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Final Environmental Impact Statement for Travel Management on the Santa Fe National Forest

Santa Fe, New Mexico

Cover Photo: Boulders moved to drive on a road.

Note: All photos used in this document were taken by Santa Fe National Forest employees except where noted otherwise.

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Final Environmental Impact Statement for Travel Management on the Santa Fe National Forest

Santa Fe, New Mexico

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Abstract: The forest supervisor of the Santa Fe National Forest proposes to make changes to the current system of roads, trails, and areas open to motorized use. The result will be fewer roads, motorized trails, and specific areas designated for motorized use. Motorized cross-country travel—driving off of roads or motorized trails—will be prohibited except in designated motorized areas and fixed-distance corridors solely for the purpose of motorized dispersed camping or motorized big game retrieval. Part of the proposal amends the "Santa Fe National Forest Plan" to comply with the Travel Management Rule, which implements Executive Orders 11644 and 11989. This document analyzes five action alternatives showing different motorized systems. The action alternatives are based on the public's comments during the scoping and notice and comment periods. The forest supervisor's preferred alternative is 2M, which modifies slightly alternative 2 based on public comments during the notice and comment period.

To Review the Large Maps of the Alternatives: The Santa Fe National Forest's headquarters and seven ranger district offices (Coyote, Cuba, Jemez, Pecos, Las Vegas, Los Alamos, and Española) have large maps, 34 by 44 inches, for people to review. Most printing and copy businesses can print maps from a CD, the Internet, or a thumb drive.

Appeals: Pursuant to the regulations at 36 CFR 215, people and organizations who commented on the draft environmental impact statement during the notice and comment period that ran from August 7 to September 30, 2010, have standing to appeal the forest supervisor's decision. People who commented anonymously or outside of the notice and comment period do not have standing to appeal. Appeals received, including the names and addresses of those who appeal, will be part of the public record.

How to Submit an Appeal: You must submit your appeal within 45 days after the legal notice of decision is published in the Albuquerque Journal. The publication date of the legal notice is the exclusive means for calculating the time to file an appeal (§215.15 (a)). Do not rely upon dates or timeframe information provided by any other source. The content of your appeal must meet the requirements described in § 215.14.

Appeals may be delivered by facsimile, hand, U.S. mail, express delivery service, or email. Acceptable electronic formats are text in the body of an email or an attachment (.pdf, .doc, .txt, .rtf, or other formats readable by Microsoft Word).

Send Appeals to:

Corbin Newman, Appeal Deciding Officer
Southwestern Region
333 Broadway Blvd., SE
Albuquerque, NM 87102
Fax number: (505) 842-3173
Email address: appeals-southwestern-regional-office@fs.fed.us

Appeals may be hand delivered to the above address during regular business hours from 8:00 am to 4:30 pm.

Implementation: If no appeal is filed within the 45-day time period, implementation of the decision may begin on, but not before, the 5th business day following the close of the appeal-filing period (§215.15).

When an appeal is filed, implementation may occur on, but not before, the 15th business day following the date of appeal disposition (§215.2). In the event of multiple appeals of the decision, the implementation date is controlled by the date of the last appeal disposition.

Summary

To comply with the Travel Management Rule, the Santa Fe National Forest's forest supervisor proposes to provide for a system of roads, trails, and areas designated for motorized use by making changes to the current motorized travel system. The proposed changes will reduce the places where people can drive in the Santa Fe National Forest, which is the area this proposal encompasses. The proposed changes do not restrict where people's nonmotorized activities—such as hiking, camping, bicycling, hunting, and others—may take place.

Background

To address concerns about the effects of unmanaged off-highway vehicles, the Forest Service published final travel management regulations for motor vehicle use on national forests and grasslands on November 9, 2005. The Travel Management Rule *"… provides for a system of National Forest System roads, National Forest System trails, and areas on National Forest System lands that are designated for motor vehicle use. After these roads, trails, and areas are designated, motor vehicle use, including the class of vehicle and time of year, not in accordance with these designations is prohibited..."*

A motor vehicle use map published by the Santa Fe National Forest (forest) will show where people are allowed to drive. The motor vehicle use map enforces the system designated for motorized use. People will only be allowed to drive on the roads, trails, and areas depicted on the motor vehicle use map. If they drive places that aren't on the map, they will be subject to a fine unless they have a permit or other authorization from the Forest Service. Because the forest will publish the motor vehicle use map annually, roads, trails, and areas can be added or removed each year after the appropriate environmental analysis is done.

Regardless of the designations published on the motor vehicle use map, the forest supervisor will continue to have the ability to temporarily close roads, trails, or areas to motorized use based on a determination of considerable adverse effects (36 CFR 212.52(b)(2)).

Purpose and Need

The purpose of this project is to comply with the Travel Management Rule by providing a system of roads, trails, and areas designated for motor vehicle use by class of vehicle and time of year on the Santa Fe National Forest (36 CFR 212.50).

On the Santa Fe National Forest, complying with the Travel Management Rule means there is a need for: (1) no cross-country motorized travel except in designated areas; (2) clarification of which roads and trails would be open for motorized use; (3) the optional designation of the limited use of motor vehicles within a specified distance of certain designated routes and, if appropriate, within specified time periods, solely for the purposes of dispersed camping or retrieval of a big game animal by an individual who has legally killed that animal; and (4) amended forest plan direction regarding motorized vehicle use that is consistent with the rule.

There is also a need for fewer detrimental effects to natural and cultural resources from unmanaged motorized use and the existence of roads and motorized trails. Here are examples—taken from chapter 3 of this document—of the detrimental effects caused by unmanaged motorized use and the presence of roads and motorized trails:

- Motorized cross-country travel can create new roads and trails that aren't properly designed. The presence of roads and motorized trails interrupts the natural flow of water, channeling it and carrying sediment to streams. Sediment deposited into streams degrades water quality and habitat for fish.
- Vehicles transport nonnative invasive plant seeds to and within the forest. Roads and motorized trails act as pathways for these seeds. The establishment and spread of nonnative invasive plants disrupts native ecological processes, resulting in fewer native plants and animals.
- Roads and motorized trails fragment habitat for wildlife. Many small mammals and reptiles don't cross roads, which isolates populations and promotes inbreeding, resulting in reduced population viability. Small mammals and reptiles also risk being killed by vehicles. Large mammals tend to avoid vehicles, roads, and motorized trails, altering where they would normally live and breed.
- Driving off roads and motorized trails can damage cultural resource sites. Wheels crush artifacts. Erosion caused by driving can wash away sites. With vehicles, people have easier access to cultural resource sites and may intentionally or unintentionally damage them.

Public Involvement

From early 2006 to late 2007, Santa Fe National Forest staff held 38 public meetings and workshops and attended many field trips. This collaborative period generated more than 1,000 comment letters from the public. We used the information gathered at meetings and from the letters to create the proposed action for managing motorized travel. The forest supervisor published the proposed action on July 10, 2008.

Publishing the proposed action marked the start of the scoping comment period, during which we asked the public for comments on the proposal. We mailed notice of the proposed action to 10,270 people and held 13 public meetings. In response, we received almost 1,400 letters and emails. The content of the letters and emails formed the basis of the alternatives and environmental analysis contained in the "Draft Environmental Impact for Travel Management on the Santa Fe National Forest" (DEIS).

The forest supervisor published the draft environmental impact statement on July 22, 2010, and held eight meetings for the public to discuss the alternatives and analysis. The notice and comment period ran from August 7 through September 30, 2010. We received over 850 comment letters on the draft environmental impact statement.

Forest staff have consulted with tribes and pueblos throughout the process.

Significant Issues

Reading and analyzing the public's scoping letters resulted in a list of issues. Significant issues form the basis of alternatives to the proposed action. They are issues not resolved by the proposed action. We identified these five significant issues from the scoping comment letters:

1. Continued public motorized use of routes and areas described in the proposed action will adversely affect forest resources. These effects include:

- Erosion, soil compaction, and degradation of water quality and watershed condition;
- Degradation of fish and wildlife habitat;
- Damage to cultural resource sites;
- Damage to traditional cultural properties;
- Spread of invasive plant species;
- Damage to rare plants; and
- Compromise to the character of wilderness and inventoried roadless areas.

2. The reduction in miles of routes and the prohibition of cross-country travel described in the proposed action will adversely affect the quantity of public motorized experiences because the proposed action:
   - Lacks enough loops and connectors to provide for longer rides;
   - Lacks diverse opportunities for all-terrain vehicles, motorcycles, and 4x4s;
   - Lacks diverse routes for different skill levels;
   - Restricts access to traditional cultural properties;
   - Does not provide enough area for motorcycle trials;
   - Closes too many routes, which will concentrate use and take away the semiprimitive aspect of riding in the forest; and
   - Does not plan for the future growth in motorized sports.
3. Prohibiting motorized cross-country travel will limit the retrieval of big game, perhaps to an unacceptable level.
4. Designating motorized dispersed camping corridors will increase cross-country travel and the resource damage associated with it and curtail the kind of unrestricted camping that the Santa Fe National Forest currently provides.
5. The proposed action, by designating routes uniformly across the forest outside of designated wilderness, will cause conflicts between motorized and nonmotorized users because they will be recreating in the same vicinity.

Using these significant issues, we created three alternatives to the proposed action and presented them in the draft environmental impact statement. The public then commented on the draft. Although we received a lot of comments on the DEIS, we did not receive any comments with new significant issues. Our complete response to the public's comments is located in appendix 7.

The regulations at 40 CFR 1503.4 give an agency five different ways to respond to the public's comments on a draft environmental impact statement. One of the ways is to modify an existing alternative. After reading the public's comments on the draft environmental impact statement, we modified an existing alternative—the proposed action—to best meet the public's need for access while balancing that against protecting natural resources. This *final* environmental impact statement, then, contains six alternatives: the no action alternative required by the regulations, the proposed action, and four alternatives to the proposed action.

Alternatives

Alternative 1 is the no action alternative. For this project, the no action is the same as the existing condition. It is our best estimate of where people drive now. Where people drive now represents no change from current management direction or level of management intensity (NEPA's Forty Most Asked Questions, http://ceq.hss.doe.gov/nepa/regs/40/1-10.HTM#3). For example, if the forest didn't make any changes to the motorized system, people would continue to drive where they pleased.

Alternative 2 is the proposed action, which is the forest's first attempt at meeting the purpose and need. The proposed action described in this document differs slightly from the one mailed to the public in July 2008 (36 CFR 220.5(e)(1)). It corrects the locations of roads and motorized trails based on the public's comments and our field verification. It also adds the ability to retrieve big game with a vehicle in the same fixed-distance corridors proposed for motorized dispersed camping.

Alternative 2M is similar to alternative 2, the proposed action, but modified as a result of the public's comments on the draft environmental impact statement and our subsequent analysis. It is the forest supervisor's preferred alternative. It incorporates concerns raised in significant issues 1, 2, 3, and 4. It would designate fewer miles of roads, motorized trails, and fixed-distance corridors than alternative 2.

Alternative 3 would provide the fewest miles of designated roads and motorized trails. It proposes no driving off roads or motorized trails for any reason. This means that to camp, retrieve game, or participate in any other forest activity, people would have to park next to the side of the road and proceed without their vehicles. It incorporates concerns raised in significant issues 1, 3, and 4.

Alternative 4 would provide more roads, motorized trails, and areas designated for motorized use than the proposed action, but still less than the amount people drive on now. It would allow the most places for people to drive to retrieve game or set up a campsite. It incorporates concerns raised in significant issues 2, 3, and 4.

Alternative 5 would provide about the same amount of roads, motorized trails, and areas designated for motorized use as the proposed action, but arranges motorized use geographically. This means that alternative 5 attempts to cluster motorized use in certain places on the forest, leaving other places with less motorized use. It incorporates concerns raised in significant issue 5.

Alternatives 2 through 5 nearly eliminate motorized cross-country travel.

Except for alternative 4, alternatives 2 through 5 decrease the mileage of motorized trails from what people said they use now. Alternatives 2 through 5 all increase the miles of motorized system trail—those trails officially managed by the Forest Service for motorized use.

Figure 1, figure 2, and table 1 compare the resultant motorized system to and change from alternative 1 for each alternative.

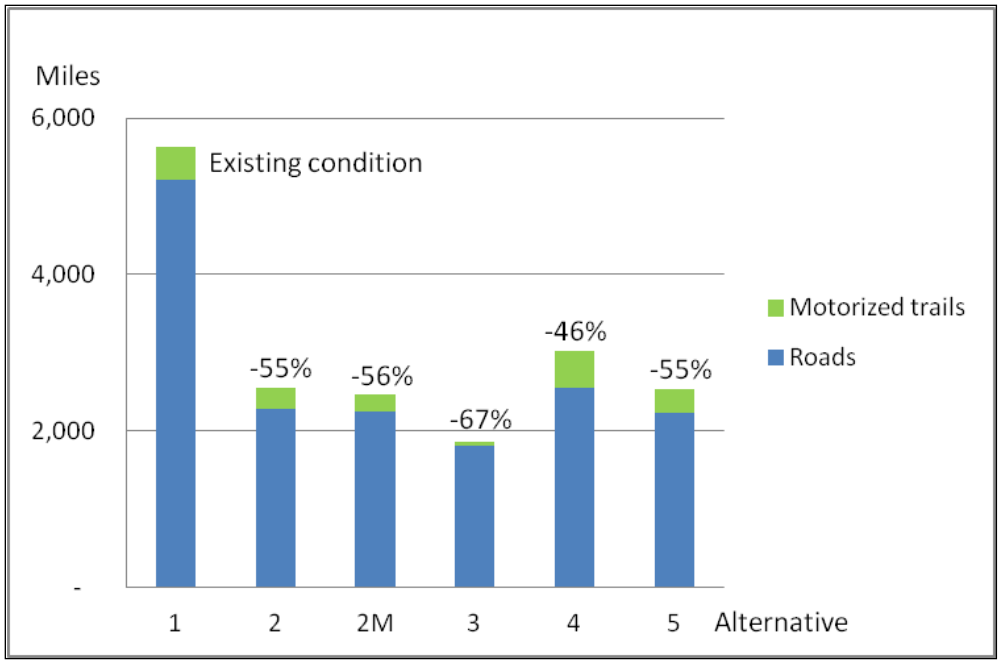

Figure 1. Summary of the miles of roads and motorized trails that would result from each alternative, and their overall percent change from alternative 1, the existing condition

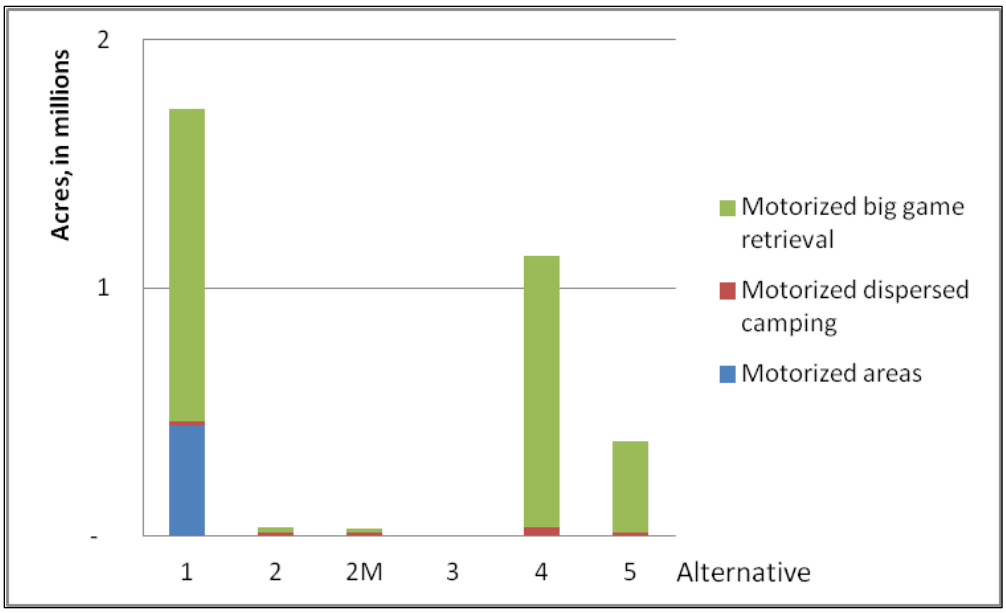

Figure 2. Comparison of acres available for driving off road, by alternative. Percent change is not depicted because some acres can be used in more than one way. For instance, the corridors for dispersed camping and for retrieving big game are the same in alternative 2.

Table 1. Comparison of motorized system resulting from changes to alternative 1, the existing condition

		Where People Drive Now	Resultant Motorized System, by Action Alternative				
Alternative		1	2	2M	3	4	5
Roads	Miles	5,218	2,290	2,255	1,817	2,554	2,231
	Percent change from alternative 1		**-56%**	**-57%**	**-65%**	**-51%**	**-57%**
Motorized trails	Miles	408	263	208	53	462	306
	Percent change from alternative 1		**-36%**	**-49%**	**-87%**	**13%**	**-25%**
Total roads and motorized trails	Miles	5,626	2,552	2,463	1,869	3,017	2,573
	Percent change from alternative 1		**-55%**	**-56%**	**-67%**	**-46%**	**-55%**
Motorized areas	Acres	433,848	40	41	0	49	35
	Percent change from alternative 1		**-100%**	**-100%**	**-100%**	**-100%**	**-100%**
Motorized access to dispersed camping	Miles	17,195	16,237	13,856	0	32,890	11,422
	Percent change from alternative 1		**-6%**	**-19%**	**-100%**	**91%**	**-34%**
Motorized access for big game retrieval	Miles	1,258,361	16,237	13,856	0	1,098,330	370,841
	Percent change from alternative 1		**-99%**	**-99%**	**-100%**	**-13%**	**-71%**

Conclusions About the Effects of the Alternatives

The effects of this project can be split into two types: (1) effects to people and how they use the forest, called “social effects” here, and (2) effects to natural and cultural resources. Social effects include things like opportunities for motorized access and recreation, motorized access to private land, noise, conflicts between people, and loss of jobs and revenue associated with motorized use of the national forest. Natural and cultural resources include soil, water, habitat for fish and wildlife, nonnative invasive plants, cultural resource sites, air, wildfires, and visual quality. Chapter 3 examines effects to these and other resources in detail.

For motorized opportunities, choosing any of the action alternatives (2 through 5) significantly reduces the places where people can drive in the Santa Fe National Forest from the existing condition. The total amount of roads and trails open for motorized use would be reduced by 46 to 67 percent depending on the alternative selected, and virtually no driving off roads or motorized trails would be allowed. People’s ability to drive to a dispersed campsite or to retrieve big game would be restricted to corridors designated for such use.

Limiting where people can drive may alter some people’s ability to enjoy the national forest in the manner they are accustomed to. Being able to drive on about half as many roads and trails means people might not be able to drive to their recreational destination. This applies to motorized and nonmotorized uses of the forest. Some people may no longer be able to get to a hiking spot, for

instance. For those with limited time or physical ability, some destinations would be rendered inaccessible. Exploring or touring by driving off roads or trails would no longer be allowed. Some people's favorite trails would not be open to motorcycles or ATVs. Some people indicated that curtailing motorized use of the national forest unacceptably limits their freedom.

That said, people who value motorized access and recreation are most likely to favor alternative 4 because it preserves more motorized opportunities than the other action alternatives. Though the biggest change is between alternative 1 and the others, drivers and riders would want to forfeit as few motorized opportunities as possible. Proponents of nonmotorized use of the national forest are most likely to favor alternative 3, which proposes the fewest miles of motorized routes and no driving off road for any reason.

Fewer open routes and less motorized cross-country use tend to be more protective of natural and cultural resources. As a result, choosing any of the action alternatives (2 through 5) tends to maintain or increase the protection of natural and cultural resources from the existing condition. Alternative 3 would best protect natural and cultural resources because it would allow the least amount of driving and no motorized travel off road.

Most natural and cultural resources would benefit from any of the action alternatives. But a few resources—soil, water, and fish—have exceptions. The motorized dispersed camping proposed in alternative 4 would move soil and water quality away from the desired conditions listed in the forest plan and the Clean Water Act. Alternatives 4 and 5 propose a motorized trail that runs partially up Polvadera Creek, home to one of the Santa Fe National Forest's core conservation populations of Rio Grande cutthroat trout.

Decision to Be Made

Based on public comment, the effects to social, natural, and cultural resources, and the criteria listed in the Travel Management Rule at 36 CFR 212.55, the forest supervisor will decide what changes to make to the current motorized travel system. The "record of decision" will document her decision and the reasons for it.

