated routes (spurs). As with the BLM restrictions, motor vehicle parking would be allowed within 30 feet of the edge of the designated route (FSM 7716.1). Because the Forest Service has not completed the necessary inventories, mapping, and suitability evaluations (field assessments) of the dispersed camping access spurs along these corridors, the 300-foot exemption would remain in place until those field assessments are completed. Once the field assessments are completed and the access routes for dispersed camping can be designated, the 300-foot exemption would no longer apply on the 12 corridors listed below. The MVUM maps will reflect policy changes on dispersed camping in these areas.

#### *List of Restricted Dispersed Camping Access Corridors*

- Gothic Corridor- Forest Service Road #317 (from the forest boundary past the Gothic town site to Schofield Pass)
- Washington Gulch– Forest Service Road # 811 (from the forest boundary to Elkton)
- Slate River Corridor- County Road 734 (from the forest boundary to private land at Pittsburg)
- Kebler Pass Corridor- Country Road 12 (from the forest boundary to above Irwin Campground ending at private lands, to the top of Ohio Pass and Kebler Pass, and up the Splains Gulch road)
- Cement Creek Corridor- Forest Service road #740 and #740.2C, D, E (from the forest boundary to Deadman trailhead)
- Spring Creek Corridor – Forest Service road #744 (from the forest boundary to ¼ mile beyond junction of Forest Service roads #744 and #880)

- Taylor Canyon – Forest Service road #742 (camping only in developed campgrounds from Almont to Rivers End campground).
- Taylor River Corridor -From the junction with Cottonwood Pass road (Forest Service road #3209) to Dorchester campground
- Quartz Creek Corridor- Forest Service road #765 (from the forest boundary past Pitkin to Hall Gulch road junction)
- Middle Quartz Creek- Forest Service road #767 (from the junction with Forest Service road #765 to Middle Quartz Creek campground)
- Long Branch- Forest Service road #780 (from the forest boundary to Baldy Lake and Longbranch trailheads)
- Needle Creek Reservoir Corridor- Forest Service road #781 (from the forest boundary to the upper end of Needle Creek Reservoir)

A detailed criterion used for the inventory and suitability evaluations to designate dispersed camping access routes along these corridors is contained in Chapter 3, Recreation Opportunity.

### Implementation Process

When a route is no longer needed and is to be closed to public travel, the actual closure procedures for the route are considered as part of the implementation process. Levels of treatment for route closures fall into two broad categories.

#### **1) No additional disturbance outside of the existing footprint:**

- Leave as is, do nothing on the ground (i.e., allow to naturally revegetate)
- Block entrance (i.e., install signs or barricades)
- Revegetate road prism (i.e., rip and seed)
- Drainage controls on road prism (i.e., water bars, out sloping)

#### **2) Disturbance outside of previously disturbed footprint:**

- Drainage structures removed (i.e., removal of bridges, large culverts, cross-drain culverts)
- Re-establishment of natural drainage patterns (i.e., re-establishing channels)
- Re-contouring (i.e., large cut and fill operations)

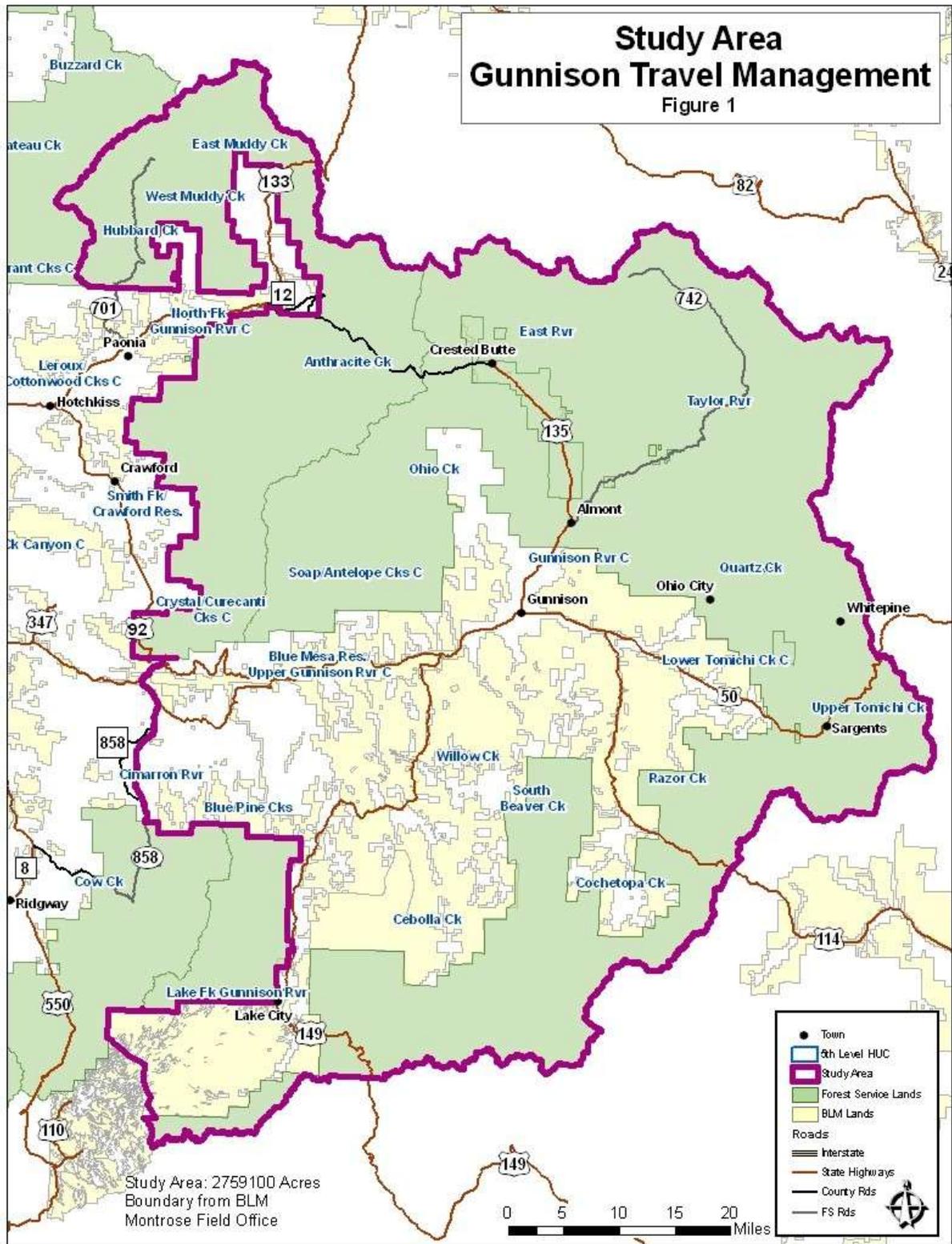
Physical closure may include a combination of any of the above examples. The type of closure activity (level of treatment) recommended for the facility will dictate the level of future NEPA decision documents applicable, if any. Closure of routes will be determined on a case-by-case basis and NEPA compliance will be conducted based on the expected level of disturbance, area of disturbance, and anticipated adverse impacts. Typically, treatment for route closures under category # 2 above will require additional NEPA. Route-specific NEPA analysis considers legal, policy, and regulatory requirements that must be incorporated into project design to avoid or minimize effects to the environment including effects to threatened and endangered species. The Forest Service and BLM would determine the specific level of treatment based on agency staff recommendations. Even if a NEPA decision document is not required, closures will be carried out in accordance with agency specifications, designs, and standards.

## **CONSULTATION HISTORY**

No previous consultation has occurred for travel management planning within the analysis area. Previous lynx consultation with the USFWS for activities occurring within the planning area occurred as part of a batch consultation for ongoing and proposed activities on the Gunnison and Paonia Ranger Districts in May, 2000. Additional consultation has occurred within the analysis area on a yearly basis since the 2000 batch consultation. None of these consultations addressed travel or travel related decision directly or indirectly affecting threatened or endangered species.

In April 2001, Forest Supervisor Robert Storch did sign a decision restricting travel to existing routes on the Gunnison National Forest. The decision only affected lands administered by the Forest Service. Prior to this decision, motorized and non-motorized modes of travel were allowed anywhere on the Forest outside designed Wilderness areas. A Biological Assessment was prepared for the project. The Assessment concluded —“No Effect” to threatened or endangered species known or suspected to occur in the planning area.

The Canada Lynx Conservation Assessment and Strategy (August, 2000), the Southern Rocky Mountain Lynx Project Decision Tree (June, 2004), and the Southern Rockies Lynx Management Direction (October, 2008) were used to make a determination of effect for the Canada lynx.



**PREFIELD REVIEWS**

**Known or Suspected Threatened, Endangered, and Candidate Species in the Analysis Area:**

The US Fish and Wildlife Service maintains a list of federally designated threatened, endangered, and candidate species that may occur or be affected by activities occurring in Colorado. The planning area is located within Gunnison, Hinsdale, Saguache, and Delta Counties in south-central Colorado. Table 3 lists Federally listed species that have been identified by USFWS with potential habitat within these counties.

<b>Table 3. Federally Listed and candidate species</b> (Determined from a unit species list of federally listed and candidate species & their status in Colorado, USFWS, Ecological Services, Colorado Field Office, ES/CO:FS/GMUG-MS 65412 GJ, updated May, 2009)		
<b>Species</b>	<b>Habitat type</b>	<b>Potential for Habitat/Species Occurrence</b>
Black-footed ferret ( <i>Mustela nigripes</i> ) <b>endangered</b>	Grasslands associated with prairie dog colonies	<b>No</b> suitable habitat, no potential for occurrence.* Outside the suspected range of the species.
Canada lynx ( <i>Felis lynx canadensis</i> ) <b>threatened</b>	Early successional spruce/fir and lodgepole pine forests used for foraging, mature and old growth spruce/fir and lodgepole pine containing large downed woody debris used for denning. Riparian areas, mixed aspen/conifer, mature spruce/fir, and shrublands to forested lynx habitat also used for foraging.	<b>Suitable</b> habitat exists within and adjacent to the planning area.
Gunnison's prairie dog ( <i>Cynomys gunnisoni</i> ) <b>candidate</b>	High mountain valleys & plateaus, grasslands	<b>Suitable</b> habitat exists within and adjacent to the planning area. Addressed as sensitive species in biological evaluation.
Mexican Spotted Owl <i>Strix occidentalis lucida</i> (threatened)	< 9100 feet. Large steep canyons with exposed cliffs and dense old growth mixed coniferous forests dominated by Douglas fir and/or white fir, or canyons in pinyon-juniper areas with small and widely scattered patches of old Douglas fir.	<b>No</b> suitable habitat, no potential for occurrence.* Outside the suspected range of the species.

<b>Table 3. Federally Listed and candidate species</b> (Determined from a unit species list of federally listed and candidate species & their status in Colorado, USFWS, Ecological Services, Colorado Field Office, ES/CO:FS/GMUG-MS 65412 GJ, updated May, 2009)		
<b>Uncompahgre fritillary butterfly (<i>Boloria acrocne</i>) endangered</b>	<b>Above 12000 feet. Snow willow patches ¼-acre or larger on north, northeast, east, and southeast aspects, often below a melting snow drift.</b>	<b>Suitable habitat exists within and adjacent to the planning area.</b>
Yellow billed cuckoo ( <i>Coccyzus americanus</i> ) <b>candidate</b>	Open woodland w/dense undergrowth, parks, riparian woodlands, urban areas w/tall trees	<b>No</b> suitable habitat, no potential for occurrence.*
Greenback cutthroat trout ( <i>Oncorhynchus clarki stomias</i> )	Mountain streams containing cold/cool water.	<b>Suitable</b> habitat exists within and adjacent to the planning area.
Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	Species present the Colorado and Gunnison Rivers downstream of the analysis area. Fish and Wildlife Service has determined watershed effects to the species is limited to depletion of water upstream of occupied habitat and/or known occupied habitat.	Downstream of the project area. Since a programmatic decision concerning travel management in the upper Gunnison basin will not result in depletion of water, the species was eliminated from further analysis.
Bonytail chub ( <i>Gila elegans</i> )	Species present the Colorado and Gunnison Rivers downstream of the analysis area. Fish and Wildlife Service has determined watershed effects to the species is limited to depletion of water upstream of occupied habitat and/or known occupied habitat.	Downstream of the project area. Since a programmatic decision concerning travel management in the upper Gunnison basin will not result in depletion of water, the species was eliminated from further analysis.
Razorback sucker ( <i>Xyrauchen texanus</i> )	Species present the Colorado and Gunnison Rivers downstream of the analysis area. Fish and Wildlife Service has determined watershed effects to the species is limited to depletion of water upstream of occupied habitat and/or known occupied habitat.	Downstream of the project area. Since a programmatic decision concerning travel management in the upper Gunnison basin will not result in depletion of water, the species was eliminated

<b>Table 3. Federally Listed and candidate species</b> (Determined from a unit species list of federally listed and candidate species & their status in Colorado, USFWS, Ecological Services, Colorado Field Office, ES/CO:FS/GMUG-MS 65412 GJ, updated May, 2009)		
		from further analysis.
Humpback sucker <i>(Gila cycha)</i>	Species present the Colorado and Gunnison Rivers downstream of the analysis area. Fish and Wildlife Service has determined watershed effects to the species is limited to depletion of water upstream of occupied habitat and/or known occupied habitat.	Downstream of the project area. Since a programmatic decision concerning travel management in the upper Gunnison basin will not result in depletion of water, the species was eliminated from further analysis.

\*Species without habitat and that do not occur within the planning area will not be directly, indirectly, or cumulatively impacted by proposed activities. No further analysis is necessary.

Site visits within the project area throughout the field seasons on a yearly basis have confirmed the suitability and availability of habitats for the above species. Threatened and endangered species that may use habitats within the project area include the Canada lynx and the Uncompahgre fritillary butterfly.

**FIELD CLEARANCES**

**Species Occurrence:**

**Canada Lynx:**

On February 3, 1999, the Colorado Division of Wildlife (CDOW) released 51 lynx in an attempt to reintroduce wild lynx back into the state of Colorado. Lynx were released in the San Juan Mountains near Creede, Colorado, approximately 15 miles south of the proposed Perfecto Creek Timber Sale. Additional lynx were released in the spring of 2000, 2003, 2004, 2005, and 2006. A total of 218 lynx have been released in Colorado as part of this reintroduction program to reestablish a viable lynx population in the Southern Rocky Mountain Ecosystem. No additional releases have occurred to date. Many of the lynx released remain in the core research area in southwest Colorado (New Mexico north to Gunnison, west as far as Taylor Mesa and east to Monarch Pass), with some movement of lynx in Colorado north of I-70 and into New Mexico, Utah, Wyoming, Montana, and Nebraska (CDOW 2009a).

CDOW researchers are currently tracking 42 out of 103 reintroduced lynx and 7 of 9 Colorado born lynx that are possibly still alive (CDOW 2009a). Reproduction was first documented in 2003 with the discovery of 16 kittens. Reproduction was documented during 2003 – 2006, with none documented in 2007 and 2008. Another 10 kittens were discovered in 2009 (CDOW 2009b). Through radio-telemetry CDOW researchers have confirmed lynx presence and dispersal on the Grand Mesa, Uncompahgre and Gunnison National Forests. From February 4,

1999 through February 1, 2005, 121 individual lynx were located within the Grand Mesa, Uncompahgre and Gunnison National Forests (Shenk 2006). With reproduction confirmed and concentrated lynx activity documented in some areas of the Forest, there are likely resident lynx present on the Gunnison Ranger District.

The lynx is a rare and elusive animal that uses large remote interior tracts of subalpine coniferous forest (generally from 8,000 feet in elevation up to treeline) with little human intrusion. Lynx habitat consists primarily of two very different forest types: early successional forests that contain relatively high numbers of prey for foraging, and late successional forests for denning and cover for kittens. Intermediate successional stage forests, while not required by lynx, provide lynx travel cover and connectivity between foraging and denning habitat (Ruggiero et al. 1994). The lynx is a specialized predator of snowshoe hares but will also eat grouse, mice, voles, shrews, squirrels, marmots, beaver, fish, porcupine, and ptarmigan, particularly when snowshoe hare abundance is low. However, even in periods of snowshoe hare scarcity, the hare still provides the highest percentage of biomass of the lynx diet with low percentages of biomass provided by other species (Ruggiero et al. 1994; Ruediger et al. 2000). Lynx abundance, reproduction, survival, and demography are highly dependent on snowshoe hare availability.

Snowshoe hares feed on grasses, forbs, and berries when they are available in the summer and in winter browse on buds, twigs, and bark of conifer seedlings and saplings, willow, alder, aspen, and other shrubs. Snowshoe hares often seek dense conifer thickets to feed on woody seedlings and saplings and to escape predators and winter cold. Areas of early successional vegetation with tree seedlings and shrubs are good habitat for snowshoe hares and thus form important foraging areas for lynx. In Colorado, snowshoe hare most commonly use dense stands of subalpine fir-Engelmann spruce and Douglas fir. In Washington, dense stands of lodgepole pine are used most often. In the Rocky Mountains, dense stands of aspen are found to be marginal habitat for snowshoe hares. Conifer stands provide greater concealment from predators, lighter snowpack, and warmer temperatures in winter than aspen stands. Conifer cover is critical for snowshoe hares during winter. During snow free months, snowshoe hares will use more open habitats where hardwoods and herbaceous vegetation provide alternate sources of food. Thick stands of willow and alder in riparian habitats are used by snowshoe hares and thus are considered foraging areas for lynx (Ruggiero et al. 1994; Ruediger et al. 2000).

Mature and old growth conifer forest stands that contain abundant large woody debris and heavy concentrations of downed logs are used by lynx for denning, travel corridors, and cover for young. Denning sites have been described as having a high density of downed and suspended trees that provide both vertical and horizontal structure. Other important characteristics of denning sites are forest stands of at least 2.5 acres in size, proximity to early successional foraging habitat, and minimal human disturbance. Lynx are mostly solitary and have large home ranges (6-8 square miles commonly, but vary from 5-94 square miles), being capable of moving extremely long distances in search of food. They are well adapted to a snow-covered environment, having large furry paws that allow them to travel lightly over snow much better than bobcats, lions, or coyotes (Armstrong 1987, Finch 1992, Halfpenny 1986, Hoover and Wills 1987, McKay 1991, Murray 1987, Ruggiero et al. 1994, USDA Forest Service 1991, USFWS 1998, Zeveloff 1988).

Lynx have relatively narrow habitat preferences (Mckelvey et al. 2000, and Gaines 2002) and to assess the effects of activities on lynx habitat, Lynx Analysis Units (LAU) have been identified. These areas contain adequate suitable habitat to support resident lynx and are an appropriate scale for addressing cumulative effects (Ruediger et al. 2000, Gaines et al. 2002). Continued threats to the lynx include: forest fragmentation caused by roading and logging of timber. Roads result in increased mortality of lynx and other wildlife. Roads also provide access to other predators that normally would not be able to access lynx range, thus making competition for lynx prey species more intense.

The project area contains all or portions of forty-two Lynx Analysis Units (LAU's) on both Forest Service and BLM lands. Much of the project area overall is considered to be potential habitat for the lynx with lynx denning, winter foraging, and "other" lynx habitat. "Other" lynx habitat is defined as capable lynx habitat but currently not winter foraging or denning habitat. Stands mapped as other lynx habitat offer additional foraging opportunities during non-snow seasons and are within a matrix of higher-quality habitat but lack the structural attributes necessary to sustain year-round snowshoe hare populations. Other lynx habitat often consists of stands that are in close proximity to high quality snowshoe hare habitat.