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Chapter 1. Purpose of and Need for Action

Structure of this Document

The Santa Fe National Forest (forest) has prepared this final environmental impact statement to analyze different ways of implementing the Travel Management Rule. This statement describes the forest's proposed alternatives and their environmental consequences. The analysis complies with and is conducted under the authority of the National Environmental Policy Act's implementing regulations at 40 CFR 1500 and other relevant Federal laws and regulations. The document consists of the following:

- **Chapter 1. Purpose of and Need for Action:** Chapter 1 describes this project's background, its purpose and need, and our initial proposal for achieving the purpose and need. It then describes how we informed the public of the proposal and how they responded.
- **Chapter 2. Alternatives, including the Proposed Action:** This chapter describes the proposed action and alternatives—including no action—in detail. We developed these alternatives based on significant issues raised by the public and other agencies. The chapter ends with a summary of the environmental consequences for each alternative. If you only have time to read one chapter, this one would give you the most complete picture of the project and its effects.
- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental consequences of each alternative in detail.
- **Chapter 4. Consultation and Coordination:** This chapter contains a list of people who wrote this document and the people and agencies we sent it to.
- Glossary
- References
- **Appendix:** The appendix supports the analyses presented in the environmental impact statement and consists of several parts.
- **Index:** The index provides page numbers for different topics.

The project record is located at the Santa Fe National Forest headquarters, 11 Forest Lane, Santa Fe, New Mexico 87508. The project record index is posted on the forest's Web site at: http://www.fs.fed.us/r3/sfe/travelmgt/index.html.

Background

This project will reduce the places where people can drive in the Santa Fe National Forest.

To address concerns about the effects of unmanaged off-highway vehicles, the Forest Service published final travel management regulations for motor vehicle use on national forests and grasslands on November 9, 2005. The Travel Management Rule *"… provides for a system of National Forest System roads, National Forest System trails, and areas on National Forest System lands that are designated for motor vehicle use. After these roads, trails, and areas are designated, motor vehicle use, including the class of vehicle and time of year, not in accordance with these designations is prohibited by 36 CFR 261.13."*

The Travel Management Rule recognizes the important role vehicles play in people's enjoyment of their national forests: "Motor vehicles are a legitimate and appropriate way for people to enjoy their National Forests—in the right places, and with proper management." (70 FR 26864)

Driving a vehicle is an important part of virtually every activity on the forest. Most visitors drive to the forest to sightsee, camp, hike, hunt, fish, ride horses, collect firewood, picnic, sit by the water, or for a number of other activities. People come to the forest to ride on roads and trails in pickup trucks, ATVs, motorcycles, and other vehicles. Outfitters, grazing permittees, telecommunications companies, and loggers use vehicles to support their business on the national forest.

People drive on "National Forest system" roads and trails—also called forest roads and trails in this statement—which are part of the Santa Fe National Forest's official transportation network, as well as "unauthorized" roads and trails, which are all the others (36 CFR 212.1).

Location

The area this statement analyzes is the Santa Fe National Forest, located in northern New Mexico as shown in figure 3. The forest has over 1.5 million acres of public land within its boundary.

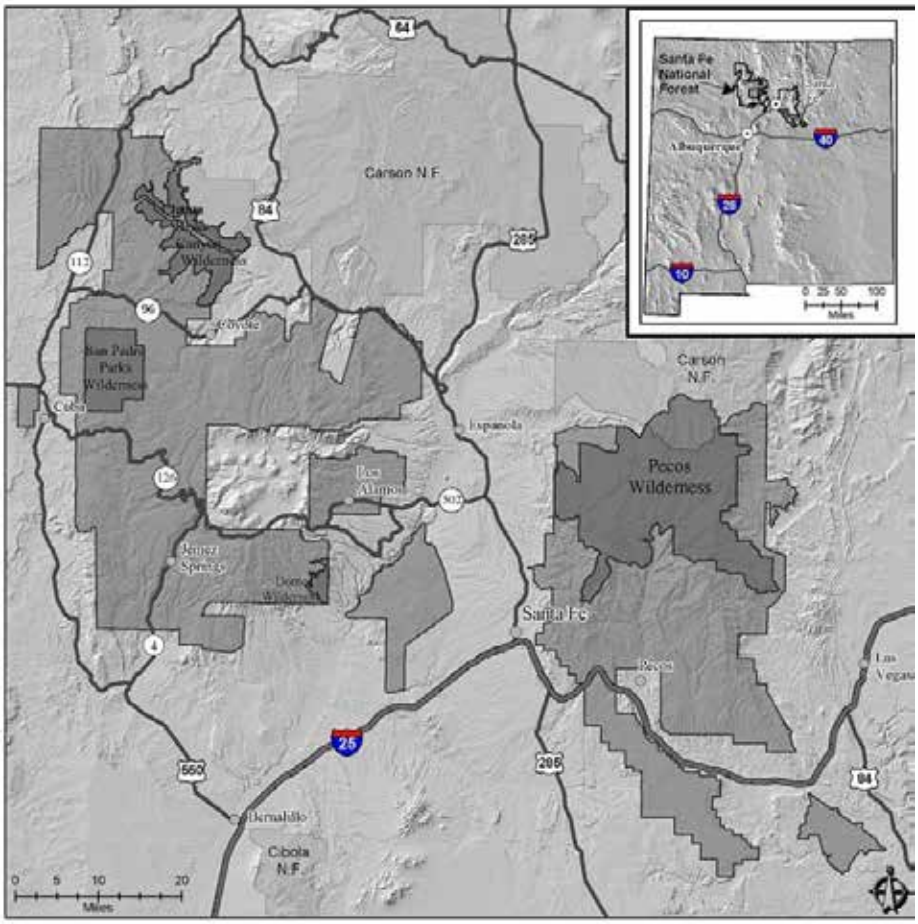

Figure 3. Location of the Santa Fe National Forest

Purpose and Need

The purpose of this project is to comply with the Travel Management Rule by providing a system of roads, trails, and areas designated for motor vehicle use by class of vehicle and time of year on the Santa Fe National Forest (36 CFR 212.50).

On the Santa Fe National Forest, complying with the Travel Management Rule means there is a need for: (1) no cross-country motorized travel except in designated areas; (2) clarification of which roads and trails would be open for motorized use; (3) the optional designation of the limited use of motor vehicles within a specified distance of certain designated routes and, if appropriate, within specified time periods, solely for the purposes of dispersed camping or retrieval of a big game animal by an individual who has legally killed that animal; and (4) amended forest plan direction regarding motorized vehicle use that is consistent with the rule. Projects must be consistent with the forest plan, or the forest plan must be amended.

Figure 4. A forest system road winding through a valley on the Española Ranger District

There is also a need for fewer detrimental effects to natural and cultural resources from unmanaged motorized use and the existence of roads and motorized trails. Here are examples—taken from chapter 3 of this document—of the detrimental effects caused by unmanaged motorized use and the presence of roads and motorized trails:

- Motorized cross-country travel can create new roads and trails that aren't properly designed. The presence of roads and motorized trails interrupts the natural flow of water,

channeling it and carrying sediment to streams. Sediment deposited into streams degrades water quality and habitat for fish.

- Vehicles transport nonnative invasive plant seeds to and within the forest. Roads and motorized trails act as pathways for these seeds. The establishment and spread of nonnative invasive plants disrupts native ecological processes, resulting in fewer native plants and animals.
- Roads and motorized trails fragment habitat for wildlife. Many small mammals and reptiles don't cross roads, which isolates populations and promotes inbreeding, resulting in reduced population viability. Small mammals and reptiles also risk being killed by vehicles. Large mammals tend to avoid vehicles, roads, and motorized trails, altering where they would normally live and breed.
- Driving off roads and motorized trails can damage cultural resource sites. Wheels crush artifacts. Erosion caused by driving can wash away sites. With vehicles, people have easier access to cultural resource sites and may intentionally or unintentionally damage them.

Decision to be Made

The forest supervisor will decide what changes to make to the current motorized travel system and what forest plan amendments to adopt. Changes to the current motorized travel system may include:

- Closing the forest to motorized cross-country travel except in areas designated for motorized use;
- Adding or removing National Forest System roads designated for motorized travel;
- Adding unauthorized routes to the designated motorized system;
- Allowing motorized use on system trails built for nonmotorized uses;
- Deciding what kinds of vehicles may travel on designated routes;
- Deciding what time of year vehicles may travel on designated routes; and
- Deciding to designate the limited use of motor vehicles within a specified distance of certain routes solely for the purposes of dispersed camping or retrieval of a downed big game animal by an individual who has legally taken that animal.

The amendments to the "Santa Fe National Forest Plan" proposed for each alternative are described briefly in chapter 2, and in full in appendix 1.

The forest supervisor's decision applies only to unrestricted public use of roads, trails, and areas designated for motorized use. The rule at 36 CFR 212.51(a) (4) and (8) exempts limited administrative use by the Forest Service and use specifically authorized under a written authorization issued under Federal law or regulations. Moreover, the designation process determines the scope of opportunities for motorized recreation (73 FR 74692). A full discussion of roads used for administrative purposes is in the project record in the document titled "Roads Used for Administrative Purposes," dated September 10, 2009.

The parts of the existing designated travel system that won't change don't need to be authorized again in this travel management planning process:

> *"The responsible official may incorporate previous administrative decisions regarding travel management made under other authorities, including designations and prohibitions of motor vehicle use, in designating National Forest System roads, National Forest System trails, and areas on National Forest System lands for motor vehicle use under this subpart (§ 212.50(b))."*

Public Involvement

Since the rule's publication in 2005, forest personnel have actively sought the public's input during the travel management planning process. Informally, the district rangers and forest supervisor met with many groups and attended a number of field trips to observe conditions on the ground. We have received nearly 3,300 comments throughout the planning process. The formal aspect of public involvement to date consists of four phases: collaboration, scoping, notice and comment, and tribal consultation. Each is described next.

Collaboration

Forest personnel engaged in an intensive collaboration process from early 2006 through late 2007 by hosting 38 public meetings and workshops, attending many field trips, and speaking with many individuals personally (various project record documents dated 2006–2007). The meetings generated approximately 1,100 letters from the public. We used the letters to develop the "Travel Analysis Process Report," the report that fulfilled the requirements of 36 CFR 212.5(b) ("subpart A") of the Travel Management Rule. The "Travel Analysis Process Report" is located in the project record (USDA Forest Service, 2008b).

Scoping

On July 10, 2008, the forest supervisor let the public know the proposed action for managing motorized travel was ready for scoping comments by sending 7,510 letters and 2,760 emails to the 10,270 people on the mailing list at that time. An additional 1,140 people on the mailing list did not receive a letter because their mailing address was not valid, and they did not provide an email address. The mailing list was composed of people who attended public meetings, people who asked to be on the list, private landowners, tribes and pueblos, government agencies, media contacts, and organizations. We posted the proposed action and maps on the forest's Web site on the same day we mailed the letters, July 10, 2008.

The notice of intent to prepare an environmental impact statement was published in the Federal Register on July 17, 2008 (USDA Forest Service 2008g). Its publication marked the beginning of the scoping comment period, during which we invited comments on the proposed action. The scoping period ended September 2, 2008. During the scoping period, we held 13 public meetings to introduce the proposal, answer questions, solicit comments, and listen to the public's opinions. Meetings took place in the vicinity of all five ranger districts and the forest headquarters. Approximately 570 people attended. The district rangers and forest supervisor also met individually with people who asked.

Scoping Comments

We received 1,386 emails and letters commenting on the proposal. Of these, 45 came from organizations or agencies and the rest from individual citizens. Several people provided their own alternatives for us to consider. In addition, we received six different petitions. Almost everyone sent their comments by September 2, 2008, though a few continued to come in as late as 2010. These comments have been included in the record. However, because the analysis of effects was substantially completed by early 2010, these late comments weren't reflected in the draft environmental impact statement.

The Santa Fe National Forest's travel management interdisciplinary team, a team of Forest Service employees with different professional specialties, read and evaluated every letter. Using an established analytical process for sorting and categorizing comments into a database, the team identified the individual comments contained within each letter. For example, a single letter might contain four different comments on things like wildlife habitat, erosion, access, and noise. The team identified 3,749 comments within the scoping comment letters. Many of the comments express similar ideas.

The team found two kinds of comments. The first, "general comments," pertained to the whole forest. An example of this is, "Please provide access for hunting." The general comments numbered 2,401. The interdisciplinary team used the general comments to develop the issues discussed in this statement.

The other kind of comment, "site specific," identifies an exact place on the forest. An example is, "I would like to see Forest Road 144 open to vehicles all year." The site-specific comments numbered 1,348. Staff on the five ranger districts considered each site-specific comment to see whether the suggestion could be incorporated into an alternative. Most suggestions were placed in one or more alternatives, but some were not. When district staff recommended the comment not be in any alternative, they provided a reason why not. These reasons are found in the site-specific database in the project record (USDA Forest Service 2010g).

Issues

The interdisciplinary team grouped the 2,401 general comments into more than 60 public concern statements. Each public concern statement captured a unique theme that one or more members of the public raised. A public concern was carried forward as a significant issue if it wasn't resolved by the proposed action, or disagreement about the impacts of the proposed action existed, or the concern wasn't already addressed by law, regulation, or policy (see the section below called "Issues Not Considered in Detail" for a complete list of the latter). As a significant issue, it formed the basis of one or more of the alternatives.

For a full explanation of how the interdisciplinary team analyzed the comments received during scoping and identified the issues to analyze, refer to these documents in the project record: (1) Content Analysis Methodology (April 9, 2009); (2) Memo to File Approving Issues and Alternatives (March 17, 2010); (3) Comment Tracking Database (contains the general comments) (June 2, 2010); and (4) Report on Site Specific Suggestions (contains the site-specific comments) (June 2, 2010).

Significant Issues

We identified these five significant issues from the comment letters:

1. Continued public motorized use of routes and areas described in the proposed action will adversely affect forest resources. These effects include:
   - Erosion, soil compaction, and degradation of water quality and watershed condition;
   - Degradation of fish and wildlife habitat;
   - Damage to cultural resource sites;
   - Damage to traditional cultural properties;
   - Spread of invasive plant species;
   - Damage to rare plants; and
   - Compromising the character of wilderness and inventoried roadless areas.
2. The reduction in miles of routes and the prohibition on cross-country travel described in the proposed action will adversely affect the quantity of public motorized experiences because the proposed action:
   - Lacks enough loops and connectors to provide for longer rides;
   - Lacks diverse opportunities for all-terrain vehicles, motorcycles, and 4x4s;
   - Lacks diverse routes for different skill levels;
   - Restricts access to traditional cultural properties;
   - Does not provide enough area for motorcycle trials;
   - Closes too many routes, which will concentrate use and take away the semiprimitive aspect of riding in the forest; and
   - Does not plan for the future growth in motorized sports.
3. Prohibiting motorized cross-country travel will limit the retrieval of big game, perhaps to an unacceptable level.
4. Designating motorized dispersed camping corridors will increase cross-country travel and the resource damage associated with it and also curtail the kind of unrestricted camping that the Santa Fe National Forest currently provides.
5. The proposed action, by designating routes uniformly across the forest outside of designated wilderness, will cause conflicts between motorized and nonmotorized users because they will be recreating in the same vicinity.

Other Issues

“Other issues” didn’t form the basis of an alternative, but are analyzed in this statement.

- Designating routes close to private property may increase incidents of trespass on private land.
- Motorized travel causes fugitive dust and vehicle emissions that are harmful to human health and contribute to climate change.
- Designating routes to or motorized dispersed camping close to private property limits recreational opportunities or encourages trespass.

- The motor vehicle use map alone will be an inadequate enforcement tool.
- Any reasonable designated motorized trail system will require more maintenance than the Forest Service can provide by itself. An unmaintained system will continue to adversely affect forest resources.
- Closing routes to motorized use could affect visual quality.
- Reducing the miles of roads and trails could decrease the amount of motorized recreation on the forest, resulting in negative economic impacts.
- Motorized routes in the Santa Fe National Forest could result in undesirable noise affecting those who visit the national forest and surrounding areas.
- Motorized routes in the Santa Fe National Forest could affect property values for lands adjacent to the forest.
- Reducing the miles of routes for motorized use in the Santa Fe National Forest could impact the cultural practices and traditions by limiting opportunity for traditional activities on the forest.
- The designation of routes for motorized use in the Santa Fe National Forest could result in a disproportionately high and adverse human health or environmental effect on minority populations and low-income populations.
- Motorized use of the forest increases the risk of wildfire starts.
- The proposed action restricts motorized access to hunting and fishing opportunities, as well as forest product collection.

Issues Not Considered in Detail

We recognize that all concerns raised by the public are important. Some concerns, however, do not fit into this environmental analysis for a variety of reasons. The Council on Environmental Quality's NEPA regulations direct interdisciplinary teams to "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (40 CFR 1506.3)…" For example, a commenter might suggest we follow the NEPA process, which we are already required to do by law.

The comments not analyzed in detail fell into one of the following categories. They were:

- Already part of the proposed action;
- Addressed through implementation of standards, guidelines, or best management practices in the forest plan;
- Already decided by law, regulation, or policy;
- Beyond the scope of the project; or
- Not supported by scientific evidence.

The document titled "Final List of Issues and Concerns from Scoping" dated February 9, 2010, in the project record lists each concern not considered in detail with an explanation as to how it was considered.

Notice and Comment Period for the Draft Environmental Impact Statement

The forest posted the draft environmental impact statement on its Web site on July 22, 2010. The forest supervisor notified 1,211 individuals and organizations via email or letter on July 22 and 23, 2010, letting people know the draft was available for review. The people notified were those who commented during scoping, who asked to be kept on the mailing list, or who specifically requested notification of the draft's availability. The notice and comment period—the official time allotted for the public to comment on the draft environmental impact statement to have standing to appeal—started with publication of the notice of availability in the Federal Register on August 6, 2010. The notice and comment period ran from August 7 through September 30, 2010. The public had 71 days to review the draft from the time it was posted on the internet through the end of the comment period.

In conjunction with the notice and comment period, the forest hosted another eight public meetings to present the alternatives and answer questions.

We received 859 letters and emails from the public commenting on the draft. As with the scoping period, the forest's interdisciplinary team used an established method for reading, coding, sorting, and analyzing each letter (USDA Forest Service 2012o).

Response to Comments Made During the Notice and Comment Period

The regulations implementing the National Environmental Policy Act provide this direction to agencies responding to comments on draft environmental impact statements:

> *"An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:*
>
> - *Modify alternatives including the proposed action.*
> - *Develop and evaluate alternatives not previously given serious consideration by the agency.*
> - *Supplement, improve, or modify its analyses.*
> - *Make factual corrections.*
> - *Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response." (40 CFR 1503.4)*

The forest considered comments individually by evaluating each letter and identifying the specific comment(s) contained within. Because of the high volume of comments received, the forest grouped like comments together into one and answered them (appendix 7).

Tribal Consultation

The five district rangers started talking to tribal government officials about the forest's travel management planning in 2006. The forest supervisor sent the first formal invitation to all the

tribes with whom we maintain ongoing government-to-government relationships to consult on this subject on April 10, 2007. We received no formal responses to this invitation.

The second formal invitation to consult on this project was sent on July 10, 2008, at the same time the proposed action was released. We received one formal response from the Navajo Nation. Its response identified specific sites of concern in the forest and requested continued access to these sites. The heritage specialist report addresses these concerns, and they will be discussed in the clearance report.

The forest supervisor sent a general invitation to consult on all forest projects—including travel management—to all tribes on April 17, 2009. We received no responses related to travel management.

Informal discussions among tribal officials, district rangers and other forest employees indicate a general feeling among tribal people that they are pleased with the reduction in motorized routes, and they are satisfied with assurances that they will continue to have access to sites that have importance to them.

Important Notes

The Decision Will Change Where People Can Drive in the Forest

Right now, the Santa Fe National Forest is open to motorized use unless marked closed[1]. This means that people can drive where they like as long as no sign or closure order posts it closed. The Travel Management Rule switches that around: the forest is closed to motorized use unless specifically designated as open for motor vehicle use. Driving off routes will no longer be allowed unless it is in a designated area or fixed-distance corridor. If people drive somewhere that is not on the motor vehicle use map, they would be driving illegally and subject to a fine. The official reference for what is open will be the motor vehicle use map, which will show the roads, motorized trails, areas, and fixed-distance corridors where driving is allowed.

The First Motor Vehicle Use Map

The first motor vehicle use map may not show all the roads, trails, and fixed-distance corridors designated in the record of decision. Appendix 5 explains why.

Subsequent Motor Vehicle Use Maps

We emphasize that the motor vehicle use map is dynamic, and will be reviewed and published annually. If a road, motorized trail, or area is not included in the first map, it could be included or removed in subsequent maps as long as the appropriate environmental analysis, surveys, monitoring, or documentation are completed. The annual publication of the motor vehicle use map means the public can continue to work with forest staff to add or remove roads, motorized trails, and areas as appropriate.

[1] The forest plan allows driving off roads on 53 percent of the forest.

Errata

The maps of the alternatives were "frozen" in April 2011 so the environmental analysis could be performed on a consistent set of maps. Between April 2011 and April 2012, forest staff discovered and corrected some errors. The complete list of errata is included as appendix 8 as provided for by the regulations at 40 CFR 1503.4(C).