### **Uncompahgre Fritillary Butterfly**

The Uncompahgre fritillary butterfly is an endangered alpine species which is closely associated with patches of snow willow (*Salix reticulata nivalis*) at or above 12,500 feet. Extensive areas of suitable alpine habitat are located within the San Juan and La Garita Mountains of southwestern Colorado. Potential habitat within the planning area includes the La Garita Wilderness and surrounding alpine habitat. All known suitable habitat within the planning area has been surveyed for this species. At the present time, there are eleven known colonies containing fourteen populations of butterflies located in the San Juan and La Garita Mountains. Five colonies within the planning area are located on GMUG Forest public lands within the La Garita Wilderness and one colony occurs within the Wilderness Study Area on BLM public lands southwest of Lake City.

### **Greenback cutthroat trout**

In 2007 and 2008, tissue samples were collected from captured fish from several streams that support cutthroat trout populations on the GMUG and sent to Pisces Molecular in Boulder, Colorado. The amplified fragment length polymorphism (AFLP) technique was used to examine genetic variation. Seventeen of the populations were determined to be genetically "pure" or nearly pure GBCT. In addition, the Greenback Trout Recovery Team identified 6 additional streams that are suspected to support "pure" populations of greenback cutthroat trout based on previous genetic testing or based upon stocking history. Of the 23 populations documented or suspected on the GMUG, 13 occur in the Gunnison Travel Analysis Area. A complete discussion of GBCT populations in the Analysis Area is provided in the environmental baseline section.

DETERMINATION OF EFFECTS

**Environmental Baseline:**

***Canada Lynx***

Past, current, and planned human actions present in the planning area related to travel management activities include those associated with lynx reintroduction efforts and habitat availability, roads, trails, and recreation use. These activities are discussed in detail below.

As previously described, the CDOW is conducting an ongoing project to reintroduce lynx into Colorado and monitor their movements, survival, and reproductive success. CDOW researchers have documented successful reproduction and through radio-telemetry lynx have been confirmed as passing through and being present on the Gunnison Ranger District. Further lynx augmentations could occur by the CDOW in their effort to establish viable lynx populations in Colorado. Based on documentation of successful reproduction and continued lynx augmentations, an increase in lynx populations is anticipated with some additional lynx likely taking up residency on the Gunnison and Paonia Ranger Districts and Gunnison BLM.

The project includes all of forty-two LAU’s on USFS and BLM lands in the Gunnison Basin and the North Fork Gunnison River Basin on the Paonia Ranger District. Lynx habitat mapping within these LAUs identifies approximately 1.4 million acres of lynx denning, winter foraging, and other habitat in the area (Table 4). All LAU’s currently have less than 5% unsuitable habitat with the vast majority of LAU 1% or less (Table 5).

<b>Table 4. Environmental baseline status of lynx habitat for all LAU’s within the Gunnison Basin Federal Lands Travel Management Project (USFS and BLM lands)</b>		
Habitat description	Acres of habitat within LAU's	Percent of all lynx habitat w/in LAU’s
Winter forage	260,481	19.1%
Denning	436,676	32.0%
Other	659,297	48.2%
Unsuitable	9,825	0.7%
Total lynx habitat	1,366,279	100.0%

<b>Table 5. Total acres of habitat, acres and percent currently unsuitable habitat by LAU within the Gunnison Basin Federal Lands Travel Management Plan (USFS and BLM Lands)</b>					
LAU Name	Denning Habitat (acres)	Other Habitat (acres)	Winter Habitat (acres)	Acres/percent currently unsuitable	Total Acres Lynx Habitat
Almont	2,954	14,984	12,239	39/<1%	49,654
Anthracite	4,562	12,772	2,845	0/0	35,342
Bald Mountain	10,395	20,939	1,520	352/1%	55,792

<b>Table 5. Total acres of habitat, acres and percent currently unsuitable habitat by LAU within the Gunnison Basin Federal Lands Travel Management Plan (USFS and BLM Lands)</b>					
Beckwith Mountain	14,593	34,973	1,938	0/0	79,159
Black Mesa	14,773	17,257	3,585	563/2%	52,253
Blue/Pine Crk	3,752	16,473	11,601	0/0	31,825
Brush Creek	18,895	15,314	3,207	0/0	63,008
Castle Pass	16,633	12,012	2,104	13/0	41,481
Cathedral	5,376	10,468	5,694	226/1%	38,832
Cebolla	14,339	13,760	9,255	353/1%	59,557
Chester	16,430	6,810	20,694	667/1%	52,120
Cochetopa	8,761	9,557	11,671	990/3%	55,363
Crater Lake	12,756	14,967	6,973	536/2%	46,399
Fossil Ridge	12,859	7,383	37,970	17/<1%	68,696
Gothic	12,888	12,235	6,845	76/<1%	68,058
Grizzly Peak	2,608	2,430	25,103	387/1%	47,504
Huntsman Mountain	468	21,056	4,410	0/0	32,555
Lake City	11,113	9,339	4,063	665/3%	44,209
Los Pinos Creek	4,973	9,614	11,435	906/4%	35,511
Mount Gunnison	6,513	18,175	440	0/0	47,904
Mule Park	2,564	18,742	3,432	7/<1%	37,068
Needle-Razor	13,881	5,087	25,953	105/<1%	56,750
Peeler Lakes (Kebler)	7,014	14,495	1,016	0/0	32,400
Pitkin	24,408	7,408	20,359	369/1%	69,339
Ragged Mountain	974	10,734	2,413	0/0	20,175
Red Creek	12,119	21,024	10,377	949/2%	57,544
Rocky Brook	11,182	6,438	21,614	373/1%	46,606
Sawtooth Mountain	8,495	13,008	9,404	0/0	41,462
Slumgullion North	2,711	1,493	374	0/0	7,241
Slumgullion South	3,052	2,518	1,455	0/0	11,771
Soap Creek	14,689	23,550	7,100	369/1%	71,443
South Beaver Creek	4,063	11,606	6,526	0/0	22,195
Stewart Creek	6,421	17,938	10,197	1,592/5%	57,000
Tincup	8,911	3,333	22,194	22/1%	47,696
Tomichi Dome	6,367	8,670	10,030	478/2%	39,825
Trail Creek	5,793	1,909	15,771	161/1%	28,805
Upper Taylor	2,729	3,106	22,108	0/0	38,499
Upper Tomichi	32,021	4,800	9,891	41/<1%	58,225
Whetstone Peak	6,320	8,489	793	0/0	27,412
Whitecross Mtn.	13,623	16,593	12,277	0/0	42,493

Six lynx key linkage areas occur within or partially within the planning area. The North Pass/Cochetopa Hills area is a linkage zone within the Cochetopa and Needle Razor LAUs for lynx to travel between the Cochetopa Hills and the San Juan Mountains. The Poncha Pass linkage zone extends westward into the Marshall and Monarch Pass areas in the Upper Tomichi LAU. The Slumgullion/Spring Creek Pass linkage zone lies within the Slumgullion South and Cebolla LAUs. The Cottonwood /Tincup linkage zone lies within the Tincup LAU and is a movement corridor along and through the Continental Divide. The McClure Pass linkage zone lies within the Ragged Mountain and Huntsman Mountain LAUs. The Silverton-Lake City linkage area lies within the Whitecross Mountain LAU on BLM public lands. Total (open and administratively closed) motorized route density range from a low of 0.11 mi/mi<sup>2</sup> to a high of 2.24 mi/mi<sup>2</sup> (Table 6). Open route density ranges from a low of 0.11 mi/mi<sup>2</sup> to a high of 1.98 mi/mi<sup>2</sup>.

<b>Table 6.</b> Motorized route density in Lynx Linkages areas within the Gunnison Travel Analysis Area under existing baseline conditions (alt. 1). Densities are presented as total miles of route/mi <sup>2</sup> linkage area and miles of routes open to the public/mi <sup>2</sup> linkage area.		
<b>Lynx Linkage Area</b>	<b>Total miles of route /mi<sup>2</sup> linkage area</b>	<b>Open route density (miles of route open to the public)/ mi<sup>2</sup> linkage area</b>
McClure Pass	0.82	0.70
Cottonwood/Tincup	1.98	0.98
Poncha Pass	2.24	1.89
North Pass/Cochetopa	2.03	1.74
Slumgullion/Spring Creek	1.98	1.98
Silverton-Lake City	0.11	0.11
Grand Total	1.55	1.39

***Recreation Use***

Recreational activities within the planning area, occurring primarily in the summer, fall, and winter, include 2-wheel and 4-wheel drive vehicle driving; ATV, motorcycle and mountain bike riding; firewood cutting; dispersed camping; backpacking; hiking, hunting, and fishing. Moderate to heavy dispersed camping use occurs during the summer with locally heavy dispersed camping use in the fall during hunting season. Recreational use is extensive during the big game hunting seasons.

***Roads and Motorized Trails***

There are a total of 6,280 miles of open roads or motorized trails within the planning area. There are three major highways (Hwy 50, Hwy 133 and Hwy 114) bisecting the area. Average annual daily traffic on these highways range from 1400 Vehicles Per Day (VPD) on

Hwy 133 to 2900 VPD Hwy 50. On Forest Service and BLM administered lands, there are also numerous County Roads. Both major highways and County roads are administered by other agencies (State of Colorado and local County governments) and therefore not subject to the Gunnison Travel decision.

Routes under jurisdiction of the Forest or BLM are essentially those routes authorized by the 2001 Gunnison Travel Interim Restrictions. Overall (USFS 1991) open road and motorized trail density is calculated at 1.18 miles per square mile. Additional unclassified user-created motorized routes exist within the planning area, but are currently unauthorized routes. Motorized trails in the planning area total 575 miles. Another 410 miles of trail outside of wilderness are non-motorized. Motorized recreation with full size vehicles, motorcycles, ATVs, and snowmobiles is extensive throughout the planning area.