Use of "Closed"

The definition of a "closed road" is provided in the glossary, and we have attempted to adhere to it in this statement. Where used, "closed" may also refer to a road that isn't designated for motorized use. Some of these roads or trails may be decommissioned or obliterated at a future date. The forest's INFRA database should contain which roads are closed and which are slated for decommissioning after the forest supervisor makes her decision.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

The interdisciplinary team used the significant issues listed in chapter 1 to develop the three action alternatives analyzed in the draft environmental impact statement. Summarized briefly, the five significant issues are: protection of natural and cultural resources, reduction of the amount and type of motorized access, motorized access for retrieving big game, motorized access for dispersed camping, and conflict between motorized and nonmotorized uses. The alternatives approach the purpose and need—to provide for a designated system of roads, motorized trails, and areas and to reduce detrimental impacts caused by unmanaged motorized use—differently. The alternatives respond to the significant issues as shown in table 2.

Table 2. Relationship between alternatives and significant issues

This Alternative	Responds to These Significant Issues
1 – No Action	Baseline, required by law
2 – Proposed Action	Initial proposal (7/8/08) amended in DEIS as allowed by 36 CFR 220.5(e)(1)
2M – Modified Proposed Action	Protection of natural resources Provision of motorized opportunities Motorized access to dispersed camping Motorized access for retrieving big game
3 and 4	Protection of natural resources Provision of motorized opportunities Motorized access to dispersed camping Motorized access for retrieving big game
5	Motorized access for retrieving big game Motorized access for dispersed camping Conflicts between motorized and nonmotorized forest users

The interdisciplinary team built the alternatives around three loose themes. Alternative 3 emphasizes natural resource protection and high habitat quality by providing a reduced amount of motorized access to and in the forest. Alternative 4 increases motorized access while providing for resource and habitat protection, but at a lower level than the proposed action. Alternative 5 geographically groups motorized routes, providing separation between motorized and nonmotorized uses. The team developed the fourth action alternative, 2M, as a result of the public's comments on the draft environmental impact statement. Alternative 2M modifies the proposed action. Settling on which alternatives to consider in detail was an iterative process that occurred over the course of several months. The forest supervisor approved the final list of alternatives. To read about the Forest Service's deliberative process, please refer to the interdisciplinary and steering committee meeting notes in the project record.

In addition to the issues raised during the scoping period, several members of the public sent in alternatives for the forest staff to consider. The five action alternatives presented in this final environmental impact statement incorporate elements of some of these proposals as well as other comments made by the public. The interdisciplinary team also used information from other agencies to develop and refine the alternatives.

Overview of the Alternatives' Development

This statement considers six alternatives in detail. The next table summarizes when each was first available to the public and the criteria used in its development. A complete description of the steps taken and criteria used to develop the alternatives is in the project record (USDA Forest Service 2012p).

Table 3. Summary of alternatives and their criteria

Alternative	Date First Published	Published in . . .	Main Criteria Used	Comments
1 – No Action	July 22, 2010	DEIS FEIS	No change from current management	This alternative shows where people drive now.
2 – Proposed Action	July 10, 2008	Scoping notice DEIS FEIS	The July 10, 2008, proposed action was taken from the "Travel Analysis Process Report." The proposed action in the DEIS was modified as a result of public comments and field verification (36 CFR 220(e)(1)).	The document titled "Explanation of Differences between the July 2008 Proposed Action and the Corrected Proposed Action" dated January 27, 2010, in the project record provides an explanation of the changes.
2M	June 2012	FEIS	Public comment	This alternative modifies the proposed action as a result of the public's comments on the DEIS (40 CFR 1503.4). This is the forest supervisor's preferred alternative.
3	July 22, 2010	DEIS FEIS	USDA Forest Service 2009c	
4	July 22, 2010	DEIS FEIS	USDA Forest Service 2009c	
5	July 22, 2010	DEIS FEIS	USDA Forest Service 2009c	

Miscellaneous Notes on Alternative Development

Some people requested that the alternatives provide loops 25 miles or longer for riding. We haven't listed miles of loops for each alternative because the combination of roads and trails that a person might ride on determines the mileage of the loop. All of the alternatives provide loops that are 25 miles or longer, depending on how someone strings together their choice of routes. Not all the alternatives provide the kind of riding experience that may be desired. Alternative 3, for example, contains the fewest miles of single track.

Some people asked the Forest Service to make sure that the designated system has enough variety for drivers and riders with different skill levels (beginners through experts) and for different types of vehicles, such as motorcycles or 4x4s. The Forest Service does not rate routes in terms of difficulty. What one person considers an easy route might be very difficult for another. We attempted, however, to provide enough total mileage and variety so that everyone could find what they need and like.

Motorized access to dispersed camping is provided in two ways. The first are the designated, fixed-distance corridors in which people can drive a limited distance off roads to set up camp. The second are routes that end at dispersed campsites. These tend to be short, open spur roads that are not specifically designated for dispersed camping. These spurs provide additional motorized access to camping than what is tallied in this chapter's summary tables.

On the paper or electronic copies of the maps of the alternatives, some routes appear to dip into the San Pedro Parks and Chama River Canyon Wilderness areas. This, however, is a function of how the boundaries of the wilderness areas are electronically mapped in GIS. The Santa Fe National Forest does not have the authority to change the mapped, electronic boundaries. On the ground, the routes do not go into wilderness areas. The forest surveyor investigated all the routes that appear to cross wilderness areas, and found that on the ground, none do (USDA Forest Service 2009a).

No alternative prohibits nonmotorized activities; the change proposed with this project is where people can drive to get to places in the forest to do these activities. Designated system roads and motorized trails would also be open for walking, hiking, bicycling, horseback riding, or other nonmotorized activities.

All the action alternatives provide access to popular destinations, loops, and connectors for longer riding time; routes that increase the diversity of opportunities for different vehicle classes (ATVs, motorcycles, full-size 4-wheel drive); and routes that provide semiprimitive riding experiences. A route was included in one alternative and not in another depending on whether it fit with the objective of the alternative.

Maps of the Alternatives

Draft Environmental Impact Statement: The interdisciplinary team completed the maps of the alternatives shown in the draft on September 30, 2009. Between then and publishing the draft on July 22, 2010, the team continued to find changes, but froze the alternatives on September 30, 2009, so that specialists could begin their effects analysis with a consistent set of numbers and maps.

Final Environmental Impact Statement: Between publication of the draft and final statements, forest staff continued to record mistakes and changes. For example, forest staff used GPS to locate more routes and their alignments were refined. The forest's transportation engineer visited a number of unauthorized routes to identify road management objectives for them, and some don't exist (USDA Forest Service 2012b). Changes to the maps between September 30, 2009, and April 2011 have been incorporated into this FEIS. This means that a change identified by staff or the public after April 2011 will not show up on the maps of the alternatives in this final environmental impact statement. These changes are listed in the errata in appendix 8. These changes will be incorporated into the forest supervisor's final decision where appropriate.

Despite the public's corrections and the district staffs' field work, we still lack complete information on the location and condition of every route and area due to the volume of routes that exist on the forest. We will continue to make changes with the annual review and publication of the motor vehicle use map.

Statement of Incomplete or Unavailable Information

This section fulfills the requirements listed in 40 CFR 1502.22.

The forest doesn't have complete information on the condition and level of use of its forest system roads and trails, unauthorized routes, or motorized cross-country use. Collecting that information would constitute covering over 7,500 miles of forest system routes, an unknown mileage of unauthorized routes, and 1.5 million acres of National Forest System lands. The overall cost of obtaining this information would be exorbitant and time consuming, besides the fact that it changes every year. For example, the 2011 Las Conchas Fire changed the condition of routes within its perimeter.

Having complete information on the condition and motorized use of every mile and acre of the Santa Fe National Forest is not relevant to effectively analyzing the reasonably foreseeable significant adverse impacts on the human environment. The general effects of the existence and use of routes and off-road travel on natural and cultural resources are well documented and presented in each section of chapter 3.

None of the action alternatives are expected to have catastrophic consequences; on the contrary, most improve or maintain the condition of natural and cultural resources while continuing to provide motorized opportunities to the public.

Alternatives Considered in Detail

Some Important Laws and Policies that Will Continue to Apply to Any Alternative

Current law and policy applies to all the alternatives analyzed in this statement. A few key items merit mention here since they were of particular concern to the public:

- Motorized use on National Forest System roads and trails is subject to New Mexico State Law.
- In accordance with 36 CFR 261.12, National Forest System roads and trails, the following is prohibited: (c) Damaging and leaving in a damaged condition any such road, trail, or segment thereof.
- In accordance with 36 CFR 261.15, use of vehicles off roads (h), it is prohibited to operate any vehicle off National Forest System, State, or county roads in a manner which damages or unreasonably disturbs the land, wildlife, or vegetative resources.
- The provisions of the Alaska National Interest Lands Conservation Act (ANILCA; P.L. 96-487) that require the Forest Service to allow access to private inholdings will continue to apply.
- As provided for in the Travel Management Rule, none of the alternatives preclude the forest from closing roads, trails, or areas to motorized use through emergency closure orders if the conditions specified in the regulations are met (36 CFR 212.52(b)(2)).

In essence, people must continue to follow State and Federal rules and regulations in addition to the motor vehicle use map.

Alternative 1 – No Action

The no action alternative is no change from current management direction or level of management intensity. The "no action" alternative may be thought of in terms of continuing with the present course of action until that action is changed (CEQ's 40 Most Asked Questions, No. 3). Therefore, for this project, the no action alternative is the forest's best estimate of where people drive now, which reflects the current management and present course of action.

Alternative 1, the no action alternative, displays existing conditions and provides a baseline for comparing the other alternatives. Under the no action alternative, the conflicting direction contained in the 1987 "Santa Fe National Forest Plan" (forest plan) and other written direction (e.g., closure orders and the forest visitor map) would continue to guide motor vehicle use in the national forest. The Travel Management Rule would not be implemented, and no motor vehicle use map would be produced. No permanent prohibition on motorized cross-country travel would be in place. No changes to the existing transportation system would be made. Without clear direction, motorized use of the national forest would continue in more or less the same manner as it does presently.

Table 4 shows where people drive now, which is the present course of action. Because we don't have complete information on all the places being used, we made some assumptions and estimates. A detailed explanation of the assumptions for alternative 1 is found in the project record in a document called "How Alternative 1 (No Action) is Defined" dated November 16, 2009.

Table 4. Alternative 1, no action – where people drive now

Row No.	Type of Route	Total Miles	Miles Being Driven on (percent of total forest system)
1	All system roads and trails on the Santa Fe National Forest (does not include unauthorized routes since these are not part of the forest's transportation system)	6,899	--
2	System roads **not** managed as open for motorized use	1,349	269 (4%)
3	System roads managed as open for motorized use	5,084	4,751 (69%)
4	Unauthorized routes that may be open for motorized use*	914	540 (N/A)
5	System trail built for nonmotorized uses outside wilderness*	459	41 (less than 1%)
6	Motorized system trails	26	26 (less than 1%)
	Total miles of National Forest System routes being driven on		5,087 (74%)
	Type of Area		**Acres (percent of total forest system)**
7	Total acres of National Forest System lands on Santa Fe National Forest (does not include private or other inholdings)		1,553,369 (100%) (Percents below do not add up to 100 because uses overlap.)
8	National Forest System land being used for any kind of motorized use		443,848 (29%)
9	Motorized access to dispersed camping		17,195 (1%)
10	Motorized retrieval of downed big game		1,258,361 (81%)

*If the route is in a place where motorized cross-country travel is allowed, then motorized travel on the route is allowed.

Approximately 41 miles (row 4) of system trails built for nonmotorized uses are being used by motorized groups. Though these trails were built for nonmotorized uses like hiking, the forest doesn't actively discourage motorized use on them.

The forest built 26 miles (row 5) of system trail specifically for motorized use, and motorized groups indicated to us that they ride on all of them.

Areas and Fixed-distance Corridors People are Driving on Now

The acres of National Forest System lands within the Santa Fe National Forest's boundary, 1,553,369, are shown in row 7. This figure excludes land held privately. It is all the acres of public land managed by the Santa Fe National Forest.

The 443,848 acres (row 8) where motorized cross-country travel is estimated to occur is shown in figure 5. Staff on the five ranger districts identified places where people drive off roads regularly for dispersed camping, collecting forest products, driving for pleasure, ATV use, and 4-wheel drive use.

We estimate that people drive and camp close to roads on about 17,195 acres (row 9). During 2008 and 2009, ranger district personnel conducted field inventories to determine where people "car camp." A complete description of the protocol used and results obtained is located in the project record (USDA Forest Service 2008d). For ease of comparison to the other alternatives, we placed corridors for alternative 1 around these existing sites. We acknowledge that people are also driving cross country in the forest at large to camp; however, we think this is relatively small compared to that which occurs along roads.

The area being used by people retrieving downed game with a vehicle is estimated at 1,258,361 acres (row 10). It is all the acres outside of the four congressionally designated wilderness areas on the forest. As explained in the document called "How Alternative 1 (No Action) is Defined," neither the Forest Service nor the New Mexico Department of Game and Fish have data on where people drive to retrieve game animals. The interdisciplinary team thought it reasonable to assume that game could potentially be retrieved from any part of the forest where a vehicle could go, and excluded wilderness areas because those tend to have specific access points so people know where they are. This figure is in no way meant to imply that hunters are not following the rules. In the absence of data, we made this assumption. It is likely that people can't drive on many of these acres due to slope, vegetation, and terrain.

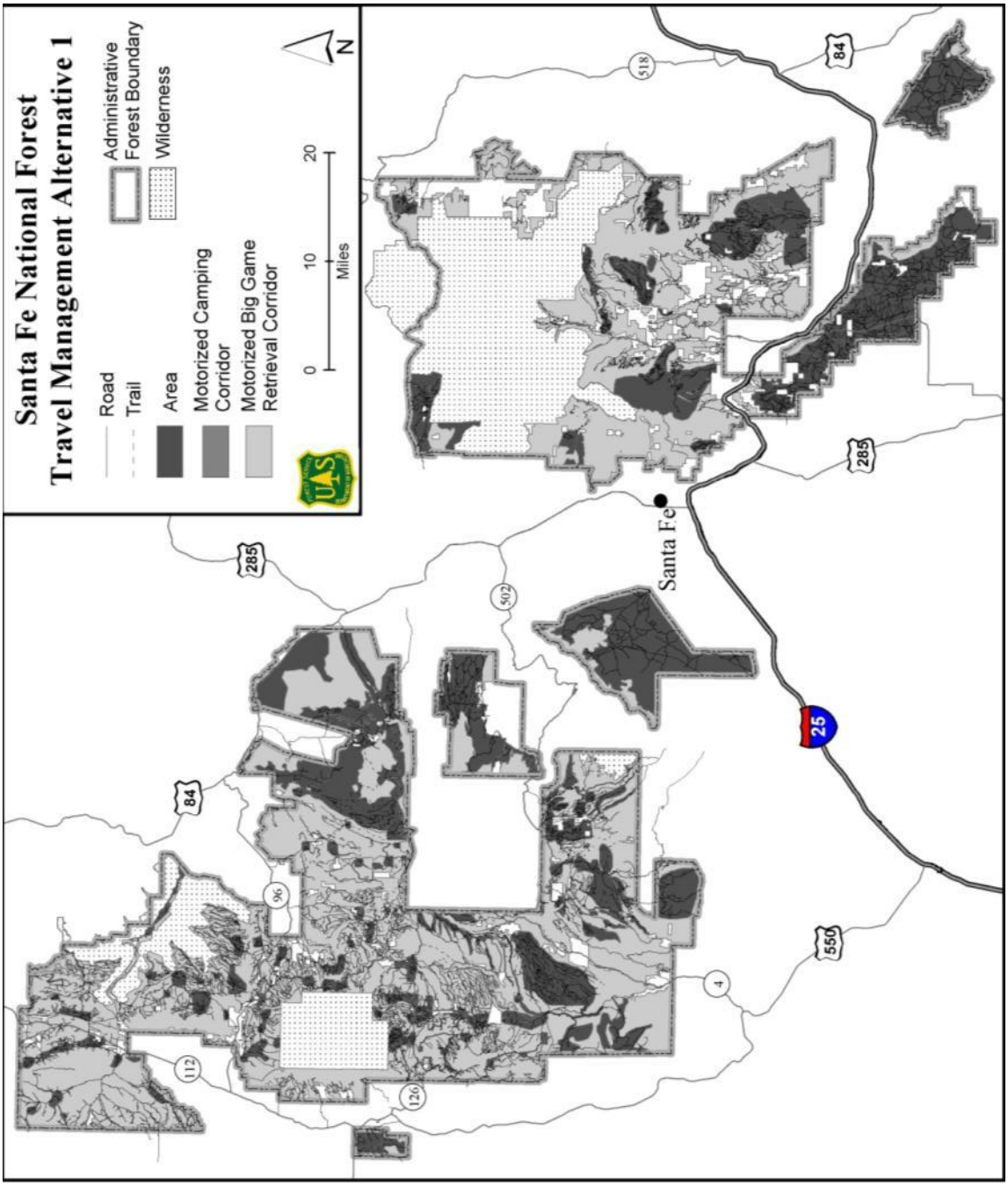

Figure 5. Alternative 1 (no action)—roads, trails, and areas where people drive now. The fixed-distance corridors shown are based on the dispersed camping inventories done by the forest in 2008 and 2009 to show what people use now.

Format Describing the Action Alternatives

Alternatives 2 through 5, the "action" alternatives, all propose changes to the forest's current motorized travel system. (Because alternative 1 is the baseline where no changes are proposed, the following format doesn't apply.) To make it easier to compare the alternatives, each is described using the same format:

1. The theme or principle behind the alternative.
2. The six kinds of specific, proposed changes to the current motorized travel system, as follows:
    a. **Motorized cross-country travel:** All of the action alternatives would prohibit the public from using a vehicle off designated National Forest System roads, National Forest System motorized trails, and areas on National Forest System lands shown on the motor vehicle use map except as allowed by permit or other authorization. This changes the forest's current policy, which allows motorized travel on 53 percent of the forest, and satisfies the requirement in the Travel Management Rule (36 CFR 212.1; 70 FR 68273-4). Four of the action alternatives keep small areas, intended for motorcycle trials and dispersed camping, open for motorized cross-country travel.
    b. **Changes to existing National Forest System routes:** Changes to existing system routes include closing routes to motorized use, allowing motorized use on routes that currently prohibit it, converting roads to trails, or vice versa.
    c. **Adding routes to the system:** All of the action alternatives propose to add unauthorized routes to the forest's transportation system. Unauthorized routes have been proposed for these reasons: (1) to provide a diversity of desirable motorized recreational experiences in appropriate locations; (2) to provide access to certain places in the forest; (3) to provide motorized dispersed camping (usually at the end of a short spur road); and (4) to provide access to private land. The document called "GEN08_TravelMgt_UnauthorizedRoutesDesignations_20110502.xlsx" in the project record contains the unauthorized routes proposed for addition and the reason why for each alternative. The calculations upon which each table showing the unauthorized routes is based on is found in the document called "GEN09_TravelMgt_PurposeOfUnauthRoute_20120112_JB.xlsx" in the project record. In a few instances, routes that do not exist on the ground are proposed to provide motorized access to private property, to show an easement owned by the Forest Service, or to provide motorized recreation (figure 6). In these cases, the route's exact alignment would be determined at a future date, and construction allowed only after the appropriate environmental analysis and permitting is done.
    d. **Changing motorized access to dispersed camping or big game retrieval:** The Travel Management Rule at section 212.51(b) provides for the optional designation of "the limited use of motor vehicles within a specified distance of certain designated routes and, if appropriate, within specified time periods, solely for the purposes of dispersed camping or retrieval of a downed big game animal by an individual who has legally taken that animal." The action alternatives propose varying amounts of motorized access for these purposes, depending on the emphasis of the alternative.

Figure 6. Area where a trail existed before the Cerro Grande Fire. Motorcyclists requested that we repair and open it again.

e. **Changing vehicle class allowed on routes:** The action alternatives include changes to the types of vehicles, such as passenger cars or motorcycles, allowed on routes. (The current motorized travel system does not specify what kinds of vehicles are allowed on roads or trails. By default, then, all vehicles are allowed anywhere they can physically pass.) In many cases, the types of vehicles allowed correspond with existing tread widths. For instance, routes designated as single track generally accommodate motorcycles only, whereas routes designated for vehicles 50 inches wide or less accept motorcycles and ATVs. The forest does not intend to reconstruct routes to match the vehicle class. Some routes, though designated for all vehicles, may be too rough for a passenger car. Some routes may exist as two tracks on the ground, and be designated as single track to provide that kind of riding experience. The forest would not, however, close one of the tracks to make a single track.

f. **Changing season of use:** The action alternatives propose different combinations of seasonal closures depending on the focus of the alternative. Seasonal closures are composed of restrictions to protect breeding wildlife and to prevent driving on routes when they are wet and vulnerable to damage. The current motorized travel system does not contain uniform seasonal restrictions.

3. Features unique to the alternative.
4. A table showing the motorized system that results from the proposed changes—this shows how much of the forest would be open for driving. The calculations from which these tables are created are in the spreadsheet "GEN05c_TravelMgt_RoutesByMOT_ExistCond_JB_20111221.xlsx".
5. A map of the designated roads, trails, areas, and fixed-distance corridors.

A brief description of proposed amendments to the forest plan follows alternative 5. Appendix 1 contains the exact text of the forest plan amendments for each alternative.

The miles, acres, and percent changes shown in this FEIS for alternatives 1, 2, 3, 4, and 5 differ from those shown in the DEIS. The reason is the groupings composing each category—such as unauthorized routes or routes managed as open to motorized use—have changed. It's important to note that this doesn't constitute a substantive change in the designations proposed in each alternative. The alternatives shown in the DEIS are the same as those in the FEIS (except alternative 2M, which is new), outside of alignment changes and other minor corrections (USDA Forest Service 2011e).

Appendix 2 contains tables summarizing the proposed changes, how this differs from the current motorized travel system, how it differs from where people drive now, and the resultant system for each alternative. Appendix 2 contains this summary for letters a through d described above. The calculations that support letters e and f are located in these spreadsheets in the project record: GEN01_TravelMgt_RoutesByMOT_20111220_JBworking.xlsx and GEN07_TravelMgt_SeasonalDates_20120124_JB.xlsx. To find out if a route has a new seasonal restriction or is proposed to be closed to certain kinds of vehicles, refer to the large maps of the alternatives.

All miles, acres, and percentages have been rounded to the nearest whole number. The totals shown in the tables and text may differ slightly due to rounding.

Alternative 2

1. **Theme:** Alternative 2 is the proposed action described in the draft environmental impact statement published July 22, 2010.

2. **Proposed changes to existing travel policy:**

   a. **Motorized cross-country travel:**

      - Motorized travel by the public off designated National Forest System roads, trails, and areas shown on the motor vehicle use map would be prohibited except as allowed by permit or other authorization.

   b. **Changes to existing National Forest System routes:**

      - Allow motorized use by all vehicles on 64 miles of system roads not currently managed as open for motorized use.
      - Allow motorized use by highway legal vehicles only on 2 miles of system roads not currently managed as open.
      - Convert 48 miles of closed system roads to motorized system trail; 14 miles for motorcycles only and 34 miles for vehicles less than or equal to 50 inches wide.
      - Convert 102 miles of open system roads to motorized system trail; 26 miles for motorcycles only and 76 miles for vehicles less than or equal to 50 inches wide.

Features Unique to Alternative 2

- Motorized access for dispersed camping and big game retrieval are in the same corridors.
- Keeps most of the existing use for motorized dispersed camping.
- Keeps 11 unique areas (40 acres total) open for motorized cross-country use.
- Has the most (11) different seasonal closure dates.

- Convert 259 miles of system roads open to all vehicles to be open to highway legal vehicles only.
- Close 2,813 miles of open system roads to all motorized use.
- Allow motorized use for motorcycles only on 8 miles of system trail not built for motorized use outside wilderness.
- Close 7 miles of motorized system trail.
- Change 7 miles of open system road that is coincident with motorized trail to be 2 miles for motorcycles only, 3 miles for vehicles 50 inches or less, and 2 miles open to all vehicles.

c. **Adding routes to the system (table 5):**

- Add 51 miles of unauthorized routes as roads open to all vehicles.
- Add 3 miles of unauthorized routes as roads open to highway legal vehicles only.
- Add 10 miles of unauthorized routes as motorized trails for vehicles 50 inches wide or less.
- Add 78 miles of unauthorized routes as motorized trails open to motorcycles only.

d. **Changing motorized access to dispersed camping or big game retrieval:**

- Designate approximately 16,237 acres along 423 miles of National Forest System routes solely for the purpose of motorized access to dispersed camping or to retrieve a downed big game animal. In alternative 2, the corridors for dispersed camping and motorized big game retrieval are the same. We propose the corridors in two widths, either 150 or 300 feet from either side of the route.

e. **Changing vehicle class allowed on routes:**

- 2,027 miles would be open to all vehicles.
- 263 miles would be open to vehicles legal on paved highways (no ATVs or motorcycles that are not street legal).
- 123 miles would be open to vehicles 50 inches or less in width.
- 140 miles would be open to motorcycles only.

f. **Changing season of use:**

- 720 miles of routes would be open all year.
- 1,832 miles of routes would be open seasonally.

3. **Features unique to alternative 2:** Alternative 2 proposes motorized access for dispersed camping and big game retrieval in the same corridors because the New Mexico Department of Game and Fish requested that hunters not be treated differently than other drivers. This alternative allows motorized access to dispersed camping where it currently happens along roads and trails, except where forest staff identified unacceptable resource damage during field surveys. Alternative 2 has 11 different dates for seasonal closures in an effort to provide the best balance between resource protection and motorized access. The dates are tailored to individual situations, which allows more access than does "grouping" dates.
4. **Designated motorized system that results from the changes (table 6).**

5. **The roads, trails, areas, and fixed-distance corridors proposed in alternative 2 are shown in figure 7**.

Table 5. Miles of unauthorized routes proposed for designation and reason why in alternative 2

Reason for Proposed Designation	Type of Designation (miles)					
	Road Open to All Vehicles	Road Open to Highway Legal Vehicles Only	Trail Open to Motorcycles Only	Trail Open to Vehicles Less than 50 Inches Wide	Unauthorized Route, Not Designated	Total
Camping	9	1			2	11
Connector	13	1			2	15
General access	14				10	24
Motorized trail	2		78	10	67	158
Private access	13	1			3	17
Not designated					317	317
Total	51	2	78	10	401	541

Table 6. The designated motorized system as a result of the changes proposed in alternative 2

	Kind of Vehicle Allowed	Miles	Miles Open by Time of Year		Percent Open by Time of Year
Roads	Open to all vehicles	2,027	All year	532	26%
			Seasonal	1,494	74%
	Open to vehicles legal on paved highways*	263	All year	152	58%
			Seasonal	111	42%
Trails	Open to vehicles less than or equal to 50 inches wide	123	All year	12	10%
			Seasonal	110	90%
	Open to motorcycles only	141	All year	24	17%
			Seasonal	117	83%

	Miles	Percent Open All Year
Total roads	2,290	30%
Total trails	263	14%
Total trails, vehicles ≤ 50 inches wide	123	10%
Total trails, motorcycles only	140	17%
GRAND TOTAL, Alternative 2	2,552	28%

	Acres	Miles
Areas	40	NA
Corridors - dispersed camping	16,237	423
Corridors - big game retrieval	16,237	423

* Under New Mexico State law, ATVs are not allowed on paved highways but are allowed on nonsurfaced highways.

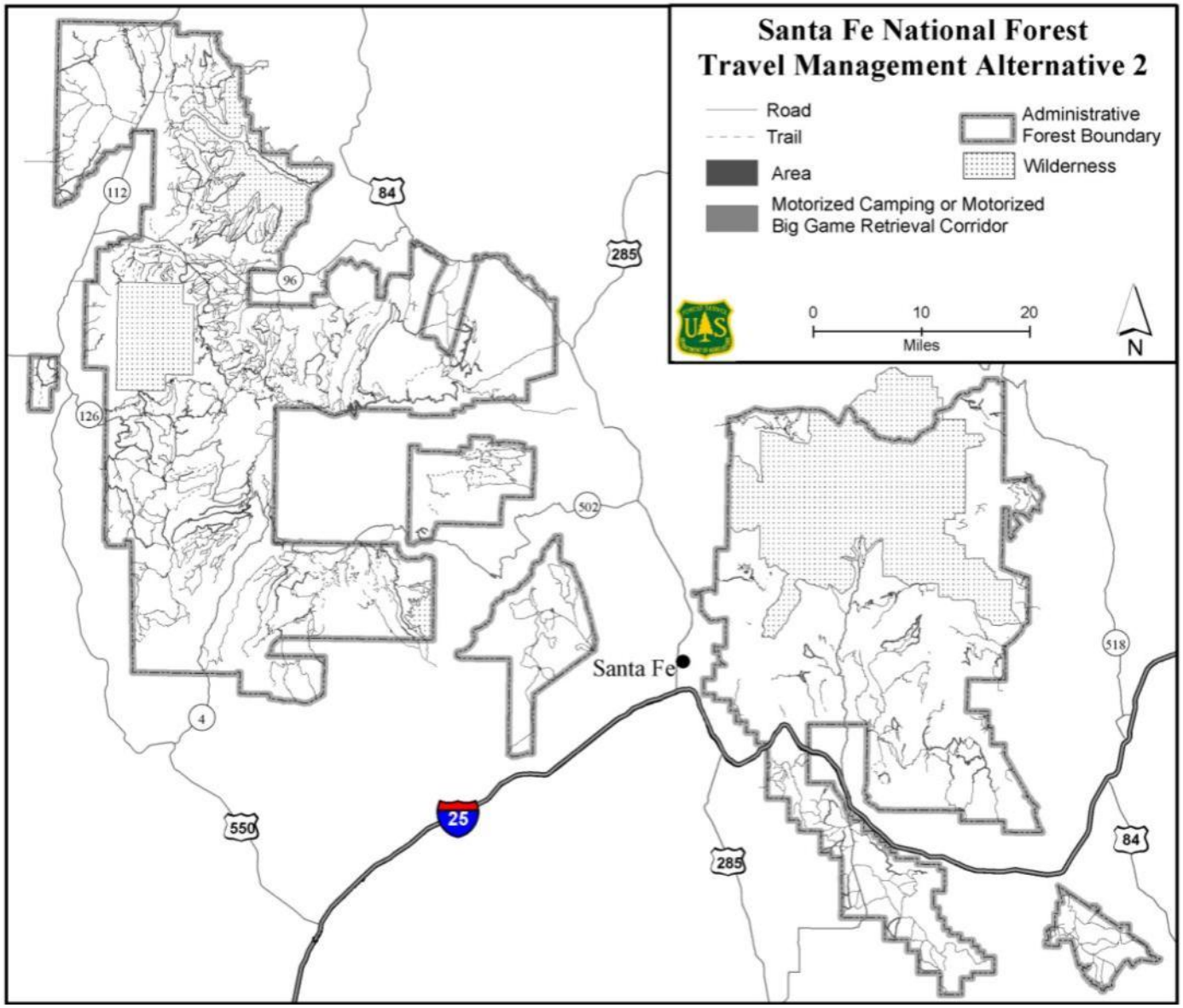

Figure 7. Roads, trails, areas, and fixed-distance corridors proposed – alternative 2

Alternative 2M

1. **Theme:** Alternative 2M is the forest supervisor's preferred alternative. It is similar to alternative 2, the proposed action, but modified as a result of the public's comments and our subsequent analysis. The modifications are primarily adding or removing specific routes, not allowing motorized travel off roads or trails within 100 feet of water in areas and fixed-distance corridors, and has no set closure dates for weather.

2. **Proposed changes to existing travel policy:**

   a. **Motorized cross-country travel:**

   - Motorized travel by the public off designated National Forest System roads, trails, and areas shown on the motor vehicle use map would be prohibited except as allowed by permit or other authorization.
   - Alternative 2M would not allow any vehicles within 100 feet of water (FSM 2526.03). The concept of not driving near water was originally presented in the draft environmental impact statement in alternative 3, which proposes no driving off roads for any reason.

Features Unique to Alternative 2M

- Doesn't allow driving off roads or trails within 100 feet of water in areas or corridors.
- Motorized access for dispersed camping and big game retrieval are in the same corridors. All corridors are 150 feet from either side of the road.
- Seasonal closures: Keeps closure dates for protection of wildlife habitat. No set closure dates for weather; those would be handled with individual closure orders on an annual basis.
- Keeps 41 acres as motorized cross-country use areas.
- Motorized use in inventoried roadless areas allowed on a case-by-case basis.
- Keeps 81 percent of the motorized dispersed camping corridors being used now.

   b. **Changes to existing National Forest System routes:**

   - Allow motorized use by all vehicles on 65 miles of system roads not currently managed as open for motorized use.
   - Allow motorized use by highway legal vehicles only on 2 miles of system roads not currently managed as open.
   - Convert 39 miles of closed system roads to motorized system trail; 13 miles for motorcycles only and 26 miles for vehicles less than or equal to 50 inches wide.
   - Convert 68 miles of open system roads to motorized system trail; 22 miles for motorcycles only and 47 miles for vehicles less than or equal to 50 inches wide.
   - Convert 108 miles of system roads open to all vehicles to be open to highway legal vehicles only.
   - Close 2,878 miles of open system roads to all motorized use.
   - Allow motorized use for motorcycles only on 3 miles of system trail not built for motorized use outside wilderness.
   - Close 13 miles of motorized system trail.
   - Change 4 miles of open system road that is coincident with motorized trail to be 2 miles for motorcycles only, 1 mile for vehicles 50 inches or less, and 1 mile open to all vehicles.

c. **Adding routes to the system (table 7):**
   - Add 48 miles of unauthorized routes as roads open to all vehicles.
   - Add 7 miles of unauthorized routes as motorized trails for vehicles 50 inches wide or less.
   - Add 82 miles of unauthorized routes as motorized trails open to motorcycles only.

d. **Changing motorized access to dispersed camping or big game retrieval:**
   - Designate approximately 13,856 acres along 381 miles of National Forest System routes solely for the purpose of motorized access to dispersed camping or to retrieve a downed big game animal. In alternative 2M, the corridors for dispersed camping and motorized big game retrieval are the same. All corridors would be 150 feet from either side of the road.

e. **Changing vehicle class allowed on routes:**
   - 2,144 miles would be open to all vehicles.
   - 111 miles would be open to vehicles legal on paved highways (no ATVs or motorcycles that are not street legal).
   - 80 miles would be open to vehicles 50 inches or less in width.
   - 128 miles would be open to motorcycles only.

f. **Changing season of use:**
   - 2,298 miles of routes would have no set closure date, but could be closed individually during wet seasons.
   - 164 miles of routes would be closed certain times of year to protect wildlife.

3. **Features unique to alternative 2M:** Alternative 2M proposes motorized access for dispersed camping and big game retrieval in the same corridors because the New Mexico Department of Game and Fish requested that hunters not be treated differently than other drivers. This alternative prevents motorized access in the designated corridors within 100 feet of water in areas and fixed-distance corridors[2]. Alternative 2 keeps the seasonal closures for wildlife protection listed in the forest plan. It would have no set closure dates for weather. Instead, roads and trails would be closed as needed in wet weather, allowing for the most flexibility in access while balancing resource protection. This alternative proposes to designate some existing roads or trails in inventoried roadless areas, but reduces motorized access from the existing condition in them.

4. **Designated motorized system that results from the changes (table 8).**

5. **The roads, trails, areas, and fixed-distance corridors proposed in alternative 2M are shown in figure 8.**

[2] The Forest Service Manual defines a riparian area as being at least 100 feet from the edges of streams, lakes, and other bodies of water (FSM Section 2526.03 Riparian Management Policy). Thus, we chose to not allow vehicles within 100 feet of water in areas and fixed-distance corridors as a starting point. Future site-specific analyses may show that vehicles could be allowed closer, or need to be pulled even farther back depending on the site. This provision doesn't apply to roads and trails because that would fundamentally alter the forest's transportation infrastructure since a great deal of roads, trails, and developed recreational sites are within 100 feet of water now.

Table 7. Miles of unauthorized routes proposed for designation and reason why in alternative 2M

Reason for Proposed Designation	Type of Designation (miles)					
	Road Open to All Vehicles	Road Open to Highway Legal Vehicles Only	Trail Open to Motorcycles Only	Trail Open to Vehicles Less Than 50 inches Wide	Unauthorized Route, Not Designated	Total
Camping	9	less than 1			1	11
Connector	13	less than 1			2	15
General access	14				10	24
Motorized trail	4		82	7	66	158
Private access	8	less than 1			8	17
Not designated					317	317
Total	48	1	82	7	404	541

Table 8. The designated motorized system as a result of the changes proposed in alternative 2M

	Kind of Vehicle Allowed	Miles	Miles Open by Time of Year**		Percent Open by Time of Year**
Roads	Open to all vehicles	2,144	All year	2,017	94%
			Seasonal	127	6%
	Open to vehicles legal on paved highways*	111	All year	110	99%
			Seasonal	1	1%
Trails	Open to vehicles less than or equal to 50 inches wide	80	All year	68	85%
			Seasonal	13	16%
	Open to motorcycles only	128	All year	104	81%
			Seasonal	24	19%

	Miles	Percent Open All Year**
Total roads	2,255	94%
Total trails	208	82%
Total trails, vehicles ≤ 50 inches wide	80	84%
Total trails, motorcycles only	128	81%
GRAND TOTAL, Alternative 2M	2,463	93%

	Acres	Miles
Areas	41	NA
Corridors - dispersed camping	13,856	381
Corridors - big game retrieval	13,856	381

* Under New Mexico State law, ATVs are not allowed on paved highways but are allowed on nonsurfaced highways.
**Roads or trails may be closed due to wet weather on an individual basis, but no set closure dates for weather are proposed.

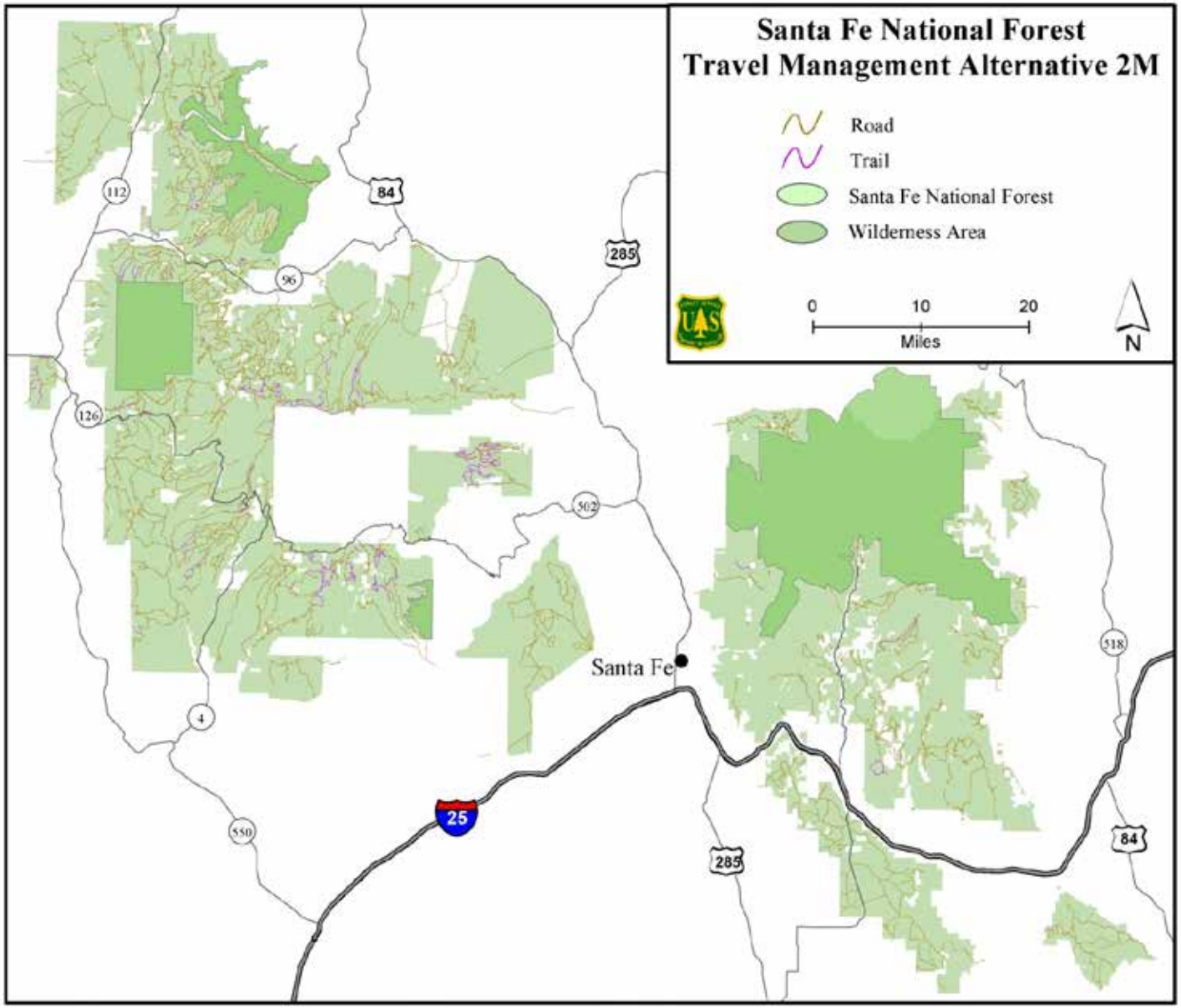

Figure 8. Roads, trails, areas, and fixed-distance corridors proposed – alternative 2M

Alternative 3

Features Unique to Alternative 3

- Has the fewest routes open for driving.
- Allows no driving off roads or trails for any reason.
- Adds only 1 mile of unauthorized trail.
- Has four different seasonal closure dates.