Traffic count data has been collected on 32 maintenance level 3-5 roads in the analysis area. Data is collected from June through November. Of these 32 routes, 19 have a period of record of at least 8 years (Table 7). Comparing average daily vehicular traffic for the summer months from 2001 to 2004 compared to 2005-2008 showed an average daily increase of 18%. Three routes showed a slight decrease in daily use. Average daily use range from a high of 1055 vehicles per day on the Taylor Canyon road to a low of 21 vehicles per day on the Stewarts Creek road. The Taylor Canyon road is a paved County Road.

<b>Table 7. Average daily vehicular traffic for selected routes in the Gunnison Travel Analysis Area.</b>				
<b>Route Name</b>	<b>Average daily use 2001-2004</b>	<b>Average Daily use 2005-2008</b>	<b>Percent Change</b>	<b>Maximum Daily use</b>
Slumgullion	53	117	+121	141
Los Pinos-Cebolla	67	40	-40	100
Waunita Pass	36	42	+16	53
Big Meadows	43	53	+24	65
Stewarts Creek	16	21	+33	27
Marshall Pass	34	32	-5	37
Pitkin	192	232	+21	261
Kebler Pass	444	492	+11	513
Gothic	230	241	+5	296
Cement Creek	173	262	+51	278
Tincup	313	325	+4	363
Texas Creek	390	537	+38	729
Spring Creek	130	136	+5	146
Cottonwood Pass	449	543	+21	567
Taylor Dam	626	634	+1	690

<b>Table 7. Average daily vehicular traffic for selected routes in the Gunnison Travel Analysis Area.</b>				
Taylor Canyon	860	964	+12	1055
Upper Tincup	102	117	+14	130
Stevens Gulch	101	107	+6	128
Lower Cow Camp	41	39	-6	45
Averages	226	259	+18	

***Greenback cutthroat trout***

Greenback cutthroat trout - GBCT (*Oncorhynchus clarki stomias*) is native to the headwaters of the South Platte and Arkansas River drainages and small segment of the South Platte drainage in Wyoming. Greenback distribution and numbers of fish declined rapidly beginning in the 1800’s. By 1973 when ESA was passed into law greenback only existed in two small headwater streams (Como Creek and South Fork, Cache La Poudre River). The subspecies was listed under the ESA, as “endangered” in 1973, and downlisted to “threatened” in 1978.

Greenback, like all cutthroat subspecies, inhabits cold water streams and lakes with adequate spawning habitat present in the spring of the year. Spawning is generally in the spring when water temperatures reach 5C-8C. Greenback feed on a wide variety of organisms but their primary source of food is terrestrial insects. Size and growth of greenbacks varies, based upon elevation and population size. However, greenbacks typically do not reach a large size, 1-2 pounds maximum.

Within the analysis area, 13 populations GBCT are known to occur in 9 sub-watersheds (Table 8). Within these sub-watersheds, approximately 32 miles of stream are known to be occupied by GBCT. Habitat conditions are considered good on all occupied reaches. Population estimates for fish over 150mm range from a low of 50 in West Antelope Creek to over 400 fish in West Fork Terror Creek. All of the occupied streams are small with a wetted width less than 6 feet and flow less than 2 cubic feet per second (cfs). Because of their small size and low base flows, streams are often vulnerable to drought.

<b>Table 8. Sub-watersheds containing populations of GBCT in the Gunnison Travel analysis area</b>					
<b>Sub-Watershed (HUC 6)</b>	<b>Stream Name</b>	<b>Habitat Conditions<sup>1</sup></b>	<b>Miles of occupied habitat</b>	<b>Total adult population estimates (high)<sup>2</sup></b>	<b>Genetic Purity</b>
14020002031 (Antelope Creek)	West Antelope Creek	Good	5	50	Pure – no evidence of hybridization
140200045602 (Upper Hubbard) 140200045603 (Alder Ck.)	Main Hubbard Creek, main	Good	2	242	Pure – minor hybridization with other cutthroat subspecies
140200045602	Middle Hubbard	Good	2	150	Pure – minor

(Upper Hubbard) 140200045603 (Alder Creek)	Creek				hybridization with other cutthroat subspecies
140200041104 (Paonia Reservoir)	Deep Creek	Good	3	111	Pure – no evidence of hybridization
140200045502 (Upper Muddy Ck.)	Dyke Creek	Good	4	116	Pure – minor hybridization with other cutthroat subspecies
140200041103 (Terror Ck.)	East and West Terror Creek Cunningham Creek	Good	3 2	498 (West Fk.) 490	Pure – minor hybridization with other cutthroat subspecies
140200040901 (Lower East Muddy)	Henderson Creek	Good	4	Unknown	Unknown but suspected greenback based upon stocking history
140200040903 (Clear Fk.)	Clear Fork Muddy	Excellent	2	NA	Pure – minor hybridization with other cutthroat subspecies

Sub-watersheds supporting GBCT generally have low to moderate levels of anthropogenic influence with seven of the nine classified as activity class 1 or 2. (Table 9). Antelope Creek and Paonia Reservoir sub-watersheds are Integrity Class 3 and 4 respectively. Factors influencing lower integrity classes are motorized route density and percent of canopy removed by past vegetation treatment projects.

<b>Table 9. Greenback Cutthroat Trout Watershed Integrity, Sensitivity, and Activity Ratings</b>					
Greenback Streams	Watersheds	Integrity Class**	Sensitivity Class	Activity Class	Factor Influencing Integrity Class 3 or 4 results
West Antelope Creek	Antelope Creek	3	2	3	Motorized route density, % canopy removed
Hubbard Creek (Main /Middle)	Upper Hubbard Creek	2	3	2	
Deep Creek	Paonia Reservoir	4	3	4	Motorized route density
Dyke Creek	Upper West Muddy Creek	1	2	2	
Roberts Creek	Lower West Muddy Creek	1	2	2	
West/East Fork Terror Creek, Cunningham Creek	Terror Creek	2	3	2	
Henderson Creek	Lower East Muddy	1	3	1	
Clear Fork Muddy Rock Creek	Clear Fork East Muddy	1	3	1	
Chair Creek	Lee Creek	1	3	1	

\*\*

**Integrity Class I** - These sub-watersheds have the highest relative integrity and are functioning in a near natural state with minimal anthropogenic influence. About 40 percent of the sub-watersheds on the GMUG are included, accounting for about 30 percent of the total GMUG area.

**Integrity class II** - These sub-watersheds generally have moderate activity levels coupled with low to moderate physical sensitivity levels. Activities have altered natural conditions to some extent, but most likely processes remain in the range of historic variability. About 35 percent of the sub-watersheds fall into this integrity class and comprise just over 40 percent of the GMUG area.

**Integrity Class III** - This group of sub-watersheds has moderate or higher activity levels coupled with moderate to high sensitivity. While these watersheds may have diminished levels of natural function, they are not impaired and beneficial uses are sustained. About 15 percent of the sub-watersheds fall into this integrity class and comprise just over 17 percent of the GMUG area.

**Integrity Class IV** - This group of sub-watersheds have the greatest likelihood of specific degraded stream segments with some impairment of beneficial use, or unstable conditions that are adversely affecting aquatic conditions. Twenty-three or slightly more 10% of the sub-watersheds are in this class, which comprise about 12 percent of the GMUG area.

## **Effects of the Project:**

### **Canada Lynx (threatened)**

The Canada Lynx Conservation Assessment and Strategy (LCAS) were reviewed for biological and technical information on this species. The LCAS recommends the following conservation measures relevant to roads, trails, and recreational activity that are relevant to travel management.

- *Determine where high total road densities ( $>2\text{mi}/\text{mi}^2$ ) coincide with lynx habitat, and prioritize roads for seasonal restrictions or reclamation in those areas.*
- *Locate trails and roads away from forested stringers.*
- *Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.*

Relevant guidelines identified within the Southern Rockies Lynx Management Direction (October 2008) include:

- *Objective HU 02 – manage recreational activities to maintain lynx habitat and connectivity.*
- *Guideline HU G7 – new permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity. New permanent roads and trails should be situated away from forested stringers.*
- *Guideline HU G9 – if project level analysis determines that new roads adversely affect lynx, then public motorized use should be restricted. Upon project completion, these roads should be reclaimed or decommissioned, if not needed for other management objectives.*

These guidelines and conservation measure, where appropriate, were used in identifying existing roads and trails for closure and/or to determine whether proposed new routes were appropriate.

Table 10 is a summary of motorized route densities for LAUs affected by the Gunnison Travel decision. Both alternative 1 and alternative 5 are presented. Table 11 provides a comparison of the total motorized route density and open motorized route density by alternative. Table 12 is a summary of the miles of route proposed for decommissioning in lynx habitat by LAU. All these tables will be discussed for alternative 1 and alternative 5 below.