1. **Theme:** Alternative 3 emphasizes natural resource protection and habitat quality while still providing motorized access to and in the forest. It incorporates the concerns raised in significant issues 1 (protection of natural and cultural resources) and 3 (motorized dispersed camping).

2. **Proposed changes to existing travel policy:**

   a. **Motorized cross-country travel:**
      - Motorized travel by the public off designated National Forest System roads, trails, and areas shown on the motor vehicle use map would be prohibited except as allowed by permit or other authorization.

   b. **Changes to existing National Forest System routes:**
      - Allow motorized use by all vehicles on 39 miles of system roads not currently managed as open for motorized use.
      - Allow motorized use by highway legal vehicles only on 2 miles of system roads not currently managed as open.
      - Convert 12 miles of closed system roads to motorized system trail; 1 mile for motorcycles only and 11 miles for vehicles less than or equal to 50 inches wide.
      - Convert 37 miles of open system roads to motorized system trail; 8 miles for motorcycles only and 29 miles for vehicles less than or equal to 50 inches wide.
      - Convert 239 miles of system roads open to all vehicles to be open to highway legal vehicles only.
      - Close 3,309 miles of open system roads to all motorized use.
      - Close 22 miles of motorized system trail.
      - Change 2 miles of open system road that is coincident with motorized trail to be 2 miles open to all vehicles.

   c. **Adding routes to the system (table 9):**
      - Add 34 miles of unauthorized routes as roads open to all vehicles.
      - Add 2 miles of unauthorized routes as roads open to highway legal vehicles only.
      - Add 1 mile of unauthorized routes as motorized trails open to motorcycles only.

   d. **Changing motorized access to dispersed camping or big game retrieval:**
      - No fixed-distance corridors for motorized access to dispersed camping or big game retrieval would be designated.

e. **Changing vehicle class allowed on routes:**
   - 1,574 miles would be open to all vehicles.
   - 243 miles would be open to vehicles legal on paved highways (no ATVs or motorcycles that are not street legal).
   - 41 miles would be open to vehicles 50 inches or less in width.
   - 12 miles would be open to motorcycles only.

f. **Changing season of use:**
   - 516 miles of routes would be open all year.
   - 1,354 miles of routes would be open seasonally.

3. **Features unique to alternative 3:** Of the alternatives, the changes proposed in alternative 3 would result in the fewest places where people could drive. It would not allow people to drive off roads or trails anywhere for any reason unless under permit or other authorization. This means that to camp, people must park next to the side of the road and then tote their gear to a camping spot. They could not drive their car to the campsite. Hunting and retrieving game would similarly need to be done by foot, horseback, or other nonmotorized method. Alternative 3 would not add any unauthorized trails to the system. This means that people wanting to ride on loops would be restricted mainly to the road system. This alternative would not designate any unauthorized motorized trails in inventoried roadless areas. This alternative contains four different seasonal closure dates. One is the forest standard for weather, and the remaining are for wildlife protection.

4. **Designated motorized system that results from the changes is shown in table 10.**

5. **The roads, trails, areas, and fixed-distance corridors proposed in alternative 3 are shown in figure 9.**

Table 9. Miles of unauthorized routes proposed for designation and reason why in alternative 3

Reason for Proposed Designation	Type of Designation (miles)					
	Road Open to All Vehicles	Road Open to Highway Legal Vehicles Only	Trail Open to Motorcycles Only	Trail Open to Vehicles Less Than 50 Inches Wide	Unauthorized Route, Not Designated	Total
Camping	6	1			4	11
Connector	7	less than 1			8	15
General access	6				18	24
Motorized trail	2		1	less than 1	154	158
Private access	12	1			4	17
Not designated					317	317
Total	34	2	1	less than 1	504	541

Table 10. The designated motorized system as a result of the changes proposed in alternative 3

	Kind of Vehicle Allowed	Miles	Miles Open by Time of Year		Percent Open by Time of Year
Roads	Open to all vehicles	1,574	All Year	399	25%
			Seasonal	1,175	75%
	Open to vehicles legal on paved highways*	243	All Year	111	46%
			Seasonal	132	54%
Trails	Open to vehicles less than or equal to 50 inches wide	41	All Year	2	4%
			Seasonal	39	96%
	Open to motorcycles only	12	All Year	4	34%
			Seasonal	8	66%

	Miles	Percent Open All Year
Total roads	1,817	28%
Total trails	53	11%
Total trails, vehicles ≤ 50 inches wide	41	4%
Total trails, motorcycles only	12	34%
GRAND TOTAL, Alternative 3	1,869	28%

	Acres	Miles
Areas	0	NA
Corridors - dispersed camping	0	0
Corridors - big game retrieval	0	0

***** Under New Mexico State law, ATVs are not allowed on paved highways but are allowed on nonsurfaced highways.

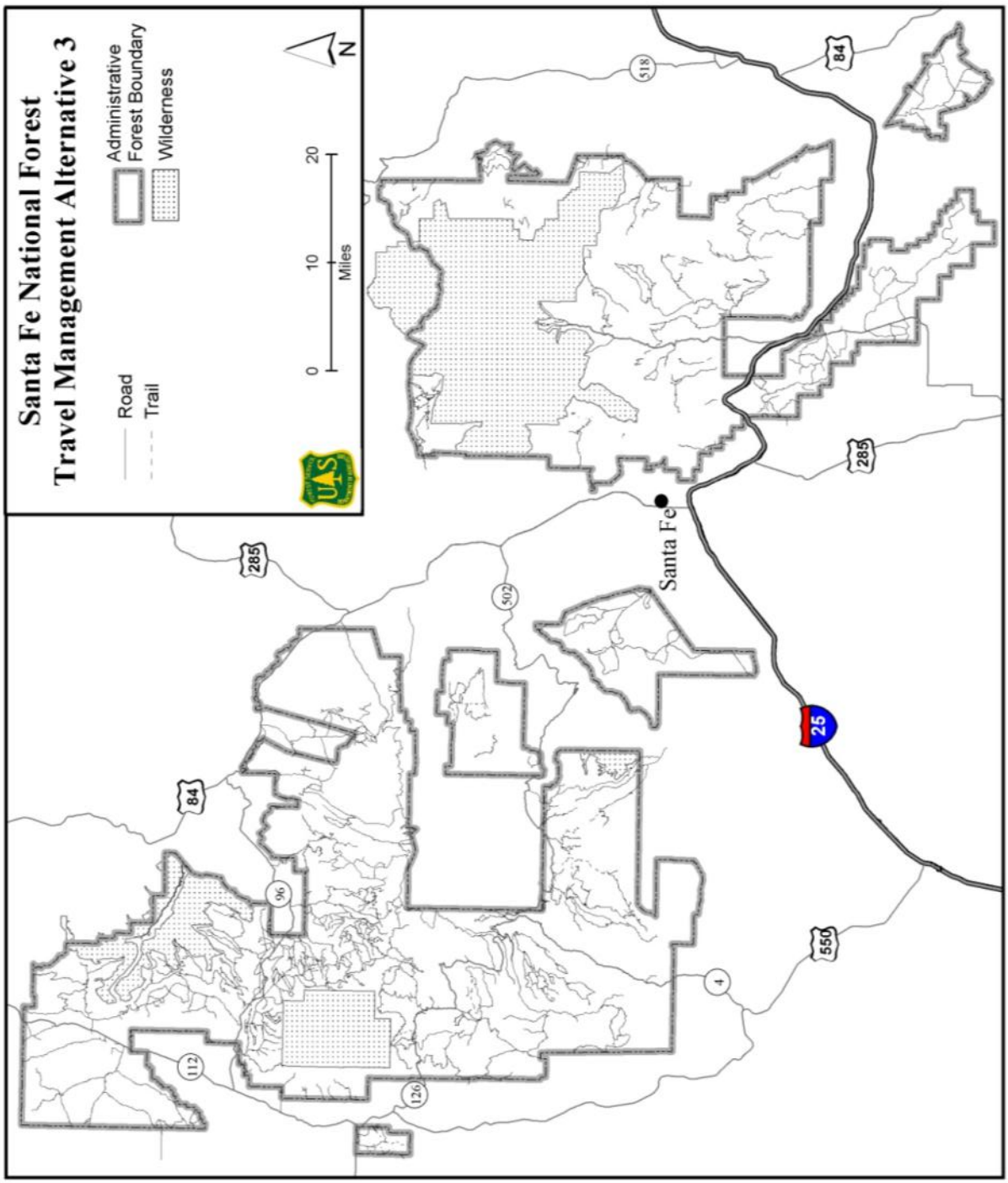

Figure 9. Roads and trails proposed – alternative 3

Alternative 4

Features Unique to Alternative 4

- Has the most routes open for driving.
- Keeps 29 unique areas (49 acres total) open for motorized cross-country use.
- Individual closure orders would be used for weather.
- Has the most places where people could drive to retrieve downed game.
- Has the most places where people could drive to access dispersed camping.

1. **Theme:** Alternative 4 emphasizes motorized access and recreation while protecting natural and cultural resources. It addresses concerns raised in significant issues 2 (motorized access and recreation), 3 (motorized dispersed camping), and 4 (motorized big game retrieval).

2. **Proposed changes to existing travel policy:**

   a. **Motorized cross-country travel:**

      - Motorized travel by the public off designated National Forest System roads, trails, and areas shown on the motor vehicle use map would be prohibited except as allowed by permit or other authorization.

   b. **Changes to existing National Forest System routes:**

      - Allow motorized use by all vehicles on 123 miles of system roads not currently managed as open for motorized use.
      - Allow motorized use by highway legal vehicles only on 1 mile of system roads not currently managed as open.
      - Convert 80 miles of closed system roads to motorized system trail; 20 miles for motorcycles only and 59 miles for vehicles less than or equal to 50 inches wide.
      - Convert 200 miles of open system roads to motorized system trail; 43 miles for motorcycles only and 157 miles for vehicles less than or equal to 50 inches wide.
      - Convert 114 miles of system roads open to all vehicles to be open to highway legal vehicles only.
      - Close 2,533 miles of open system roads to all motorized use.
      - Allow motorized use for motorcycles only on 36 miles of system trail not built for motorized use outside wilderness.
      - Close 7 miles of motorized system trail.
      - Change 7 miles of open system road that is coincident with motorized trail to be 2 miles for motorcycles only, 3 miles for vehicles 50 inches or less, and 2 miles open to all vehicles.

   c. **Adding routes to the system (table 11):**

      - Add 69 miles of unauthorized routes as roads open to all vehicles.
      - Add 2 miles of unauthorized routes as roads open to highway legal vehicles only.
      - Add 23 miles of unauthorized routes as motorized trails for vehicles 50 inches wide or less.
      - Add 112 miles of unauthorized routes as motorized trails open to motorcycles only.

d. **Changing motorized access to dispersed camping or big game retrieval:**
   - Designate approximately 32,890 acres along 461 miles of National Forest System routes solely for the purpose of motorized access to dispersed camping. The corridors would all be 300 feet from either side of the route.
   - Designate approximately 1,098,330 acres along 2,847 miles of National Forest System routes solely for the purpose of motorized access to retrieve downed big game. The corridors would all be 1 mile from either side of all designated routes, except where they cross wilderness, the Santa Fe watershed, or private property.

e. **Changing vehicle class allowed on routes:**
   - 2,434 miles would be open to all vehicles.
   - 120 miles would be open to vehicles legal on paved highways (no ATVs or motorcycles that are not street legal).
   - 243 miles would be open to vehicles 50 inches or less in width.
   - 219 miles would be open to motorcycles only.

f. **Changing season of use:**
   - 2,672 miles of routes would be open all year.
   - 345 miles of routes would be open seasonally.

3. **Features unique to alternative 4:** Of the action alternatives, the changes proposed in alternative 4 would result in the most miles of designated routes and the highest number of acres designated for motorized use. It would not have uniform seasonal closures for weather, which means that people would be able to drive on routes until they "closed themselves" with snow or until the ranger districts put closure orders on them. Seasonal closures for wildlife would remain in place at the minimums specified in the forest plan. Alternative 4 would have two different corridor widths: 300 feet for motorized access to dispersed camping, and 1 mile for motorized retrieval of downed big game. This alternative would add the most miles of unauthorized routes to the system.

4. **Designated motorized system that results from the changes is shown in table 12.**

5. **The roads, trails, areas, and fixed-distance corridors proposed in alternative 4 are shown in figure 10.**

Table 11. Miles of unauthorized routes proposed for designation and reason why in alternative 4

Reason for Proposed Designation	Type of Designation (miles)					
	Road Open to All Vehicles	Road Open to Highway Legal Vehicles Only	Trail Open to Motorcycles Only	Trail Open to Vehicles Less Than 50 Inches Wide	Unauthorized Route, Not Designated	Total
Camping	9	1			1	11
Connector	15	less than 1			less than 1	15
General Access	22				2	24
Motorized Trail	8		112	23	14	158
Private access	15	1			1	17
Not designated					317	317
Total	69	2	112	23	335	541

Table 12. The designated motorized system as a result of the changes proposed in alternative 4

	Kind of Vehicle Allowed	Miles	Miles Open by Time of Year		Percent Open by Time of Year
Roads	Open to all vehicles	2,434	All Year	2,219	91%
			Seasonal	215	9%
	Open to vehicles legal on paved highways*	120	All Year	119	100%
			Seasonal	2	0%
Trails	Open to vehicles less than or equal to 50 inches wide	243	All Year	206	85%
			Seasonal	37	15%
	Open to motorcycles only	219	All Year	128	59%
			Seasonal	92	41%

	Miles	Percent Open All Year
Total roads	2,554	92%
Total trails	462	73%
Total trails, vehicles ≤ 50 inches wide	243	85%
Total trails, motorcycles only	219	59%
GRAND TOTAL, Alternative 4	3,017	89%

	Acres	Miles
Areas	49	NA
Corridors - dispersed camping	32,890	461
Corridors - big game retrieval	1,098,330	2,847

***** Under New Mexico State law, ATVs are not allowed on paved highways but are allowed on nonsurfaced highways.

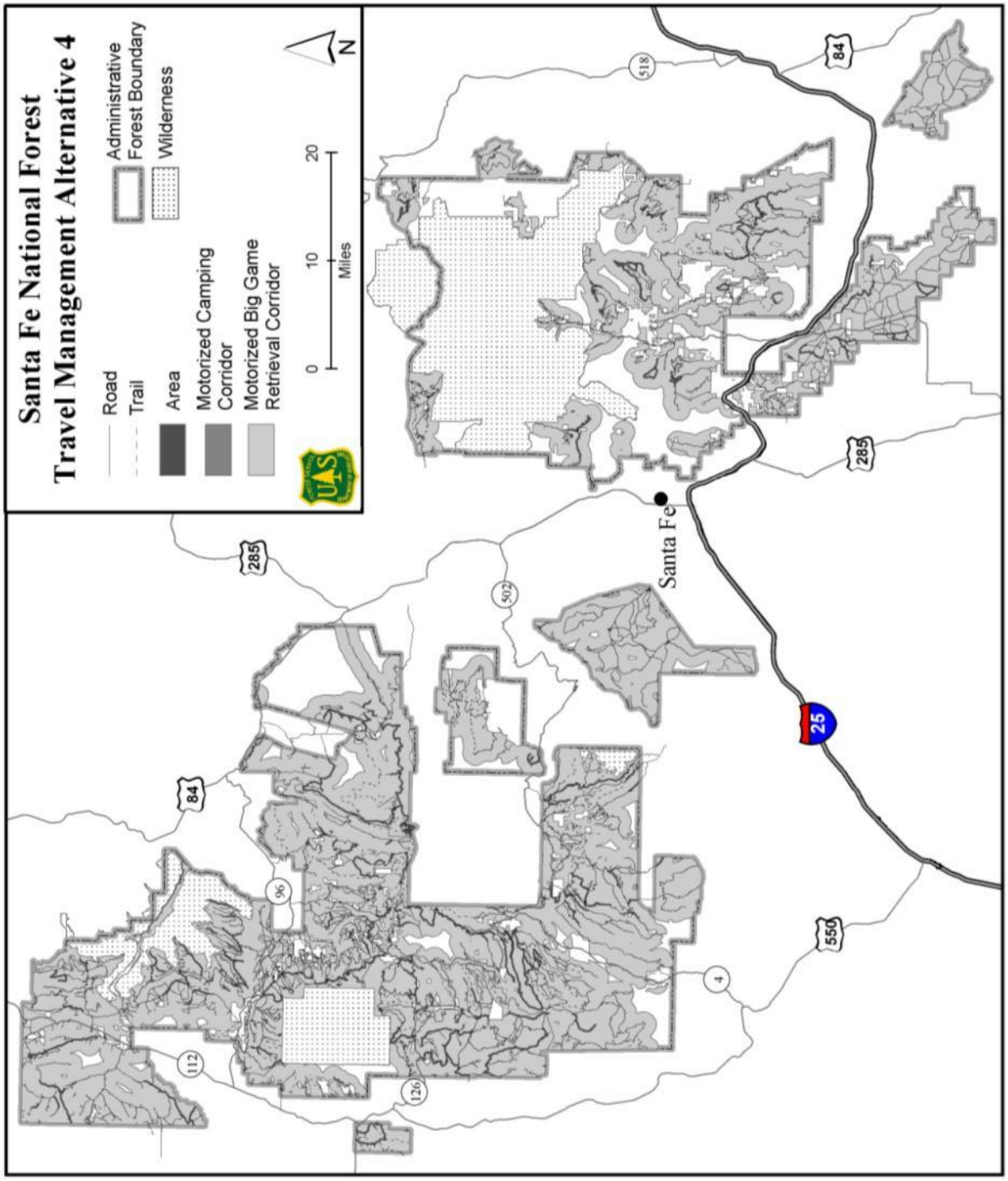

Figure 10. Roads, trails, areas, and fixed-distance corridors proposed – alternative 4

Alternative 5

Features Unique to Alternative 5

- Has about the same miles of routes open for people to drive on as alternative 2, but arranges them differently on the landscape.
- Keeps nine unique areas (35 acres total) open for motorized cross-country use.
- Has five different seasonal closure dates.

1. **Theme:** Alternative 5 geographically groups motorized and nonmotorized uses separately as much as possible to reduce conflicts between visitors. It addresses the concern raised in significant issue 5 (conflicts between motorized and nonmotorized users).

2. **Proposed changes to existing travel policy:**

   a. **Motorized cross-country travel:**
      - Motorized travel by the public off designated National Forest System roads, trails, and areas shown on the motor vehicle use map would be prohibited except as allowed by permit or other authorization.

   b. **Changes to existing system routes:**
      - Allow motorized use by all vehicles on 73 miles of system roads not currently managed as open for motorized use.
      - Allow motorized use by highway legal vehicles only on 7 miles of system roads not currently managed as open.
      - Convert 58 miles of closed system roads to motorized system trail; 14 miles for motorcycles only and 44 miles for vehicles less than or equal to 50 inches wide.
      - Convert 130 miles of open system roads to motorized system trail; 21 miles for motorcycles only and 109 miles for vehicles less than or equal to 50 inches wide.
      - Convert 324 miles of system roads open to all vehicles to be open to highway legal vehicles only.
      - Close 2,860 miles of open system roads to all motorized use.
      - Allow motorized use for motorcycles only on 19 miles of system trail not built for motorized use outside wilderness.
      - Close 12 miles of motorized system trail.
      - Change 4 miles of open system road that is coincident with motorized trail to be 2 miles for motorcycles only and 2 miles open to all vehicles.

   c. **Adding routes to the system (table 13):**
      - Add 52 miles of unauthorized routes as roads open to all vehicles.
      - Add 4 miles of unauthorized routes as roads open to highway legal vehicles only.
      - Add 14 miles of unauthorized routes as motorized trails for vehicles 50 inches wide or less.
      - Add 73 miles of unauthorized routes as motorized trails open to motorcycles only.

d. **Changing motorized access to dispersed camping or big game retrieval:**
   - Designate approximately 11,422 acres along 294 miles of National Forest System routes solely for the purpose of motorized access to dispersed camping. The corridors would be 150 or 300 feet from either side of the route.
   - Designate approximately 370,841 acres along 373 miles of National Forest System routes solely for the purpose of motorized access to retrieve downed big game. The corridors would all be 1 mile from either side of some routes, except where they cross wilderness or private property.

e. **Changing vehicle class allowed on routes:**
   - 1,897 miles would be open to all vehicles.
   - 334 miles would be open to vehicles legal on paved highways (no ATVs or motorcycles that are not street legal).
   - 167 miles would be open to vehicles 50 inches or less in width.
   - 139 miles would be open to motorcycles only.

f. **Changing season of use:**
   - 695 miles of routes would be open all year.
   - 1,842 miles of routes would be open seasonally.

3. **Features unique to alternative 5:** Alternative 5 clusters motorized routes, with motorized recreation in mind, in certain places in the forest. This means that motorized recreation could occur away from nonmotorized recreation on a larger scale. This alternative contains five different seasonal closure dates. One is the forest standard for weather, and the remaining are for wildlife protection.

4. **Designated motorized system that results from the changes is shown in table 14.**

5. **The roads, trails, areas, and fixed-distance corridors proposed in alternative 5 are shown in figure 11**.

Table 13. Miles of unauthorized routes proposed for designation and reason why in alternative 5

Reason for Proposed Designation	Type of Designation (miles)					
	Road Open to All Vehicles	Road Open to Highway Legal Vehicles Only	Trail Open to Motorcycles Only	Trail Open to Vehicles Less Than 50 Inches Wide	Unauthorized Route, Not Designated	Total
Camping	8	1			2	11
Connector	11	0			4	15
General access	19				5	24
Motorized trail	3		73	14	68	158
Private access	12	2			3	17
Not designated					317	317
Total	52	4	73	14	398	541

Table 14. The designated motorized system as a result of the changes proposed in alternative 5

	Kind of Vehicle Allowed	Miles	Miles Open by Time of Year		Percent Open by Time of Year
Roads	Open to all vehicles	1,897	All year	580	31%
			Seasonal	1,317	69%
	Open to vehicles legal on paved highways	334	All year	72	22%
			Seasonal	263	78%
Trails	Open to vehicles less than or equal to 50 inches wide	167	All year	21	12%
			Seasonal	147	88%
	Open to motorcycles only	139	All year	22	16%
			Seasonal	117	84%

	Miles	Percent Open All Year
Total roads	2,231	29%
Total trails	306	14%
Total trails, vehicles ≤ 50 inches wide	167	12%
Total trails, motorcycles only	139	16%
GRAND TOTAL, Alternative 5	2,537	28%

	Acres	Miles
Areas	35	NA
Corridors - dispersed camping	11,422	294
Corridors - big game retrieval	370,841	371

***** Under New Mexico State Law, ATVs are not allowed on paved highways but are allowed on nonsurfaced highways.

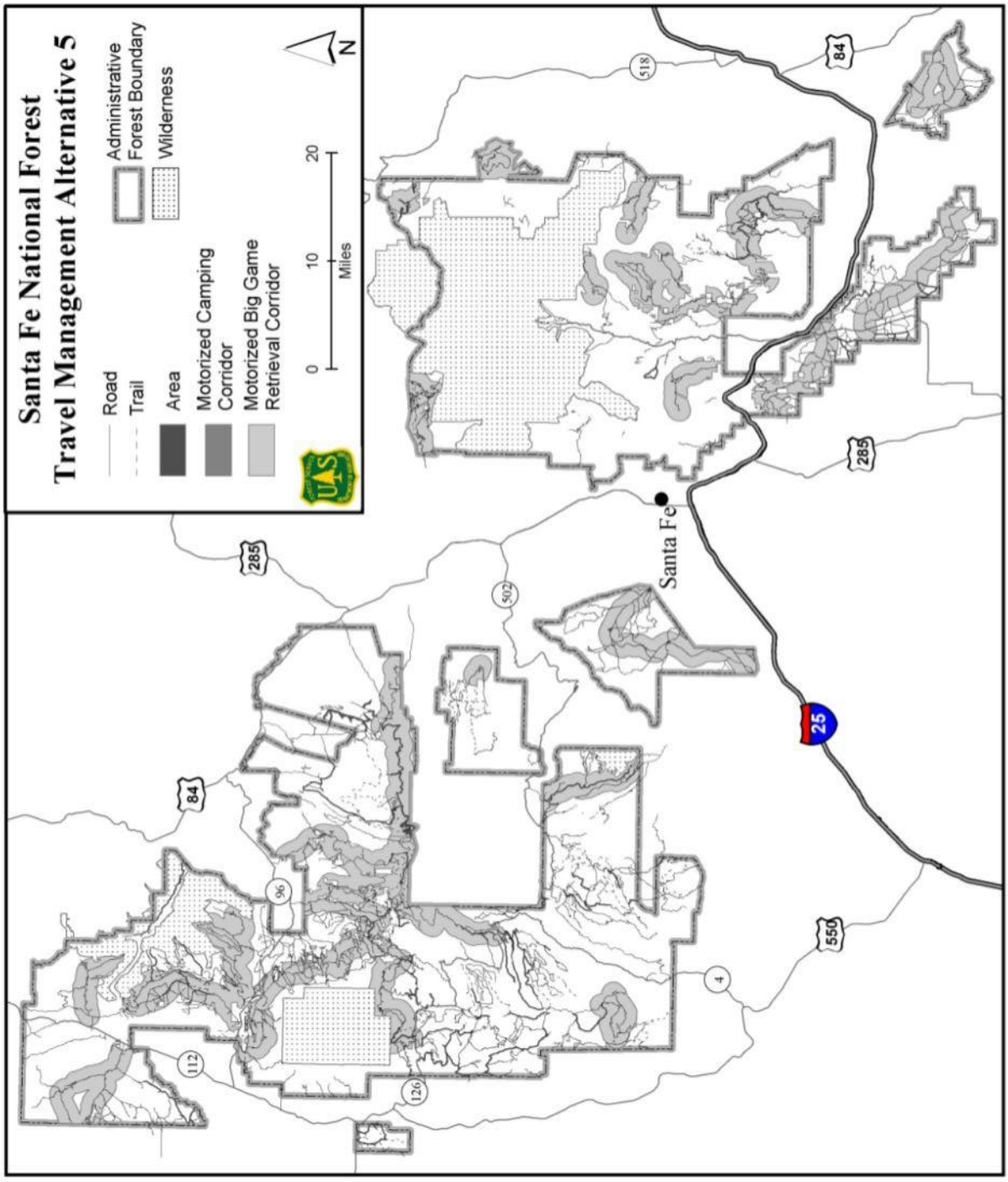

Figure 11. Roads, trails, areas, and fixed-distance corridors proposed – alternative 5

Proposed Amendments to the Forest Plan

The exact text of the proposed amendments is located in appendix 1. This section provides an overview of the proposed changes common to alternatives 2 through 5:

- Change language in the forest plan to be consistent with the Travel Management Rule. For example, change off-road vehicle to off-highway vehicle.
- Motor vehicle use by the public off the designated system of roads, trails, and areas is prohibited, except as identified on the motor vehicle use map or where exempted under 36 CFR 212.51.
- Prohibit motorized cross-country travel in all management areas.
- Remove the lower limit of the open road density standards for all management areas. This would make the lower limit zero.
- Allow motorized cross-country travel on some acres in management areas where it had previously been prohibited for the purpose of motorized access to dispersed camping and to retrieve big game.
- Allow motorized use of some roads and trails in management areas where it had previously been prohibited. The miles of roads and trails affected vary by alternative.

Features Common to All Action Alternatives

The things listed in this section would be a part of any alternative selected.

Removing routes from the motor vehicle use map: If, through monitoring, the Forest Service finds that motor vehicle use on a route is directly causing adverse effects on public safety or on natural or cultural resources, it may be closed immediately per 36 CFR 212.52(b)(2) until the forest supervisor determines that such adverse effects have been mitigated or eliminated.

A monitoring plan will be written separately from this NEPA document (36 CFR 212.57, 70 FR 26879).

Tracked vehicles: Tracked vehicles would be permitted in all the alternatives as long as they met the size class shown on the motor vehicle use map.

Spur routes for access to motorized dispersed camping: All the action alternatives propose to designate numerous short spur routes that end at dispersed campsites. This adds to the motorized dispersed camping provided for by fixed-distance corridors.

Motorized trails for vehicles 50 inches or less: All motorized trails designated for vehicles 50 inches wide or less would also allow motorcycles.

Parking safely next to the side of the road: Parking safely next to the side of any designated road or trail would be allowed in all the alternatives. Parking would be allowed within 30 feet from the edge of the road surface. This project does not prohibit any forest activities, only where a person could drive to do the activity. Parking next to the road means a person could still have a picnic, set up a campsite, ride their bicycle, hike, or do any other activity they do now.

ATV-only trails: None of the action alternatives proposes motorized trails just for ATVs. ATVs would be allowed on designated motorized trails for vehicles less than or equal to 50 inches wide and roads designated as open to all vehicles.

Jeep or 4x4 trails: We did not specifically identify jeep trails in any of the alternatives. Jeeps and 4x4s would be allowed on all designated roads, but not trails. Many of the forest roads, due to remoteness and condition, effectively serve as jeep or 4x4 trails without being specially designated as such. Technical driving skill varies by individual.

Big game: Except in alternative 3 where no motorized big game retrieval is proposed, the game that licensed hunters may use vehicles to retrieve includes elk and mule deer (New Mexico Department of Game and Fish 2009). Only hunters with a valid license and a tagged animal may use a vehicle to retrieve game.

Ground disturbance: None of the action alternatives propose any ground-disturbing activities such as obliterating roads, constructing new routes, or installing gates or berms. Such activities would require separate analysis under the National Environmental Policy Act.

Mitigations

The Council on Environmental Quality's regulations for implementing NEPA define mitigations as measures that avoid, minimize, reduce, rectify, or compensate for impacts to the physical environment resulting from Federal actions (40 CFR 1508.20). They are things the Forest Service will do as part of implementing the decision to lessen any potential damage to natural or cultural resources. The mitigation measures listed here apply to all the action alternatives.

Cultural Resources

Where we identify substantial impacts to cultural resource sites from route designation, we will apply one of three mitigations:

1. The route, or a portion of the route, will be excluded from the motor vehicle use map.
2. The route, or portion of the route, will be plated (covered and armored).
3. The route, or a portion of the route, will be rerouted, reconstructed, or will undergo another kind of physical mitigation. These activities would all require separate NEPA analysis and compliance with the National Historic Preservation Act.

Where we identify substantial impacts to cultural resource sites from fixed-distance corridors for motorized dispersed camping or areas, we will apply one of two mitigations:

1. The corridor, or portions of the corridor, will be excluded from the motor vehicle use map so that sites are excluded from a corridor.
2. Other kinds of physical mitigation such as placement of fencing or barriers will be constructed to exclude sites from effects associated with designating the corridor.

Where we identify impacts to traditional cultural properties from motorized access, we will apply two mitigations:

1. Where motorized access to traditional cultural properties is reduced because of designation, we will grant special use or other authorizations to users.
2. Where traditional cultural properties have the potential to be physically impacted by routes, fixed-distance corridors, or areas, mitigation will consist of not designating them or using other kinds of mitigation to reduce adverse effects. In some cases, consultation with traditional communities may result in other mitigation measures that would avoid or not adversely affect traditional cultural properties.

Wildlife

Unauthorized roads and trails that go through Jemez Mountain salamander habitat won't be published on the motor vehicle use map until they have been assessed for potential resource concerns and appropriate actions are taken to minimize effects to resources.

Any new motorized routes through Mexican spotted owl habitat will be evaluated for effects and have seasonal restrictions placed on them consistent with the forest plan.

Alternatives Considered but Not Studied in Detail

This section describes the alternatives considered but eliminated from detailed study and the reasons why. We present these in no particular order.

Both the Forest Service and the public developed alternatives that have not been carried forward in detail. Most suggestions from the interdisciplinary team and the public were not fully developed alternatives. Rather, they were conceptual suggestions for one aspect of the proposal, such as having corridors on every route. Or, they covered only one part of the forest, such as Glorieta Mesa or the Jemez Mountains. No alternative from the public contained a map of proposed designated routes for the entire forest.

To make this section easier to read, we bundled similar suggestions into thematic alternatives. The project record contains the description of how we bundled the suggestions (USDA Forest Service 2010d).

Current Motorized Travel Policy Alternative

This alternative is the forest's current motorized travel policy, shown in detail in appendix 4. Key elements of this alternative are:

- It would allow motorized cross-country travel on 53 percent of the forest.
- It is ambiguous about where motorized use of trails and roads would be allowed.
- It would not limit motorized access for dispersed camping or big game retrieval.
- It would not have consistent seasonal restrictions.
- It would not specify the kinds of vehicles that may drive on certain routes.
- It would rely on closure orders to restrict motorized use.
- It contains conflicting direction on where motorized vehicles are allowed.

Reason Not Analyzed In Detail

The interdisciplinary team did not analyze this alternative in detail for several reasons. This alternative does not meet the project's purpose and need because it doesn't establish a clearly designated system of roads, trails, areas, and fixed-distance corridors required by the Travel Management Rule. By not restricting motorized cross-country travel, it would not reduce the detrimental effects to natural and cultural resources from unmanaged motorized cross-country use.

July 2008 Proposed Action

The July 2008 proposed action resembles alternative 2 shown in this FEIS, but doesn't propose any corridors for motorized big game retrieval and is less accurate in its route alignments than alternative 2.

Reason Not Analyzed In Detail

The regulations don't require us to analyze a proposal that we've modified (36 CFR 220.5(e)(1)). Since we've made changes to the proposed action since July 2008, it is an alternative considered and eliminated from detailed study. We've documented the incremental changes in the project record (USDA Forest Service 2010c).

Alternative 1 with No Motorized Cross-Country Travel

The public brought this alternative forward in its comments on the DEIS. It would continue the present course of action by designating all forest system roads and trails for motorized use but prohibiting motorized cross-country travel.

Reason Not Analyzed In Detail

Designating all the forest's roads and trails for motorized use would not meet the criteria for designation listed in 36 CFR 212.55. For example, trails are to be designated with the objective of minimizing damage to soil, watershed, vegetation, and other forest resources (§212.55(b)(1)). Many roads and trails have been identified as causing damage to natural and cultural resources as early as the publication of the "Travel Analysis Process Report" (USDA Forest Service 2008b). During field verification, we found that many forest system roads and trails don't exist. To designate these would be permitting cross-country travel (figure 12). Finally, designating all the forest roads as open to motorized travel wouldn't meet the open road density standards shown in the forest plan.

Highway Legal Vehicles Only

The public brought this alternative forward in its comments on the DEIS. It would only allow highway legal vehicles (e.g., no ATVs and only some motorcycles) into the national forest.

Reason Not Analyzed In Detail

The Travel Management Rule never intended to eliminate motorized recreation in the national forests; instead, it seeks to designate motorized use where appropriate. The use of ATVs and motorcycles is a legitimate use of the national forest when properly managed.

Figure 12. Designating a motorized trail here would be the same thing as allowing motorized cross-country travel

Minimum Road System Alternative

This alternative would designate the 3,737 miles of roads identified as being the minimum "needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands" (36 CFR 212, Subpart A) in the "Travel Analysis Process Report" (USDA Forest Service 2008b).

Reason Not Analyzed In Detail

This alternative would not meet the project's purpose and need because it does not provide for a designated system of roads and trails. It describes the roads needed and contains only a cursory mention of trails. It is silent on motorized cross-country travel in areas. It also designates roads for administrative purposes, and these are exempt from designation pursuant to the Travel Management Rule (§212.51(a)(4)).

The "Travel Analysis Process Report" meets the requirements of subpart A of the rule whereas the designation process meets subpart B.

Maximum Motorized Access and Recreation Alternative

This alternative is composed of suggestions from the public and the Forest Service. Key elements are:

- Designate every existing road in the Santa Fe National Forest's transportation system, and all the unauthorized routes.
- Focus on designating recreational, motorized loops.
- Designate 300-foot corridors on all designated routes for motorized dispersed camping.

- Make the fixed-distance corridors into areas where driving to all activities, such as picnicking, day use, or firewood collection, would be allowed.
- Change the "open to vehicles less than 50 inches" designation to "open to vehicles less than 60 inches" in light of newer UTVs having a wheelbase of 54 to 60 inches.
- Have routes designated for ATVs only.

Reason Not Analyzed In Detail

This alternative would not fulfill the purpose and need, which is in part to counter detrimental effects to natural and cultural resources from roads, trails, and unmanaged motorized cross-country travel. Not all the forest's routes receive use and a number of them have reverted to their natural state.

As recorded in various meeting notes in the project record, we initially considered two alternatives that responded to the significant issue of variety and kinds of motorized access. One would have featured routes that primarily went out and back (access), and another that would have focused on motorized loops (recreation). Since travel management is a tool to provide for the needs of all motorized users, not just for motorized recreation, we concluded that it was not appropriate to segregate those two types of uses. Instead, alternative 4 combined access and recreation by providing more kinds of motorized opportunities of all kinds than the proposed action. Alternative 5, by responding to the issue of conflicts between uses, provided a way to have more motorized loops in some parts of the forest and less in others without sacrificing motorized access.

Figure 13. Trials riding in the Jemez Mountains

People are not currently camping along every route in the forest (USDA Forest Service 2009g). Many of the forest's routes are not suitable for driving off road to camp due to slope, terrain, or vegetation. For alternative 2, district personnel identified where people are currently camping, then the alternatives varied from that baseline. Alternative 4, for example, proposes 300-foot corridors for motorized dispersed camping on some routes to accommodate potential future use.

After much debate, we concluded that converting the fixed-distance corridors into areas did not meet the intent of the Travel Management Rule, which is to have areas be much smaller than ranger districts. To participate in day use activities, parking safely within 30 feet of all designated routes is an option in all the action alternatives. People with permits may drive places that are not on the motor vehicle use map according to the exemptions listed in the Travel Management Rule (§212.55(a)(8)).

Based on public comments, we believe that keeping motorized trails open only to smaller vehicles is desirable. Motorcycle riders in particular commented that they wanted trails that were not shared with large vehicles. UTVs with wheelbases larger than 50 inches will continue to be allowed on routes designated for all vehicles.

We looked at designating routes solely for ATVs; however, it did not appear to be needed based on the lack of public comment requesting such. Staff on the ranger districts indicated that ATV riders appear to be satisfied using forest routes that are shared with full-size vehicles on roads, or with motorcycles on trails.

Minimum Motorized Access and Recreation Alternative

Key features of this alternative are one or more of the following:

- Only designate routes for which the Forest Service can maintain and enforce the correct use.
- Do not add any unauthorized routes.
- Do not designate any roads for high-clearance vehicles.
- Do not designate any trails for motorized use.
- Do not designate any routes in inventoried roadless areas.
- Designate individual motorized dispersed campsites instead of fixed-distance corridors.
- Designate only trails that meet current trail maintenance standards.
- Reduce the miles of routes near wilderness.

Reason Not Analyzed in Detail

We do not intend to eliminate motorized access to and motorized recreational use of the national forest since vehicles are an integral part of peoples' enjoyment of their public lands.

Not adding any unauthorized routes isn't reasonable and goes against the intent of the Travel Management Rule (70 FR 68270, 68277). The public currently uses the unauthorized routes, which in many cases provide important recreational opportunities. Some of these routes are well laid out and are not causing unacceptable resource damage. Some, like National Forest System trails, may need minor maintenance only.

The Santa Fe National Forest has numerous high-clearance roads that exist for important reasons and that the public has used for decades. To not designate any of these roads would prevent the public from using their public lands. All routes were subject to environmental and social analysis in order to determine if motorized use on these routes is appropriate.

Figure 14. A meadow that has not been driven on

The Santa Fe National Forest currently has approximately 210 miles of system and known unauthorized routes in its inventoried roadless areas. Of these, we estimate that people are now driving on approximately 168 miles. Chapter 3 contains a detailed discussion of routes in inventoried roadless areas. All the action alternatives propose routes that cross inventoried roadless areas to varying degrees, depending on the emphasis of the alternative. Proposing no routes in inventoried roadless

areas was not possible. Some of the routes existed prior to the roadless inventory and are needed to get to private land. Some boundaries of the inventoried roadless areas were not correctly mapped and contained roads in error. At the time of this writing, designating motorized trails in inventoried roadless areas was permitted and was requested by motorized groups as providing a unique riding opportunity.

The Travel Management Rule has no provision for the designation of individual campsites, so this suggestion is beyond the scope of this project. Instead, where appropriate, the alternatives have routes that lead to dispersed campsites.

Chapter 3 looks at the miles of routes near wilderness by alternative. Only Congress can create wilderness areas. We proposed routes near wilderness in accordance with the focus of the alternative, not to expand or contract wilderness.

Private Property Alternative

This alternative suggested two different ways to handle access to private property:

- Provide only one access route to contiguous blocks of private land, regardless of the number of subdivided parcels contained within.
- Designate no roads to private property.

Reason Not Analyzed in Detail

Limiting existing access routes to one per block of private land would not be possible due to the history of private land access on the Santa Fe National Forest and the extensive property ownership research that would be required (USDA Forest Service 2012i). We proposed designating routes to private property on a case-by-case basis where the private ownership is clear. In other cases where subdivision and ownership facts are not clear, we defaulted to the solution of designating existing access route(s). Where we are certain duplicate access can be removed, we proposed it.

Not designating any routes to private property is not possible because it would mean the landowners would be unable to legally drive to their property until they had a written authorization in place. If a road does not appear on the motor vehicle use map, and the property owner does not have an authorization, then motorized travel on the road would be illegal.

Forest staff would not be able to process the anticipated requests for authorizations had we not designated roads to private property. The process for obtaining a written authorization is lengthy and expensive. In the interim, people would not be able to legally drive to their property. As a result, we concluded that it would be prudent to designate roads to private property, and then work to issue authorizations for those who desire and can afford them over time.

Enforcement Alternative

The idea behind this alternative is to designate roads and trails in a physical configuration that would make enforcement easier. This alternative could include pinch points, more motorized access (where all use is legal), less motorized access (where any use off a very few routes is illegal), fewer seasonal dates, or other elements.