<b>Table 10. Total Motorized Route Densities (mi/mi<sup>2</sup>) and percent change by LAU</b>			
LAU	Alternative 1 No Action	Alternative 5 Preferred Alternative	Percent change
Almont	1.74	1.62	-6.9
Anthracite	0.29	0.25	-13.7
Bald Mountain	0.56	0.31	-44.6
Beckwith Mtn.	0.35	0.33	-5.7
Black Mesa	1.51	1.00	-33.8
Blue/Pine Crk.	0.45	0.45	0
Brush Creek	2.30	1.56	-32.2
Castle Pass	0.57	0.50	-12.3
Cathedral	0.19	0.11	-42.1
Cebolla	0.63	0.60	-4.8
Cebolla Crk.	0.60	0.57	-5.0
Chester	2.03	1.79	-11.8
Cochetopa	1.91	1.32	-30.9
Crater Lake	0.96	0.56	-41.7
Fossil Ridge	0.80	0.80	0
Gothic	1.41	1.12	-20.6
Grizzly Peak	1.50	1.27	-15.3
Huntsman Mtn.	0.12	0.03	-75.0
Lake Fork Gunnison	0.49	0.49	0
Little Cimarron	0.30	0.30	0
Los Pinos Creek	1.47	1.26	-14.3
Mount Gunnison	2.26	0.95	-57.9
Mule Park	1.04	0.95	-8.7
Needle-Razor	1.75	1.53	-12.6
Peeler Lakes	0.86	0.71	-17.4
Pitkin	2.70	2.12	-21.5
Ragged Mtn.	0.79	0.74	-6.3
Red Creek	1.29	1.07	-17.1
Rocky Brook	2.23	1.64	-26.5
Sawtooth Mtn.	0.89	0.84	-5.6

<b>Table 10. Total Motorized Route Densities (mi/mi<sup>2</sup>) and percent change by LAU</b>			
LAU	Alternative 1 No Action	Alternative 5 Preferred Alternative	Percent change
Slumgullion North	0.41	0.34	-17.1
Slumgullion South	0.68	0.52	-23.5
Soap Creek	0.36	0.25	-30.6
South Beaver Crk.	0.87	0.87	0
Stewart Creek	0.99	0.71	-28.3
Tincup	2.43	2.02	-16.9
Tomichi Dome	2.65	1.70	-35.8
Trail Creek	2.11	1.31	-37.9
Upper Taylor	1.05	0.91	-13.3
Upper Tomichi	2.01	1.66	-17.4
Whetstone Peak	0.85	0.63	-25.9
Whitecross Mtn.	0.37	0.37	0
Total road density for all LAU's	1.16	0.91	-19.8

**Table 11.** Comparison of total motorized route density and open (w/out administrative routes) in lynx linkage areas for no action (alt. 1) and preferred action (alt. 5) for the Gunnison Travel analysis area.

Lynx Linkage Area	Alternative 1		Alternative 5	
	Total miles of route /mi <sup>2</sup> linkage area	Open route density (mi of route open to the public)/ mi <sup>2</sup> linkage area	Total miles of route /mi <sup>2</sup> linkage area	Open route density (mi of route open to the public)/ mi <sup>2</sup> linkage area
McClure Pass	0.82	0.70	0.78	0.66
Cottonwood Tincup	1.98	0.98	0.88	0.88
Poncha Pass	2.24	1.89	1.83	1.34
North Pass Cochetopa	2.03	1.74	2.03	1.65
Slumgullion Spring Creek	1.98	1.98	1.96	1.83
Silverton-Lake City	0.11	0.11	0.11	0.11
<b>Grand Total</b>	1.55	1.39	1.38 (-11%)	1.15 (-17%)

**Table 12.** Miles of motorized route in mapped lynx habitat proposed for decommissioning under the preferred alternative.

LAU Name	Denning Habitat	Other Habitat	Unsuitable	Winter Habitat	Total miles
Almont	1.06	4.66	0	.07	6.42
Anthracite	0	0.12	0	0	0.12
Bald Mountain	1.88	4.46	0.02	.027	6.66
Beckwith Mtn.	0	0.81	0	0.04	0.85
Black Mesa	5.85	10.86	0.23	3.54	20.48
Blue/Pine Crk.	0	0	0	0	0
Brush Creek	2.46	3.79	0	1.32	7.56
Castle Pass	1.11	2.16	0	1.30	4.57
Cathedral	0	0.23	.013	0	0.36
Cebolla	0.16	0.01	0	0	0.18
Cebolla Crk.	0	0	0	0	0
Chester	8.13	8.53	0	8.93	25.59
Cochetopa	30.1	6.87	0.11	3.88	13.87

<b>Table 12. Miles of motorized route in mapped lynx habitat proposed for decommissioning under the preferred alternative.</b>					
LAU Name	Denning Habitat	Other Habitat	Unsuitable	Winter Habitat	Total miles
Crater Lake	0.22	3.37	0	0.08	3.67
Fossil Ridge	0.84	0.85	0	9.37	11.06
Gothic	5.19	1.57	0.12	0.51	7.38
Grizzly Peak	1.45	0.18	0.32	8.95	10.90
Huntsman Mtn.	0.65	0.36	0	0	1.01
Lake Fork Gunnison	0	0	0	0	0
Little Cimarron	0	0	0	0	0
Los Pinos Creek	0.78	2.87	0	2.86	0
Mount Gunnison	2.48	12.79	0	0.09	15.36
Mule Park	0.16	0.80	0	0.43	1.39
Needle-Razor	1.92	3.40	0	5.84	11.16
Peeler Lakes	1.34	3.82	0	0.08	5.24
Pitkin	15.27	8.09	0.11	31.83	55.30
Ragged Mtn.	0	0.24	0	0	0.24
Red Creek	1.56	13.85	0.36	1.41	17.17
Rocky Brook	4.86	2.87	0	6.17	13.91
Sawtooth Mtn.	0	0.59	0	0.73	1.32
Slumgullion North	0	0	0	0	0
Slumgullion South	0.17	0.39	0	0.03	0.59
Soap Creek	0.19	0.97	0	0.45	1.61
South Beaver Crk.	0	0	0	0	0
Stewart Creek	0.10	6.62	0	.062	7.33
Tincup	0.95	1.70	0.04	10.17	12.86
Tomichi Dome	10.56	14.68	0.24	14.26	39.75
Trail Creek	2.81	2.63	0.33	7.36	13.14
Upper Taylor	3.04	0.02	0	2.84	5.90
Upper Tomichi	2.91	2.25	0	7.53	12.68
Whetstone Peak	0.18	2.45	0	0.27	2.89
Whitecross Mtn.	0	0	0	0	0
Total road density for all LAU's	81.31	129.89	2.01	131.83	345.03

## **Alternative 1 – No Action - Existing Condition**

### **Direct and Indirect Effects:**

Alternative 1 will maintain existing road and motorized trail densities. Human disturbance and habitat fragmentation related to roads and trails would continue. No opportunity to reduce route densities would occur. Total route density within LAU's in the planning area is currently 1.18 mi/mi<sup>2</sup> (Table 10). No opportunity to remove routes that exist in forested stringers, ridgetops, or areas identified as important to lynx habitat connectivity would occur. Currently 9 LAUs have motorized route density in excess of the 2.0 mi/mi<sup>2</sup> recommended by the LCAS.

Total miles of motorized route range from 0.11 mi/mi<sup>2</sup> in the Silverton-lake City linkage area to 2.24 mi/mi<sup>2</sup> in the Poncho Pass linkage area (Table 11). However, if administrative routes (routes closed to the public) are removed from the calculations motorized route density is reduced from a high of 1.98 mi/mi<sup>2</sup> to a low of 0.11 mi/mi<sup>2</sup>. Because administrative routes are closed to the public, the number of vehicles is significantly reduced, lessening potential direct mortality of lynx from vehicular collisions. These routes will continue to fragment habitat reducing its quality.

Based upon traffic use patterns from 19 routes in the planning area, traffic use from 2004 to 2008 has increase approximately 1-2% annually. Future increases in traffic use are difficult to predict due to other factors such as gasoline prices and the overall economy. Yearly traffic counts indicate a maximum vehicle use within the planning area on public lands is 1055 vehicles per day (VPD) on the Taylor Canyon Road which is a county road not under Forest Service jurisdiction. Canadian studies suggest that 2,000-3,000 vehicles per day can create a significant threat to lynx mortality (Ruediger, 2000). Average daily use from 2005-2008 in the planning area ranged from a low of 21 vehicles per day to a high 690 VPD on routes managed by the Forest Service or BLM, which is well below the 2,000 VPD threshold. While some risk of lynx mortality from direct collision with a motorized vehicle still exists on routes in the analysis area, vehicular traffic is well below 2,000 VPD and believed to be discountable.

Existing motorized routes can fragment lynx habitat reducing its quality. Habitat adjacent to routes with higher traffic volumes is likely to be most affected. Individual lynx may be subject to increased human disturbance, temporary displacement, and possible permanent displacement if human activity in an area is on-going and at a high level. However, abundant lynx habitat will remain within each LAU to provide lynx denning, winter foraging, and travel habitat. The existing condition is unlikely to change lynx habitat to unsuitable, impair lynx home ranges, disrupt habitat connectivity, or compromise the function of any of the affected LAU's. No other direct or indirect effects are expected.

## **Alternative 5 – Preferred Alternative**

### **Direct and Indirect Effects:**

#### *Motorized travel (open to the public and administrative routes)*

Reduction of motorized road densities as proposed in Alternatives 5 may have a beneficial impact on the species in the long term by reducing the potential for human disturbance and reducing habitat fragmentation. Total road densities across all LAU's are reduced by 0.25 mi/mi<sup>2</sup> to 0.91 mi/mi<sup>2</sup> (Table 10). Out of 42 LAU's, 38 have a reduction in road density and four LAUs remains the same. During the GIS analysis some minor differences in motorized route density between alternative 1 and alternative 5 for three LAUs (Blue/pine Creek, Lake Fork, and South Beaver) on BLM were detected. Review of the data in these LAUs indicated that these small differences were due to rounding errors in the calculations. No additional motorized routes are proposed in these LAUs under the preferred alternative. Overall motorized route density across all LAUs will be reduced by 19.8%.

Two LAU's, Tincup and Pitkin, show reduced road densities, but are still above 2.0 mi/mi<sup>2</sup> and should be considered for additional route closures in the future. However open route density is 1.21 mi/mi<sup>2</sup> in the Tincup LAU and 1.32 mi/mi<sup>2</sup> in the Pitkin LAU. Routes only open for administrative use only will typically only see 1 or 2 vehicles per week and often do not have any vehicular traffic for several weeks/months at a time. Reduced traffic volume reduces risk or direct lynx mortality from vehicular collisions. Routes will continue to have at least some affect on habitat quality due to fragmentation but these effects are not expected to reduce overall quality of functionality of lynx habitat.