Reason Not Analyzed in Detail

Members of the interdisciplinary team met with the forest's law enforcement officers to attempt to flesh out this alternative. The group concluded that configurations that would make enforcement easier would not meet the project's purpose and need. If all the routes were designated, then resource protection would not be achieved to the desired level. If very few routes were designated, then needs for access to use and enjoy the national forest would not be met. Some places on the forest might lend themselves to "pinch points," places where routes converge, but most do not. The motor vehicle use map will be the primary enforcement tool. We will consider other methods of education and enforcement during implementation.

Administrative Alternative

This alternative, a combination of suggestions submitted independently, contains recommendations for controlling off-highway vehicle use by administrative means. Its main features include:

- Have nonmotorized volunteer community patrols work with the Forest Service to protect public lands.
- Require permits for all motorized use of the forest. Permits would be free if using the designated system and at a cost if operating off the system.
- Issue travel regulations and policies with each permit.
- Use the permit system to monitor use, and temporarily close off areas to mitigate damage to sensitive areas.
- Rotate open and closed places over the years.
- Require permit holders, like ranchers, and the Forest Service itself, to operate on horseback or on foot.
- Develop an education plan.
- Develop an enforcement plan and increase the budget for enforcement.
- Enforce noise limits of 80 decibels or less.
- Require spark arrestors on all off-highway vehicles.
- Have sizable fines for off-road abuse.
- Post signs on routes.
- Install barriers, like gates or berms, to physically block roads as part of closing routes to motorized use (figure 15).

Figure 15. Example of a fence built to block ATVs from shortcutting roads

Reason Not Analyzed in Detail

Things like education, signing, putting in physical barriers, working with volunteer groups, and enforcement are outside the scope of this decision, which will result in a designated motorized

system. We like some of these suggestions and could use and expand on them during implementation of the project.

The State of New Mexico has jurisdiction over things like decibel limits, fines, licensing, and registration.

Constructing physical barriers usually entails disturbing the ground, which requires site-specific analysis under the National Environmental Policy Act. Analyzing site-specific impacts from ground disturbances is outside the scope of this analysis, which is at a forestwide level. In coming years we plan to identify routes that are still causing negative environmental effects and do separate NEPA analysis to determine the best way to mitigate those effects. If constructing barriers or physical obliteration is necessary, then we would do the analysis for that.

Motorized Big Game Retrieval Alternative

This alternative focused on methods for providing and controlling motorized access to retrieve downed big game. Key points include:

- Require licensed hunters to purchase a permit for off-road access to retrieve downed big game.
- The permit would be hunt specific, limited to a certain window and only to that hunter. Game could only be retrieved using an off-highway vehicle between 12 p.m. and 4 p.m.
- Require hunters to fill out a followup “use report” indicating whether the permit was used to retrieve an animal off road. Set penalties for not filling out the use report.
- Set strict consequences for failing to follow the permit system.

Reason Not Analyzed in Detail

We didn’t study this alternative in detail because the Forest Service does not have the regulatory authority to set up this kind of permit system.

Glorieta Mesa Alternative

This alternative contains recommendations specific to Glorieta Mesa, mostly its north end. Its key points are:

- Eliminate the fixed-distance corridors that provide motorized access to dispersed camping.
- Designate loop roads for vehicles legal on paved highways only so that no ATVs or dirt bikes would be allowed.
- Close motorized access on roads where significant negative impact to natural resources, adjacent private property, and traditional uses has already occurred.
- Notify and involve permit holders, inholders, and adjacent property holders before modifying the transportation plan in any way.
- Do not allow ATVs or dirt bikes to use any places used by local ranchers.

Reason Not Analyzed in Detail

We didn't consider this a stand-alone alternative because it pertains only to a small part of the Santa Fe National Forest. This project's geographic scope covers the entire national forest. Staff on the Pecos/Las Vegas Ranger District, where Glorieta Mesa is located, considered each suggestion made and incorporated it into one or more alternatives. If a suggestion wasn't included in an alternative, district staff provided the reason why (USDA Forest Service 2010g and 2010i; appendix 7).

Citizen's Alternative to Include Traditional User-created Trail Routes in the Santa Fe National Forest OHV Transportation Rule (August 28, 2008) and the Amendment to the Citizen's Alternative to Include Historical and New Event Sites for Motorcycle Observed Trials in the Santa Fe National Forest Draft EIS (August 28, 2008)

This alternative requests that a large network of single-track trails and trials riding areas, mainly in the Jemez Mountains, be adopted. The Blackfeather Trail Preservation Alliance, a subgroup of the New Mexico Off-Highway Vehicle Alliance, and the New Mexico Trials Association prepared and submitted it. The Blue Ribbon Coalition wrote to support it. Key elements of this alternative include:

- Analyze all of the routes and areas submitted by motorized users in the "No Change" alternative. (Note: This has been done as part of alternative 1, no action.)
- Loops should be comprised primarily of single track or double track, and have a minimum amount of roads as part of mileage.
- Designate this approximate mileage for multiple use (motorcycles, equestrians, hikers, and bicyclists): 120 miles of major system roads; 275 miles of user-maintained logging roads and system trails; and 115 miles of user-created and maintained trails.
- Designate appropriate areas for motorcycle trials, which include a staging area with parking and camping; a loop with termini at the staging area; and sections containing obstacles.
- Conduct a cultural resources survey of the routes to establish that they comply with the Antiquities Act. The group believes that routes over a certain age are historic and, thus, should be designated.
- Repair routes through mitigation measures rather than close them to motorized use altogether.
- Initiate a process for opening routes to motorized use in nonwilderness areas currently closed to motorized vehicles.

Reason Not Analyzed in Detail

We did not analyze this alternative as a stand-alone alternative because it does not pertain to the whole forest, and this project is being conducted at the forestwide level. We did analyze each specific loop and route submitted to see if it could be included in one or more alternatives (USDA Forest Service 2010g and 2010i).

We incorporated some of the conceptual suggestions included with this alternative into one or more alternatives. Personnel on the Jemez, Coyote, and Española Ranger Districts (where the majority of the routes were proposed) worked hard to include loops composed of single and

double track with few roads in all the action alternatives, but especially in alternative 4. The Jemez Ranger District included the trials areas requested by motorcycle riders in alternatives 2, 2M, 4, and 5. It is not clear where the specific mileages listed come from, or which routes the "user-maintained logging roads" refers to. The forest's GIS personnel analyzed the routes provided by motorized users and determined whether they were existing routes or new routes (USDA Forest Service 2008a).

The rest of the conceptual suggestions are already decided by law, regulation, or policy. All the routes on the Santa Fe National Forest will be available for multiple use. This project does not restrict nonmotorized use in any way, so hikers, mountain bikers, and equestrians will be able to use routes that are designated for motorized use. The National Historic Preservation Act dictates the process the Forest Service will comply with to survey and clear cultural resources, not the Antiquities Act. The Santa Fe National Forest's report documenting the requirements of Section 106 will contain the recommendations to approve cultural resource clearance for designation. Where possible, we intend to mitigate routes rather than close them; however, this will not apply to all routes. Finally, this designation process is one that could result in "new"—that is, unauthorized—routes being opened in nonmotorized areas outside of wilderness. The motor vehicle use map will be printed every year, and new routes may be added once the proper environmental analysis has taken place.

Science-based Alternative

The main idea behind this alternative is that, when designating a system for motorized use, the Forest Service focus on the science, and not put the idea of multiple use above the science. Key points include:

- The environmental analysis should dictate the designated route system.
- Include adaptive management triggers.

Reason Not Analyzed in Detail

Considering environmental consequences is already mandated. The forest supervisor will consider the environmental consequences and explain how she considered and evaluated them in the record of decision. The purpose of the NEPA process is to "…provide full and fair discussion of significant environmental impacts and … inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment" (40 CFR 1502.1).

We considered incorporating adaptive management at several stages of the process (USDA Forest Service 2009b and 2009e). We eventually concluded that adaptive management required an exhaustive, site-specific analysis that is beyond the scale of this project (USDA Forest Service 2009e). Periodically revising the motor vehicle use map effectively serves as adaptive management.

Landscape-based Alternative

The main ideas behind this alternative, submitted by Wild Earth Guardians and others, were to use landscape planning principles in route designation and to expand the concept of the motor vehicle use map into a fully developed travel management plan. Its guiding principle was to reduce the amount of motorized use from that described in the proposed action. Its key points are:

- Incorporate landscape planning principles into route designation, rather than the road-by-road analysis done in the "Travel Analysis Process Report."
- Use geographical features to constrain motorized recreation and prevent cross-country travel.
- Develop a full travel management plan, including route obliteration, education, and enforcement, not just the motor vehicle use map.
- Reduce overall route densities on the Santa Fe National Forest.
- Do not designate any unauthorized routes.
- Minimize user conflicts.
- Use monitoring and adaptive management to determine whether resource thresholds have been exceeded and action should be taken.

Reason Not Analyzed in Detail

As submitted, this alternative did not specify a designated system of roads, trails, and areas. It is unclear whether any routes are proposed in this alternative. The 174 pages of tabular appendices to this letter contain lists of routes "within proximity of, located within, or transverse (sic) areas of the forest easily impacted by motorized vehicle use. These sensitive areas … should be candidates for closure, decommissioning, or minimally seasonal closures to motorized use (sic)." We propose to close many of the routes in these tables already. The tables disregarded the need to connect routes; in other words, it appears that all routes in all sensitive areas were listed as candidates for closure, without regard for needs for access to and within the forest.

Though landscape planning principles can be incorporated, in order to create a map each road, trail, and area must be analyzed using the criteria listed in the Travel Management Rule (36 CFR 212.55). The interdisciplinary team appreciated the suggestion on landscape planning and incorporated those principles in alternative 3, where larger blocks of land without routes were proposed, and alternative 5, which separated motorized and nonmotorized uses. The latter also addressed the issue of conflicts between users.

All the action alternatives reduce open road densities in each management area from the present situation, and all meet the open road densities in the forest plan (USDA Forest Service 2012r).

Education, enforcement, monitoring, and route obliteration are all beyond the scope of this project. We will, however, consider incorporating each during implementation.

Monitoring Alternative

Several people wrote to ask that the Forest Service include monitoring as part of this project. We received many creative suggestions, including:

- Create a thorough, science-based monitoring plan with action-oriented management responses to address problem areas associated with off-highway vehicle travel.
- Monitor nonmotorized areas exactly as the motorized trail areas.
- Baseline should be the existing condition of the areas.
- Monitoring records need to be made public.
- Use speed sensors, noise detectors, webcams, and other high-tech devices to monitor.

- Embed colored gravels into ruts on closed trails and roads so disturbance of them shows unacceptable use.

Reason Not Analyzed in Detail

Monitoring is beyond the scope of this project, which is to provide for a designated system of roads, trails, and areas for motorized use. The Travel Management Rule, however, requires that monitoring be done:

> *"For each administrative unit of the National Forest System, the responsible official shall monitor the effects of motor vehicle use on designated roads and trails and in designated areas under the jurisdiction of that responsible official, consistent with the applicable land management plan, as appropriate and feasible." (36 CFR 212.57)*

We will create a monitoring plan separately, and will consider these and other suggestions as part of it.

Equal Use Alternative

This alternative suggested that motorized route and area designations should be equally dispersed across all five ranger districts.

Reason Not Analyzed in Detail

The Santa Fe National Forest's terrain and district boundaries do not lend themselves to having equal amounts of motorized routes and areas. For example, the Pecos Wilderness, where no motorized use is allowed by law, composes almost 25 percent of the Pecos/Las Vegas Ranger District, whereas the Dome Wilderness on the Jemez Ranger District is about 2 percent of that district. Some ranger districts, like the Jemez, are closer to urban centers like Albuquerque than the Coyote Ranger District is. As a result, the Jemez generally has a higher demand for access to the forest and for places to ride recreationally.

Road Density Alternative

Some people asked that the Santa Fe National Forest rework the way it calculates open road density, and to change the standards in the forest plan. The suggestions included:

- The forest should adhere to federally mandated road densities.
- Motorized trails should be included in the calculation of road density.
- Road density standards are outdated and not an accurate way to determine route designations.
- The forest plan's open road densities are objectives, not standards.
- All routes, whether open or closed, should be included in the calculation of road density.

Reason Not Analyzed in Detail

We concluded that changing the method for calculating road density or the upper limit of the standards listed in the forest plan is beyond the scope of this project, which is to provide for a system of roads, trails, and areas designated for motorized use. Changing the upper limit of the road density standards or the way they are calculated is better suited for forest plan revision.

We have proposed to remove the lower bound of road density. These proposed amendments to the forest plan clarify that the lower thresholds are not sensible in the context of the guideline's intent of "limiting open road density." It was never envisioned, for example, that if there were areas where road density was less than 1 mile per square mile that we would be required to build more road, or in this context, only consider alternatives that have at least 1 mile per square mile.

Comparison of Alternatives

Table 15. Summary of the proposed changes for each alternative and how they compare to where people drive now

Where People Drive Now, No Action		Type of Change Proposed	Action Alternative				
Alternative 1			2	2M	3	4	5
Unauthorized roads and trails, miles	539	Add unauthorized roads and trails to National Forest System miles	141	138	37	206	143
		Percent change from where people drive now	-74	-74	-93	-62	-73
Forest system roads and trails managed as closed to motorized use, miles	269	Allow motorized use on roads and trails currently closed, miles	114	106	53	204	137
		Percent change from where people drive now	-58	-61	-80	-24	-49
Forest system roads and trails managed as open to motorized use, miles	4,751	Close roads and trails that currently allow motorized use, miles	2,272	2,207	1,776	2,552	2,224
		Percent change from where people drive now	-52	-54	-63	-46	-53
Areas, acres*	443,848	Close areas that are currently open to motorized cross-country travel, acres*	821,604	821,603	821,644	821,595	821,609
		Percent change from where people drive now	-100	-100	-100	-100	-100
Motorized dispersed camping, acres	17,195	Designate corridors for motorized access to dispersed camping, acres	16,237	13,856	0	32,890	11,422
		Percent change from where people drive now	-6	-19	-100	91	-34
Motorized big game retrieval, acres	1,258,361	Designate corridors for motorized access to retrieve big game, acres	16,237	13,856	0	1,098,330	370,841
		Percent change from where people drive now	-99	-99	-100	-13	-71

*The forest proposes to close more acres than people are driving on now. In other words, the whole forest will be closed to motorized cross-country travel. Taken from GEN01 and GEN05d excel spreadsheets.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type	Alternative					
		1	2	2M	3	4	5
Motorized access and recreational opportunities	**Roads, miles**	5,218	2,290	2,255	1,817	2,554	2,231
	Trails, miles	408	263	208	53	462	306
	Areas, acres	443,848	40	41	0	49	35
	Seasonal closure dates, number of different	No uniform dates exist	11	8	4	5	5
	Big game retrieval, acres	1,258,361	16,237 – allowed only during hunting season with a license and downed animal	13,856 – allowed only during hunting season with a license and downed animal	0	1,098,330 – allowed only during hunting season with a license and downed animal	370,841 – allowed only during hunting season with a license
	Dispersed camping, acres	17,195 along roads, but driving off road to camp is also allowed on 53 percent of the forest.	16,237	13,856 – no vehicles allowed within 100 feet of water	0	32,890	11,422
	Unauthorized routes, miles	539 (miles being used now)	141	138	37	206	143
Conflicts between motorized and nonmotorized users of the forest		Tends to happen in particular places rather than forestwide.	Expected to reduce conflicts by keeping motorists on a known, published system.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Expected to reduce conflicts the most because it also groups motorized activities geographically.
Wilderness		No motorized use allowed inside. Negligible disturbance from adjacent land due to infrequent use. Most potential to disturb.	Greatly reduces potential to cause disturbance inside wilderness.	Same as alternative 2.	Least potential to cause disturbance in wilderness.	Most potential to cause disturbance in wilderness.	Same as alternative 2.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type		Alternative				
		1	2	2M	3	4	5
Inventoried roadless areas		Most motorized use in IRAs (120 miles)	Reduces routes open to motorized use in IRAs by 61 percent.	Reduces routes open to motorized use in IRAs by 58 percent.	Reduces routes open to motorized use by 67 percent and fewest miles of trails in IRAs.	Reduces routes open to motorized use by 38 percent and proposes most trails in IRAs. Would need department approval to designate 2 miles of road.	Reduces routes open to motorized use in IRAs by 61 percent.
Ease of enforcement and compliance		Visitor map serves as guide for motorists; it does not match the forest plan.	Improves by having a single reference; however, the MVUM would be the most complicated.	Improves by having a single reference, the MVUM.	Improves by having a single reference. The MVUM would be the least complicated.	Improves by having a single reference, the MVUM.	Improves by having a single reference, the MVUM.
Maintenance		Forest cannot maintain the entire route system on an annual basis.	No change, but frequency of maintenance would increase	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.
Safety		Route system is safe.	No change	No change	No change	No change	No change
Social and economic environ-ment	**Jobs and income from motorized use in the forest**	Negligible at the scale of the local economy.	No change	No change	No change	No change	No change
	Noise	Most noise occurs on passenger car routes. Highest amount of places in primitive and SPNM areas where noise could occur.	Reduces places where engine noise would occur by eliminating motorized cross-country travel and reducing designated routes.	Same as alternative 2.	Has the least amount of places where engine noise would occur.	Of the action alternatives, has the most places where engine noise would occur.	Same as alternative 2.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type	Alternative					
		1	2	2M	3	4	5
	Property values	Could increase or decrease values depending on what characteristics people seek in a property.	No change	No change	No change	No change	No change
	Collecting forest products	Allowed with a permit. No permit needed now to collect piñon nuts.	No change for permitted uses. Reduces places people can drive to collect piñon nuts and other plants. May reduce user conflicts.	Same as alternative 2.	No change for permitted uses. Reduces places where people can drive the most.	No change for permitted uses. Reduces places where people can drive the least.	Same as alternative 2.
	Environ-mental justice	No change in motorized related employment or access to the forest.	No measureable change to minority or low-income populations.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.
Lands	**Access to private property**	Provides the most access and keeps access people are accustomed to.	Removes some duplicate access. People must have an authorization or their road must be on the MVUM.	Same as alternative 2.	Removes duplicate access. People must have an authorization or their road must be on the MVUM. Eliminates motorized access to some properties in inventoried roadless areas (IRAs).	Removes duplicate access. People must have an authorization or their road must be on the MVUM. Allows motorized use on some trails in IRAs for access.	Same as alternative 2.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type	Alternative					
		1	2	2M	3	4	5
Soil and water		Erosion and soil compaction from the use and existence of routes, motorized cross-country travel, and motorized dispersed camping in riparian areas likely to continue or increase.	Most likely to sustain current soil and water quality conditions. The effects from routes would stay the same, motorized cross-country use would be nearly eliminated, and there would be little change in acres available for motorized dispersed camping.	Most likely to sustain current soil and water quality condition, with the potential to improve over time. The effects from routes would stay the same, motorized cross-country use would be nearly eliminated, and no driving within 100 feet of water is allowed.	Most likely to improve soil and water quality conditions. The effects from constructed routes would stay the same, but motorized cross-country use and motorized dispersed camping would be eliminated.	Most likely to decrease soil and water quality conditions. The effects from routes would stay the same and motorized cross-country use would be nearly eliminated. There would be over twice as many acres available for motorized dispersed camping.	Likely sustains current soil and water quality condition, with potential to improve over time. Effects from routes would stay the same, motorized cross-country use would be nearly eliminated, and there would be about a third less acres available for motorized dispersed camping.
Habitat for fish		The quality of fish habitat varies across the forest. It is not causing a trend toward listing or a loss of viability. Motorized trail in Polvadera Creek is a risk to the Rio Grande cutthroat trout.	Improves the quality of fish habitat across the forest. Protects the core population of Rio Grande cutthroat trout by not proposing the motorized trail in Polvadera Creek.	Second best to improve fish habitat by not allowing vehicles within 100 feet of water. Protects core population of Rio Grande cutthroat trout by not proposing motorized trail in Polvadera Creek.	Best for improving fish habitat by not allowing vehicles within 100 feet of water. Protects the core population of Rio Grande cutthroat trout by not proposing the motorized trail in Polvadera Creek.	Slightly improves the quality of fish habitat across the forest, but would not protect the core population of Rio Grande cutthroat trout in Polvadera Creek.	Slightly improves the quality of fish habitat across the forest, but would not protect the core population of Rio Grande cutthroat trout in Polvadera Creek.
Habitat for wildlife		The current route system and amount of motorized cross-country travel is the most likely to disturb wildlife and its habitat.	Improves wildlife habitat and reduces disturbance from motorized use.	Improves wildlife habitat and reduces disturbance from motorized use by not allowing motorized use within 100 feet of water.	Improves wildlife habitat and reduces disturbance from motorized use the most because no driving off routes is allowed.	Improves wildlife habitat and reduces disturbance from motorized use the least of the action alternatives.	Improves wildlife habitat and reduces disturbance from motorized use.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type	Alternative					
		1	2	2M	3	4	5
Nonnative invasive plants		Highest risk of establishment and spread.	Risk of establishment and spread considered low.	Same as alternative 2.	Greatest decrease in the risk of establishment and spread because no driving off roads is allowed.	Risk of establishment and spread would be the highest among the action alternatives.	Risk of establishment and spread considered low to moderate.
Cultural resources		Moderate to high risk that cultural resource sites and traditional cultural properties would be damaged.	No adverse effect to cultural resource sites.	No adverse effect to cultural resource sites.	No adverse effect to cultural resource sites.	No adverse effect to cultural resource sites.	No adverse effect to cultural resource sites.
Air	**Quality**	Emissions of particulate matter are well below national standards.	No change	No change	No change	No change	No change
	Health	Health problems from dust from forest not known, but expected to be negligible.	Fewer locations where vehicles would cause dust.	Same as alternative 2.	Fewest locations where vehicles would cause dust.	Of action alternatives, most locations where vehicles would cause dust.	Same as alternative 2.
	Greenhouse Gases	Contribution from forest traffic is negligible.	No change	No change	No change	No change	No change
	Visibility	Good to excellent.	Negligible improvement	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.
Wildfire	**Firefighters Response Time**	Varies depending on location of the wildfire.	No change - emergency vehicles are exempt.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.
	Number of Human-caused Fires	Average of 28 per year from 2000 to 2010.	Slight decrease	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.	Same as alternative 2.