Road closures in an area could displace traffic to existing open routes resulting in an increase in traffic. However, this displacement of use will be minimized since the vast majority of routes proposed for closure are considered spur route extending off major routes a few hundred yards to less than a mile. While some increased use could occur it is not expected to be as a result of closure of other routes, but as a result of predicted slight increases of total motorized use in the analysis area (1-2%). At the rate of predicted increase, it would take approximately 25 years to reach 1000 VPD on the highest used route (Taylor Dam road) which is well below a threshold of concern for direct lynx mortality for vehicular traffic. Traffic counts on key routes would continue across the planning area.

Key lynx linkage areas within the planning area will see reduced routes under this alternative. Total miles of motorized route density will be reduced in 5 of the 6 linkage areas and remain the same in one (Table 11). Total miles of motorized routes will be reduced 11% overall. The North Pass/Cochetopa linkage area will have a total motorized route density exceeding 2.0 mi/mi<sup>2</sup>. Open (all routes but administrative routes) will be reduced in 4 of the 6 linkage areas with an average reduction of 17%. All linkage areas will have an open route density less than 2.0 mi/mi<sup>2</sup>. Connectivity between major drainages, across mountain ranges and the Continental Divide, and between LAU's would be maintained and enhanced due to reduced fragmentation and potential for human disturbance.

There are 345 miles of routes in mapped lynx habitat proposed for decommissioning under the preferred alternative (Table 12). Methods of decommissioning range from installation of a sign at the entrance of a closed route to total obliteration of the road. As described in the proposed action, category 1 closures require no additional disturbance outside the existing footprint and thus typically do not require additional NEPA to implement. Category 2 closures result in additional disturbance outside previously disturbed footprint and do require additional NEPA. How a particular route will be closed is dependent upon the local line officer and the effectiveness of less intrusive, less expensive methods. All routes are monitoring to determine effectiveness of closures methods.

To estimate direct effects of route closures, this assessment took a “worst case scenario” approach. It was assumed that all 345 miles of route will be closed using category 2 techniques (Table 12). However, most routes targeted for decommissioning will be done using category 1 route closure techniques. Approximately 81 miles, 130 miles, 2 miles and 132 miles of motorized route will be decommissioned in denning, other, unsuitable and winter habitat respectively. Given that the average motorized route (roads, ATV trails and motorcycle trails combined) have an average width of 10 feet, total acres of disturbance is approximately 418 acres. The Forest anticipates it will take 10 years to fully implement the Travel Plan or approximately 42 acres of disturbance could occur annually.

Effects of route obliteration include physical removal of the route prism with heavy equipment and /or felling of selected trees adjacent to the route to block motorized access. Typically the existing route prism has few trees and therefore currently not supporting suitable lynx habitat. Use of heavy equipment and the felling of trees will result in short-term disturbance from human activity and noise. Experience from travel management implementation on the Grand Mesa and the Uncompahgre National Forests indicate disturbance is short-term lasting 1-5 days in any given area. While these actions are occurring, some short-term displacement of lynx into suitable adjacent habitat could occur. Once the route has been successfully closed, vegetation, including trees, again become established. Typically within spruce-fir stands, seedlings become tall enough to provide snowshoe hare habitat approximately 10 years following effective closure (Grode, pers. comm). Route obliteration is unlikely to change lynx habitat to unsuitable, impair lynx home ranges, disrupt habitat connectivity, or compromise the function of any of the affected LAU's. All negative effects are expected to be short-term and discountable.

#### *Possible New Routes*

The preferred alternative also identifies approximately 40 miles of non-motorized routes that could be constructed in the future. These routes are expected to affect lynx habitat in Gothic, Brush Creek and Whetstone LAUs. In the Gothic LAU, approximately 26 miles of non-motorized route would be constructed. The routes will be designed to avoid lynx habitat where possible. It is estimated that approximately 1/3 of the proposed 26 mile route could be in lynx habitat (8.5 miles). Non-motorized mechanized travel routes have an average constructed width of 6 feet. Estimated acre of lynx habitat potentially affected is 6.2 acres. Even if all 6.2 acres were converted to unsuitable it would only increase the amount of unsuitable habitat in the Gothic LAU from the current 76 acres to 82.2 acres which is approximately 0.1% of the total

lynx habitat in the LAU. The small level of potential conversion will not affect functionality of habitat in the LAU and therefore is discountable.

In the Brush Creek LAU an additional 0.2 miles motorized (ATV) trail could be constructed to by-pass private land. ATV routes are generally a little wider so a width of 8 feet was used to calculate potential impact. Approximately 0.2 acres of lynx habitat could be affected. The Brush Creek LAU currently has no acres of lynx habitat in an unsuitable condition. The addition of 0.2 acres is less than 0.0003% of the total lynx habitat in the LAU. Effects are therefore not quantifiable at the LAU scale, will not affect functionality of lynx habitat and therefore are believed to be discountable.

In the Whetstone LAU 0.4 miles of motorized trail could be realigned and 0.8 miles motorized connector trail could be constructed. Again using assumptions above, total acres of lynx habitat potentially affected is 1.2 acres. The 1.2 maximum acres of habitat affected is 0.004% of the 27,412 acres of habitat in the LAU. Currently no habitat in the Whetstone LAU is considered unsuitable. Effects are therefore not quantifiable at the LAU scale, will not affect functionality of lynx habitat, and therefore are discountable.

#### *Dispersed Camping Access*

Dispersed camping and general recreation would be allowed within 300 feet of designed roads open to public travel on BLM lands. Creation of new routes would be prohibited. On the National Forest, motorized travel would be allowed within a 300 foot corridor but only on designated routes for the purpose of dispersed camping or general recreation. While no quantifiable data exists on the amount and trend of dispersed camping in the analysis area, the amount of traffic is expected to increase approximately 1-2% annually. Dispersed camping is expected to increase commensurate with traffic increases. Effects of dispersed camping on lynx are increased human disturbance, especially during the fall hunting season. Increased dispersed camping of 1-2% annually on any given route will not be measurable at the LAU scale, will not affect functionality of lynx habitat, and therefore are discountable.

#### *Conclusion*

Reducing motorized route densities in 38 out of 42 LAU and 5 out of 6 linkage areas will reduce overall human disturbance, the level of habitat fragmentation, and risk of vehicle lynx collision in the analysis area. Long-term, reducing miles of motorized routes is expected to have a beneficial effect to lynx as well as other wildlife species in the analysis area.

#### **Cumulative Effects:**

The lynx is a boreal forest predator that uses very large territories of mature and old growth forest (as well as early successional forest), and may be influenced by the cumulative effects of changes to forest habitat from timber harvest, large-scale forest fire, open road density, and other human activities on a larger scale. The planning area has a history of such changes to forest habitat. It is likely that such cumulative actions influence whether the planning area

forms high quality habitat for the lynx. Although no changes in lynx habitat are anticipated with the preferred alternative, reductions in route densities will occur and will likely reduce the potential impacts of roads and trails on lynx.

Considering all the past, present, and future activities occurring in the planning area, it is unlikely that the existing condition or the project would add cumulatively to existing impacts on the lynx to the point that an individual lynx or its home range (lynx analysis unit) would be impaired. The function of any of the LAU's will not be compromised by the proposed activities. Abundant lynx habitat will remain within the planning area to provide potential lynx denning and travel habitat. No loss of lynx habitat is anticipated. Habitat connectivity within and between LAUs will be maintained with mature forest habitats within the planning area and affected LAU's.

Private and other non-federal lands adjacent to and within LAU's within the planning area are plentiful. There are four recreation oriented towns located within close proximity to the federal lands within the analysis area, which are sources of intense recreational activities. The towns of Crested Butte, Mt. Crested Butte, and Gunnison, are economically dependent upon the Crested Butte Ski Area and other year-round tourist activities such as motorcycle, OHV, snowmobile riding, mountain biking, climbing, hiking, and backpacking. The activities centered in these towns result in high levels of human activity and disturbance to the surrounding federal lands. This amount of activity is likely to reduce the effectiveness of habitat for Canada lynx, although the level of effect is difficult to determine.

Known future development that may occur on private or state lands includes potential leasing for geothermal development. Although development on private lands across such a large area cannot be easily determined, the potential exists for additional development in the form of home construction, mine development, ski resort development, and an increase in size of existing communities. If development should occur in previously undeveloped areas, lynx habitat quality may be reduced, but whether development will change lynx habitat to unsuitable, impair lynx home ranges, disrupt habitat connectivity, or compromise the function of any of the affected LAU's is unknown at this time.

**Determination:**

**SRM Lynx Project Decision Tree**

On July 1, 2004 the US Fish and Wildlife Service re-authorized the Programmatic Agreement for Canada lynx in Colorado. I have reviewed the criteria and conditions under which the programmatic section 7 concurrence from the USFWS applies and determined that this project does not qualify for this process. After reviewing the pre-screen A&B activities in the LCAS, I've determined that the project (Travel Management Plan decisions) is outside the blanket concurrence criteria (OBCC) and should be submitted to USFWS for concurrence.

Alternative 1, the no action alternative, describes the existing condition which will maintain existing motorized road and trail densities. Alternative 1 brings forward the 2001 travel management decision requiring motorized and mechanized use to designated routes only. Human disturbance and habitat fragmentation related to roads and trails would continue at current levels and possibly higher as the amount of use on BLM and National Forest lands increases over time. Recreation use and motorized use (VPD) is expected to increase approximately 1-2% annually. All existing routes would remain open with no opportunity to reduce road densities. Based upon this rationale, I conclude alternative 1, **may affect, but are not likely to adversely affect** the Canada lynx in the analysis area.

Alternative 5, the preferred alternative, reduces motorized road densities in the Gunnison Travel Analysis Area including nearly all affected LAUs and lynx linkage areas. Physically closing a route, depending upon the technique used, may have some short-term negative impacts. Route obliteration typically takes 1-5 days on any given route to complete. The presence and noise from heavy equipment operations could displace lynx temporarily from an area. Once obliteration is complete the route becomes revegetated and begins to provide suitable lynx habitat in about 10 years. Possible construction of new routes will have a maximum impact of 7.6 acres of habitat in three LAUs. All three LAUs have less than 1% of lynx habitat currently in an unsuitable condition. The additional acres potentially affected through new route construction are extremely small, and will not increase the amount of unsuitable habitat in any of the affected LAUs more than a fraction of a percent. To further minimize effects to lynx, lynx habitat will be avoided wherever possible during layout of proposed routes.

Based upon the aforementioned rationale, I conclude alternative 5 **may affect, but is not likely to adversely affect** the Canada lynx in the analysis area. While reductions in route density should reduce the level of human disturbance and habitat fragmentation, effects are not expected to be completely beneficial due to short-term route specific effects during implementation.

## **Uncompahgre Fritillary Butterfly (endangered)**

### **Alternative 1 – No Action - Existing Condition**

#### **Direct and Indirect Effects:**

This species, because of its small home range area and low mobility, is susceptible to human disturbance. The primary threats to known populations of the Uncompahgre fritillary butterfly are collecting pressure, intensive grazing or trampling by domestic sheep, and periods of prolonged drought conditions. The Recovery Team has identified trails on Uncompahgre and Red cloud Peaks that bisect occupied butterfly colonies. A recommendation was made by the team to relocate these sections of trail to avoid the site and this has been accomplished. Other concerns related to domestic sheep grazing and trailing have been mitigated through modifications of the grazing permits, although some problems still exist in some years. Additional potential impacts to butterflies or butterfly habitat include road and trail construction and use, off-route travel, and development of recreational facilities, sheep grazing in areas where they are not supposed to be, and dispersed camping and hiking. Since all known colonies within the planning area are in designated Wilderness or Wilderness Study Areas, no motorized or mechanized activity occurs within or adjacent to any known colony. Foot and horse routes occur within these areas. Any routes that may have occurred through known colonies have been previously rerouted to avoid the colony sites and routes adjacent to or near existing colonies have been posted to deter off-route travel. While the potential exists for occasional disturbance by humans to occur due to off-route travel, it will not be due to current route density or locations.

### **Alternative 5 – Preferred Alternative**

#### **Direct and Indirect Effects:**

There is no planned development of new routes or decommissioning of existing routes in known or potential Uncompahgre fritillary butterfly habitat. While the potential exists for occasional disturbance by humans to occur, it will not be due to existing or proposed route density or locations.

#### **Cumulative Effects:**

Implementation of either alternative would have no cumulative effects on Uncompahgre fritillary butterfly above the existing baseline.

#### **Determination:**

Since there are no known routes through existing Uncompahgre fritillary butterfly colonies and there is no planned development of new routes or decommissioning of existing routes in known or potential butterfly habitat, there will be **no effect** on the Uncompahgre fritillary or its habitats, by either of the alternatives under consideration in this document.

## **Greenback cutthroat trout (threatened)**

Since GBCT are newly discovered species on the Forest, the existing Forest Plan does not directly address management objectives for the subspecies. However, the Forest Service has prepared a species and conservation assessment for CRCT that identifies threats and possible target watersheds for expansion of cutthroat trout populations on NFS lands. While not explicitly stated in this assessment, these goals also apply to GBCT until such time that more species specific direction can be developed. Goals for cutthroat trout are:

- To assure long-term survival of cutthroat by working to establish two self-sustaining populations in the Gunnison Geographic Management Unit (GMU),
- To maintain areas which currently support abundant cutthroat trout populations and manage other areas for increased abundance,
- To maintain genetic diversity of the species(s), and
- To increase the distribution of cutthroat where ecologically, sociologically, and economically feasible.

### **Direct and Indirect Effects:**

#### **General affects of roads on aquatic biota including greenback cutthroat trout**

Most of the harmful impacts to aquatic biota due to motorized routes (roads and motorized trails) use, construction, and maintenance are indirect impacts, excepting direct mortality to aquatic plants and animals during road use (stream crossings) and road construction. The effects of roads on aquatic biota can affect many of the life-history stages of aquatic animals by degrading or eliminating their associated habitats (Furniss et al. 1991; Waters 1995). Specific effects to aquatic biota include:

- 1) Chemical contamination due to spills or road-treatment products (such as dust abatement chemicals) can cause direct mortality or decreased fitness (e.g., immune system depression) of aquatic plant and animal species.
- 2) Sediment inputs to aquatic and wetland ecosystems associated with motorized routes and route activities can decrease spawning success for fish, especially salmonids, and cause decreases and/or alterations of macroinvertebrate communities.
- 3) During motorized route construction, use, and maintenance, individual organisms and local biotic communities (especially plants and early-development stage amphibians) of aquatic biota can be crushed.
- 4) Motorized routes can facilitate introductions of exotic species (plant and animal) into aquatic systems.
- 5) Motorized routes networks can facilitate the spread of pathogens and disease (e.g., whirling disease and bacterial kidney disease) in aquatic and wetland ecosystems.
- 6) Motorized routes networks can contribute to their reduction in distribution and abundance of aquatic and wetland biota because of exploitation (recreational fishing pressure) and field collections (scientific and casual).
- 7) Motorized routes drainage features such as culverts can fragment aquatic habitats by creating barriers to all or some species life stages.

## **Alternative 1 – No Action - Existing Condition**

### **Specific Direct and Indirect Effects**

Direct and indirect effects to GBCT by alternative were examined by comparing the number of stream crossings per mile of stream (Table 13) and miles of road within the water influence zone (WIZ) (Table 14).

Under the no action alternative, the existing motorized route system would remain in place and any effects of these routes on greenback would continue. Crossing density averages 0.48 crossing per mile of stream in GBCT watersheds. A crossing density of 0.48 crossings per mile of stream is 40 percent lower than the average crossing density of watersheds in the Gunnison Basin (0.8 compared to 0.48). Typically GBCT generally occur in watersheds having a low level of anthropogenic influence. While difficult to quantify at such a broad scale, these crossing will remain a potential source of fine sediment and a potential source of contaminants (oil and gas), posing at least a small risk to GBCT.

Miles of motorized route in WIZ will also stay at current levels (2.34 miles of road per mi<sup>2</sup> of WIZ). Presence of motorized routes in WIZ increases the chances that fine sediment accesses live water and therefore could affect GBCT or their habitats. The level of potential effect depends on the condition of the route (maintained or un-maintained), its proximity to live water, and the type of surfacing.

Specific routes were identified by the ID team as routes of concern to GBCT (Table 15). A route of concern is a route that is currently affecting GBCT habitat directly (e.g. stream crossing, road or trail immediately adjacent to occupied GBCT habitat). It does not mean these routes must be removed from the system to eliminate or minimize effects. In many cases, routine maintenance or hydrologic upgrading (e.g., improve roadside and runoff drainage) on the route may be sufficient to eliminate or minimize effects to streams, riparian or wetland habitats. Under the no action alternative, the type of use these routes receive will remain the same and therefore the level of impact/risk to GBCT will remain at current levels.

Other mechanisms of potential effect to GBCT is direct mortality from wheeled vehicles crushing fish when crossing occupied streams, potential for introduction of exotic species by humans, spread of pathogens (e.g. whirling disease) and exploitation of GBCT by anglers. Death or injury to GBCT by anglers is outside the scope of this analysis since GBCT populations can be fished in the State of Colorado in accordance with State regulations (CDOW 2010). Under these regulations, fishing in cutthroat waters is only allowed by artificial flies and lures only and all cutthroat must be released to the water immediately upon catch.

Biologists on the GMUG have never documented mortality to fish from vehicular traffic. Typically, stream crossings are shallow and do not provide suitable resting habitat for GBCT. In addition, fish have extremely rapid response time, moving from open water areas to cover at the first sign of disturbance. The probability that a fish could be crushed by motorized vehicle is extremely low, not measureable and therefore is discountable.

Pathogens or exotics that could be introduced from human activity in the Gunnison Basin, include, *Myxobolus cerebralis* (whirling disease), and invasive mussels like New Zealand Mudsnaill. Eleven streams in the Analysis area have documented presence of myxospores and fish infected by *M. cerebralis* (Nehring 2008). Transmission of *M. cerebralis* from one water to another is via movement of infected fish and movement of water or sediment containing spores (Wilson 2006). Nehring (2008) identified the primary vector of infection in cutthroat waters to be movement of infected non-native fish into waters occupied by cutthroat and encouraged establishment of barrier to prevent invasion. Anglers, boaters, other recreationists as well as wildlife and livestock can also transport infected sediment from one waterway to another (Wilson 2006, Nehring 2008). Cleaning of equipment, a particularly disinfecting of waders can reduce risk of transmission of the *M. cerebralis*.

While crossing of streams with motorized vehicles could possibly be a vector for transmission, there is little or no evidence it is a primary mechanism of transmission. Stream crossing density under alternative 1 in GBCT watersheds is 0.48 crossings per mile of stream. Risk of *M. cerebralis* infection would remain at current levels which is believed be low and therefore discountable.

The New Zealand mudsnail is an invasive species of concern to streams in the State of Colorado. The snail can be introduced via mud and sediment on vehicles or other equipment. However, the only known population of New Zealand mudsnail is in Boulder Creek and Eleven Mile Creek in Eastern Colorado, which is several hundred miles from the Gunnison analysis area. The probability that the snail could be transported to Western Colorado is extremely small and therefore is believed to be a discountable affect to GBCT.

## **Alternative 5 – Proposed Action and Preferred Alternative**

### **Specific Direct and Indirect Effects:**

Direct and indirect effects to GBCT by alternative were examined by comparing the number of stream crossings per mile of stream (Table 13) and miles of road within the water influence zone (WIZ) (Table 14).

The preferred alternative will result in a 15% reduction in the number of stream crossings per mile of stream. Five of the 9 sub-watersheds supporting GBCT will see reduced numbers of stream crossing. Reducing the number of stream crossings will reduce potential migration barriers, point of entry for road derived sediment, the risk of direct channel and riparian habitat alteration during construction, reconstruction and maintenance and impacts resulting from chemical contamination from spills and road treatments.

The preferred alternative will result in a 20% reduction in the miles of motorized routes per mi<sup>2</sup> of WIZ. Miles of motorized routes in WIZ will be reduced in 6 of the 9 watersheds, 2 will remain the same and 1 (Clear Creek) will see a slight increase. This slight increase (approx. 0.3 miles) of motorized route in WIZ is conversion of small section of a current non-motorized route into a motorized route with administrative use only. A reduction in miles of route in WIZ will

reduce direct effects to riparian areas, wetlands and floodplains from habitat alteration, and reduces the risk of sediment and other contaminants delivered to wetlands, riparian areas and in-channel habitats due to inadequate buffers.

Five of the 7 routes potentially affecting GBCT will either be decommissioned or closed to the public for administrative use only (Table 15). The exception is route 703.0 which will remain open to high clearance vehicles and route 820.0 which will remain open to ATV use. The 703 route crosses West Terror Creek or tributary of West Terror Creek at 3 locations high in the drainage and all 3 crossings are low-water fords. The 820.0 route is an ATV route which crosses Deep Creek low in the drainage. All 4 routes crossings provide fish passage and therefore the primary mechanism of potential effect is sedimentation from run-off or when vehicles drive through the crossings. While impacts could occur, if trails are maintained, effects are believed to be discountable. Crossings may also be a potential source of contaminants (oil and gas) from ATVs or motorcycles. However, no fish kills have been reported resulting from contaminant releases on the GMUG over the past 10 years so the level of risk is low and also discountable.

Risk of introduction of pathogens or aquatic nuisance species via motorized travel will be less under the preferred alternative because the number of stream crossings per mile of stream is reduced by 15% in GBCT watersheds (Table 13). Again because motorized travel is not recognized as a primary vector of introduction, risk remains low and therefore is discountable.

None of the possible routes under the preferred alternative will be constructed in watersheds supporting GBCT and therefore will have no effect.

Table 13. Stream Crossing Density in Watersheds with Greenback Cutthroat Trout		
Sub-watershed (6 <sup>th</sup> level HUC) supporting GBCT	Alt. 1 Crossing Density	Alt 5 –Crossing Density
	(number of crossings/mile stream)	
Antelope Creek (140200020311)	0.63	0.38
Upper Hubbard Creek (140200045602)	0.74	0.61
Paonia Reservoir (140200041104)	0.32	0.32
Upper West Muddy Creek (140200045502)	0.56	0.48
Lower West Muddy Creek (140200045501)	0.56	0.56
Terror Creek (140200041103)	0.99	0.91
Lower East Muddy Creek (140200040901)	0.12	0.09
Clear Fork (140200040903)	0.13	0.13
Lee Creek (140200040902)	0.25	0.25
Average (% reduction)	0.48	0.41 (15%)

Table 14. Water Influence Zone Motorized Route Density by Watershed with Greenback Cutthroat Trout		
Sub-watershed (6 <sup>th</sup> level HUC) supporting GBCT	Alt. 1 WIZ Density	Alt. 5 WIZ Density
(mi route/mi <sup>2</sup> WIZ)		
Antelope Creek (140200020311)	3.80	1.96
Upper Hubbard Creek (140200045602)	3.46	2.97
Paonia Reservoir (140200041104)	0.74	0.74
Upper West Muddy Creek (140200045502)	1.76	1.67
Lower West Muddy Creek (140200045501)	4.89	4.78
Terror Creek (140200041103)	1.17	1.07
Lower East Muddy Creek (140200040901)	0.19	0.15
Clear Fork (140200040903)	0.68	0.77
Lee Creek (140200040902)	0.30	0.30
Average (% reduction)	2.34	1.85 (20%)

Table 15. Motorized Routes Directly Affecting Greenback Cutthroat Trout Habitat			
6 <sup>th</sup> Level HUC Sub-watershed supporting GBCT	Route Number	Alt. 1	Alt 5
Antelope Creek	UT-7159	Motorcycle	Decom.
	78181A	High clearance	Decom.
Paonia Reservoir	820.0	ATV	ATV
Lower West Muddy Creek	None identified		
Upper Hubbard Creek	None identified		
Terror Creek	703.0	High clearance	High clearance
	703.2B	High clearance	Decom
	703.1A (.21 mi.)	High clearance	Admin.
	703.1A (1.87 mi.)	High clearance	Admin.
Lower East Muddy Creek	None identified		
Clear Fork East Muddy	None identified		
Lee Creek	None identified		

**Cumulative Effects**

Cumulative effects include the effects of State, tribal, local, or private actions that are reasonably certain to occur in the action area. The scale for the cumulative effects analysis is a sub-watershed (6<sup>th</sup> level). The types of activities occurring in these subwatersheds include, but are not limited to timber harvesting, fuels reduction and management, livestock grazing, energy exploration and development, and residential and commercial development. A more complete discussion of these activities in the planning area is included in the Environmental Impact Statement for this project.

The amount of use occurring on private and State lands and its potential effects to watershed and aquatic system health cannot be quantified. As an approximation of the amount of activity and inherent sensitivity of sub-watershed to management watershed integrity were used. The activity/sensitivity analysis includes only NF system lands within the affected subwatersheds. Upper Hubbard Creek, West Muddy Creek, Terror Creek and Lower East Muddy sub-watersheds are either Integrity class 1 or 2, indicating a relatively low level of anthropogenic influences

(Table 16). Antelope Creek is a watershed integrity class 3 and Paonia Reservoir is integrity class 4. Primary factors attributing to these higher integrity classes are motorized route density.

**Table 16. Greenback Cutthroat Trout Watershed Integrity, Sensitivity, and Activity Ratings**

Greenback Streams	Watersheds	Integrity Class	Sensitivity Class	Activity Class	Factor Influencing Integrity Class 3 or 4 results
West Antelope Creek	Antelope Creek	3	2	3	Motorized route density, % canopy removed
Hubbard Creek (Main /Middle)	Upper Hubbard Creek	2	3	2	
Deep Creek	Paonia Reservoir	4	3	4	Motorized route density
Dyke Creek	Upper West Muddy Creek	1	2	2	
Roberts Creek	Lower West Muddy Creek	1	2	2	
West/East Fork Terror Creek, Cunningham Creek	Terror Creek	2	3	2	
Henderson Creek	Lower East Muddy	1	3	1	
Clear Fork Muddy Rock Creek	Clear Fork East Muddy	1	3	1	
Chair Creek	Lee Creek	1	3	1	

Alternative 5 reduces stream crossing density and acres of roads in the WIZ in the Antelope Creek sub-watershed which will reduce the level of impact and thereby improve watershed integrity. Stream crossing density and miles of routes in WIZ in the Paonia Reservoir watershed will remain the same under alternative 5. The Paonia Reservoir subwatershed is expected to remain at integrity class 4 with no reductions, except routine maintenance, in the level of motorized route density expected. However, Paonia Reservoir subwatershed only contains one known GBCT population in Deep Creek. In the immediate Deep Creek drainage is largely roadless with the exception of ATV route 820.0 which crosses the stream at one location. Proper routine maintenance of the route will minimize any potential negative effect making them discountable.

### *Determination of Effect and Rationale – Greenback cutthroat trout*

Alternative 1, the no action alternative, describes the existing condition which will maintain existing motorized routes in GBCT subwatersheds. Potential threats from presence and use of these routes will not diminish and no opportunity to reduce the number or location of these routes will occur. Alternative 5 will reduce the number of stream crossings and the miles of road in WIZ. Any new routes are subject to NEPA and requirements of ESA. Routes proposed for decommissioning that have the potential to affect threatened and endangered species, are also subject to additional NEPA and further consultation when they occur at a future date.

Both alternative will result in a **–May affect, not likely to adversely affect–** greenback cutthroat trout in the action area. Rationale for this determination is as follows:

- The number of stream crossing per mile of stream will be reduced an average of 9 percent across all watershed supporting GBCT. No watersheds supporting GBCT will have an increase in the number of stream crossings.
- While a small risk of pathogen and aquatic nuisance species introduction could result from motorized vehicles crossings streams, it is low and will decrease under the preferred alternative due to reduced stream crossing density.
- The miles of route per square mile of WIZ will be reduced an average of 20 percent across all watersheds supporting GBCT. No watershed supporting GBCT will have an increase in miles of routes per square mile WIZ.
- Possible new routes will not be constructed in known GBCT watersheds. If ne GBCT populations are discovered in watershed in which routes are proposed the following **conservation measure** will be used.
  - Route layout will be done with the assistance of a fisheries biologist to minimize potential adverse impacts to GBCT. Occupied streams will be avoided as a first line of defense.
- Most of the routes believed to be directly affecting greenback trout populations are either being decommissioned or being closed to the public. The exception in route 703.0 which will remain open to high clearance vehicles and route 820.0 which will remain open to ATV use. The 703 route crosses West Terror Creek or tributary of West Terror Creek at 3 locations high in the drainage and all 3 crossings are low-water fords. The 820.0 route is an ATV route which crosses Deep Creek low in the drainage. All 4 routes crossings provide fish passage and therefore the primary mechanism of potential effect is sedimentation from run-off or when vehicles drive through the crossings. To further reduce these potential effects the following **conservation measure** will be included as part of the travel decision. The Region 2 Watershed Conservation Practices (WCP) Handbook will be used to design proposed measures (USDA 2006). Use of treatments specified in this Handbook are highly effective, reducing sedimentation to near natural levels and therefore not quantifiable at a stream reach scale.

- The 4 stream crossings in question will be inventoried and measures identified to reduce the amount of fine sediment entering the channel. Measures include but are not limited to construction of rolling dips or waterbars or harding of crossings with riprap. All proposed measures will be coordinated with a fisheries biologist to ensure fish passage is maintained. Inventory and proposed drainage improvements will be completed by 2012.

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