Table 16. Summary of the effects described in detail in chapter 3

Resource	Type	Alternative					
		1	2	2M	3	4	5
Visual Quality		Most locations where visual quality is degraded due to unauthorized routes and unmanaged motorized dispersed camping.	Slight increase in visual quality because no new unauthorized routes and less motorized dispersed camping.	Same as alternative 2.	Has the most places where visual quality could improve because no driving off roads or trails allowed.	Has the most places of the action alternatives where visual quality could decrease.	Same as alternative 2.

Chapter 3. Affected Environment and Environmental Consequences

This chapter is the scientific and analytic basis for comparing the alternatives (40 CFR 1502.16). It shows the tradeoffs among the alternatives for the public and the forest supervisor. It does not claim to accurately predict the outcomes of the alternatives. Rather, its purpose is to show the relative change among the alternatives. This chapter supports table 16 found at the end of chapter 2. Before describing the predicted effects of the alternatives, we start by explaining the basic components of an effects analysis.

The Basic Components of an Effects Analysis

This section explains the basic components of an effects analysis done under the National Environmental Policy Act for those who are not familiar with the process.

The Affected Environment

An effects analysis starts by describing the affected environment. As the name implies, this section describes those parts of the environment or project area that would change as a result of the proposed action. The Council on Environmental Quality describes it this way:

> *"The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives." (40 CFR 1502.15).*

Using an example of a person wanting to lose weight, the affected environment would be the person's weight, percent body fat, and current fitness level. It would not include what kind of car they drive or where they attended grade school, for instance.

The affected environment describes what is going on now. The existing condition is the baseline against which to compare the other alternatives. It is alternative 1, no action.

Effects

An effect is the result of an action. If you throw a rock into a pond, it makes ripples. Throwing the rock is the action, and the effect is the ripples. The environmental consequences are all the effects considered together.

The Council on Environmental Quality lists different kinds of effects that need to be analyzed under the National Environmental Policy Act:

1. Direct effects, which are caused by the action and occur at the same time and place.
2. Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
3. Cumulative effects, which are the sum of the incremental impacts from the action combined with other actions. These are described in the next section.

To illustrate using the example of the person wanting to lose weight, let's say they eat less and exercise more, two actions. The direct effects of these actions might be that the person feels

hungry and has sore muscles. The indirect effects, those that happen later in time, would be that the person loses weight and gets stronger. In this example, effects are beneficial (improved fitness) and detrimental (hungry and sore muscles).

The same holds true for environmental consequences—they can be both beneficial and detrimental (40 CFR 1508.8). For the travel management project, closing roads to motorized use could improve wildlife habitat (beneficial effect for wildlife species) and reduce the amount of motorized recreational opportunities (detrimental impact to riders).

The regulations do not require agencies to separate the direct and indirect effects, so in this document we describe them together. Cumulative effects have their own section.

Cumulative Effects

The Council on Environmental Quality defines a cumulative effect like this:

> *"'Cumulative impact' is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7).*

To be cumulative, effects must overlap in space and time. Continuing with the example of a person eating less and exercising more, a cumulative effect—if we suppose that many people were eating less and exercising more during the same year—could be a decrease in rates of diabetes.

Cumulative impacts are important because they could cause a tipping point, either beneficial or negative. To analyze cumulative effects, we look at the effects from this proposal and add it to the effects from past, present, and reasonably foreseeable future actions. The next sections briefly summarize how the interdisciplinary team identified and handled the past, present, and reasonably foreseeable future actions. The full text of this discussion is in the project record (USDA Forest Service 2011f).

Past and Present Actions

The interdisciplinary team considered the effects of past actions from 1987 to the present as part of the existing condition. The current conditions in the forest are the sum total of past actions. We chose 1987 because that is the year the forest plan was published. The Council on Environmental Quality recognizes "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions" (Council on Environmental Quality 2005). Innumerable actions over the last century and beyond have shaped the Santa Fe National Forest's current designated road system. Attempting to isolate and catalog these individual actions and their effects would be nearly impossible. By looking at current conditions, we capture the effects of past human actions and natural events, regardless of which event contributed those effects. Listing the past actions, however, can show trends. On balance, some past actions increased the amount of motorized use in the Santa Fe National Forest and others decreased it. Details about any action listed can be found in the document called "Temporal Bound and List of Projects for Cumulative Effects

Analysis for the Final Draft Environmental Impact Statement" dated December 31, 2011, in the project record.

Table 17. Past and present actions from 1987 to 2011 that contributed to the existing condition

Action	Description
Annual treatment of noxious weeds	Removes noxious weeds by pulling, grazing, mowing, treating with chemicals, or other methods.
Road construction and maintenance	Uses heavy equipment to build or maintain permanent or temporary roads.
Trail construction and maintenance	Uses hand tools or light equipment (e.g., ATV) to build or maintain trails.
Unauthorized routes	Created by repeated driving in the same place.
Construction and reconstruction of recreational facilities (such as campgrounds, fishing access, toilet installations)	Generally using heavy equipment.
Subdivision and development of private inholdings and land adjacent to the forest	
Mining claims and development of mining	
Wildfires, including suppression and rehabilitation	This category includes suppression activities such as use of fire retardants and building fire line with hand tools or heavy equipment. It also includes rehabilitation work such as seeding and felling trees to reduce erosion.
Hazardous fuels treatment and prescribed burning	Thinning trees by hand or with equipment. Conducting prescribed fires.
Livestock grazing	Annual grazing of cattle pursuant to permit terms.
New Mexico Senate Bill 379	This law increased safety and registration requirements for people under 18; restricted OHV use on state game commission and state park lands, except where designated; provided for the addition of state OHV park; provided for the closure of OHV trails causing irreversible damage; provides for development of overall enforcement across the state; and creates a fund for education, monitoring, and enforcement.
Jemez National Recreation Act	This act established the Jemez National Recreation Area (JNRA) in order to conserve, protect, and restore the recreational, ecological, cultural, religious, and wildlife resource values of the Jemez Mountains. The JNRA is comprised of nearly 57,000 acres within the Jemez Mountains. The Santa Fe National Forest has developed numerous recreational facilities, campgrounds, day use sites, and fishing access, within the Jemez National Recreation Area.
Wild and Scenic Rivers – Pecos, East Fork Jemez, and Rio Chama	Designated certain rivers for their "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations" (PL 90-542, 1968).
Creation of the Valles Caldera National Preserve	The creation of the Valles Caldera National Preserve made lands previously in private ownership open to public use. The Valles Caldera National Preserve is made up of 89,000 acres within the Jemez Mountain range and offers numerous recreational opportunities.

Table 17. Past and present actions from 1987 to 2011 that contributed to the existing condition

Action	Description
Land transfers from the Santa Fe National Forest to other entities:	
San Ildefonso	
Santo Domingo	
Pecos National Historic Park	
Respect the Rio Program	The Respect the Rio Program is a multi-faceted restoration and education program started in 2001 and designed to balance the need for preservation of riparian and flood-prone areas with needs of the public. The Respect the Rio Program seeks to do this by accomplishing the following goals: 1. Identifying and addressing water quality issues that have developed from recreational use. 2. Educating the public about habitat, habitat needs, and ongoing restoration projects. 3. Creating community partnerships. 4. Creating a program and materials that are easily adaptable to other forests and agencies.
Acquisition of lands by the Santa Fe National Forest	The Santa Fe National Forest aquires lands through purchase, exchange, or transfer. A comprehensive list of acquisitions is not available at this time.
Road decommissioning	Removes roads from the landscape, usually using heavy equipment to restore the natural slope, and reseed. Has also occurred naturally with vegetation growing in unused roads, but in this case the drainage pattern is still altered from the original condition. A comprehensive list of past road decommissioning is not available at this time.
Technological advances in OHVs (e.g. 3-wheelers, 4-wheelers, side-by-sides, tracked vehicles)	Technological advances in OHVs have improved performance, allowing OHVs to travel further across difficult terrains. Improved performance has also resulted in better gas mileage, less emissions, and better exhaust systems.
Forest product collection	This category includes products covered by a permit, such as firewood and Christmas trees, and other products such as pinon and products used for religious ceremonies.
Administrative use	This category includes uses authorized by the Santa Fe National Forest by a special use permit (excluding forest product collection) and the use of Forest Service roads by Forest Service staff to manage the forest. Examples of activities authorized by a special use permit are access to communication sites, access to utility corridors, and access for outfitters and guides. The "Travel Analysis Process Report" estimated that administrative use occurs on approximately 1,400 miles of roads.
Activities on land in other jurisdictions	The Santa Fe National Forest has very little information on activities currently happening on lands within the project boundary that are under other jurisdictions. This makes it hard to determine the effects of those activities along with the effects of our travel management planning. However, the Santa Fe National Forest does not believe that the effects on these lands are significant when analyzed at the forest level.
Existence of private or state OHV parks outside of Forest boundary	A number of OHV opportunities are provided by private or state OHV parks outside the Santa Fe National Forest boundary such as J-cross Motocross near San Ysidro and the Rio Puerco area outside of Rio Rancho.
Economic recession	

Reasonably Foreseeable Future Actions

Courts have interpreted a "reasonably foreseeable future action" as a human action that has been proposed and is in the planning stages (e.g., Weinberger v. Catholic Action of Hawaii, 454 U.S. 139, 70 E.Ed.2d 289 (1981)). For example, a subdivision would not be reasonably foreseeable until the owner submitted plans to the county. To analyze the cumulative effects of reasonably foreseeable future actions, each resource specialist looked at the list of projects created by the interdisciplinary team in table 18. They identified the ones expected to cause effects on their resource at the same time and in the same place as effects from the proposed action or alternatives. Some specialists analyzed additional actions that pertained only to their resource.

Table 18. Present and reasonably foreseeable future actions related to motorized use (2009–2025)*

Action	Description
Preparation of travel management plans and motor vehicle use maps by other national forests and agencies	All national forests and grasslands in New Mexico, and some Bureau of Land Management districts.
Transfer of management of lands in Pecos Canyon from New Mexico Department of Game and Fish to the New Mexico State Parks	SJM 16 authorized New Mexico State Parks to enter into a Joint Powers Agreement with the New Mexico Department of Game and Fish in order to better manage recreation on 186 acres of land divided between six locations along the Pecos River. These locations provide fishing access, day use, and overnight camping opportunties along the Pecos River.
Projects on the SOPA	
Geothermal leases in Coyote and Cuba Ranger Districts	The Santa Fe National Forest is considering a geothermal leasing proposal. The proposal would be to drill exploration wells north and west of the Valles Caldera National Preserve. Small roads would be developed to access the exploration wells. If the project moves to completion, production wells and a power line would be installed.
Oil and gas leases in Cuba Ranger District	The proposal is to lease additional acreage adjacent to lands currently leased for oil and gas. Short roads would be developed to any new wells installed and would remain in use until the well is abandoned at which point the road would be reclaimed.
Mineral (pumice) leases in Jemez Ranger District	See the next 3 rows for more details.
El Cajete reopening and expansion	The proposal is to expand the El Cajete No. 1 mine by 15 acres and proposes to open a second mine to the north. A road would need to be constructed to access the second mine.
South Pit extension	The proposal is to expand the South Pit Mine by 48 acres. Access to the mine is already available and no new road construction is proposed.
Duran 2010	The proposal is to open a new 20-acre pumice mine on the Jemez Ranger District. An existing road would need to be upgraded to provided sufficient access for operation.

* The interdisciplinary team started this list in 2009 and made it final in December 2011

Current and Predicted Use and Existence

Between the draft and final environmental impact statement, the interdisciplinary team realized that displaying the difference between the motorized use and the existence of a road, trail, area, or fixed-distance corridor is important. The effects between the use and existence of routes and areas may differ. Table 19 summarizes these differences. The conditions described in the table apply to the direct, indirect, and cumulative effects analysis.

Table 19. Current and predicted motorized use and existence

Changes Common to All Action Alternatives (miles and acres vary by alternative)	What Exists Now - Existing Condition	Predicted Use or Condition, 15 Years After First Motor Vehicle Use Map	Notes
Prohibit driving off designated roads, trails, and areas and outside of designated fixed-distance corridors.	It's estimated that people drive off-road on about 29 percent of the forest. This motorized use is generally light to moderate, but can be heavy in particular places.	No driving off road occurs except in designated areas and corridors.	Administrative use would not change (chapter 3, assumption 17).
	User-created two track and single track routes exist. The exact number is not known and the Travel Management Rule doesn't require that knowledge (70 FR 68269). Compacted soil, with or without vegetation, exists where motorized use occurs.	No new unauthorized routes would be created. Natural rehabilitation of areas that had light motorized use could occur. Areas heavily used by motor vehicles would take longer than 15 years to naturally rehabilitate, and in some cases would require active restoration by the Forest Service (USDA Forest Service 2012a and 2012d).	Determining which routes would rehabilitate and which would continue to erode is not possible within the timeframe of this analysis. Such information is not needed to make a decision about designating a motorized travel system. For the purposes of this analysis, we assumed that there would be no net change on the forest (chapter 3, assumption 23).
Allow motorized use on some system roads currently managed as closed to it.	Motorized use occurs on some of the closed roads proposed for designation (USDA Forest Service 2008b).	No noticeable change in motorized use (chapter 3, assumption 1).	For purposes of complying with law and policy, some resources, such as wildlife and heritage, treat the action of changing a closed road to open as new use, even though a footprint exists and the roads are being driven on.
	Footprints of roads or two tracks exists (chapter 3, assumption 22).	No change in roads' footprint (USDA Forest Service 2012a and 2012d).	

Table 19. Current and predicted motorized use and existence

Changes Common to All Action Alternatives (miles and acres vary by alternative)	What Exists Now - Existing Condition	Predicted Use or Condition, 15 Years After First Motor Vehicle Use Map	Notes
Allow motorized use on some system trails. (Motorized use on most system trails outside of wilderness is allowed now, regardless of what the trail was designed for.)	Motorized use occurs on the system trails proposed for designation (USDA Forest Service 2008a).	No noticeable change in motorized use (chapter 3, assumption 1).	
	Footprints of trails exists (chapter 3, assumption 22).	No change in trails' footprint (USDA Forest Service 2012a and 2012d).	
Add some unauthorized roads to the system.	Motorized use occurs on the most of the unauthorized roads proposed for designation (USDA Forest Service 2008a).	No noticeable change in motorized use (chapter 3, assumption 1).	
	Footprints of roads exist.	No change in roads' footprint (USDA Forest Service 2012a and 2012d).	
Add some unauthorized trails to the system.	Motorized use occurs on most unauthorized trails proposed for designation (USDA Forest Service 2008a).	No noticeable change in motorized use (chapter 3, assumption 1).	
	Footprints of trails exist (chapter 3, assumption 22).	No change in trails' footprint (USDA Forest Service 2012a and 2012d).	
Prohibit motorized use on some system roads currently managed as open to it.	Light to no motorized use occurs on most of the system roads not proposed for designation (chapter 3, assumption 1).	No motorized use of closed roads would occur. For effects analysis, we assumed no measurable change; for example, going from 1 vehicle per week to none isn't enough to measure a change (chapter 3, assumption 1).	
	Footprint of road or two track exists (chapter 3, assumption 22).	For the purposes of this analysis, we assumed that there would be no net change in the existence of system roads on the forest (chapter 3, assumption 23). Constructed roads are not likely to naturally rehabilitate in the 15-year timeframe considered, and their footprints would remain present for much longer (USDA Forest Service 2012a).	Physical decommissionning of roads is possible in the 15-year timeframe analyzed. Decommissioning is likely to occur on only a small percentage of miles due to funding limitations and the need for site-specific NEPA.

Table 19. Current and predicted motorized use and existence

Changes Common to All Action Alternatives (miles and acres vary by alternative)	What Exists Now - Existing Condition	Predicted Use or Condition, 15 Years After First Motor Vehicle Use Map	Notes
Prohibit motorized use on some system trails currently open to it. (Motorized use on most system trails outside of wilderness is allowed now, regardless of what the trail was designed for.)	Light motorized use occurs on some of the system trails not proposed for designation.	No motorized use of closed roads would occur. For effects analysis, we assumed no measurable change; for example, going from 1 vehicle per week to none isn't enough to measure a change (chapter 3, assumption 1).	
	Footprint of trail or two track exists (chapter 3, assumption 22).	For the purposes of this analysis, we assumed that there would be no net change in the existence of system trails on the forest (chapter 3, assumption 23). Constructed trails are not likely to naturally rehabilitate in the 15-year timeframe considered, and their footprints would remain present for much longer (USDA Forest Service 2012a).	Use could switch (or continue) from hikers, bikers, horses.
Change the vehicle types allowed on some roads and trails.	Almost no restrictions on vehicle types allowed on roads or trails exist now.	No noticeable change in the amount of motorized use (chapter 3, assumption 1).	People would follow the designations on the MVUM. Thus, the kinds of vehicles found on roads and trails would change from the present. For most resources, however, we assume that all vehicles cause similar effects (chapter 3, assumption 6).
	Footprints of roads and trails exist (chapter 3, assumption 22).	No change in the footprint (USDA Forest Service 2012a and 2012d).	
Put seasonal closures on some roads and trails.	Motorized use of roads and trails occurs all year unless there is a closure order or the route is impassable as a result of weather.	No motorized use of roads and trails would occur during the time there is a seasonal closure placed on them.	Seasonal closures of roads and trails is to protect certain species of wildlife during their breeding season. Ranger district staff will continue to issue weather related closure orders on a route-by-route basis. Administrative use of routes, such as to access private property, would continue.
	Footprints of roads and trails exist (chapter 3, assumption 22).	No change in the footprint (USDA Forest Service 2012a and 2012d).	

Table 19. Current and predicted motorized use and existence

Changes Common to All Action Alternatives (miles and acres vary by alternative)	What Exists Now - Existing Condition	Predicted Use or Condition, 15 Years After First Motor Vehicle Use Map	Notes
Designate corridors for motorized dispersed camping.	Based on data collected during 2008 and 2009, motorized access to dispersed camping occurs as shown in alternative 1 (chapter 3, assumption 18). People drive right to the water's edge when they can.	The amount of motorized dispersed camping would not change (chapter 3, assumption 19). Motorized use would not occur within 100 feet of water.	
	(USDA Forest Service 2009g)	We expect to see some recovery where vehicles aren't allowed within 100 feet of water, but conditions won't be natural in the 15-year timeframe. Would need intervention in some cases to return the area to "natural" (USDA Forest Service 2012a).	Hardened camping access and sites, especially those near water, are more likely to recover than engineered roads. The former are mostly user created, whereas the latter have been compacted. The availability of water helps plants grow more quickly (USDA Forest Service 2012a).
Designate corridors for motorized big game retrieval.	Neither the forest nor the NMDGF has accurate data on where motorized big game retrieval occurs. We estimate 438 average annual trips (2 in, 2 out) across about 1.26 million acres.	The amount of motorized use to retrieve game would not change, but would be limited to the edge of the designated corridor. Motorized use would not occur within 100 feet of water.	
	User-created two track and single tracks exist. The exact number is not known and the Travel Management Rule doesn't require that knowledge (70 FR 68269). Compacted soil, with or without vegetation, exists where motorized use occurs.	No new unauthorized routes as a result of motorized big game retrieval would be created (chapter 3, assumption 16). Natural rehabilitation of areas that had light motorized use could occur. Areas heavily used by motor vehicles would take longer than 15 years to naturally rehabilitate, and in some cases would require active restoration by the Forest Service (USDA Forest Service 2012a and 2012d).	

Methodology for this Effects Analysis

This final environmental impact statement looks at effects at the forestwide scale. We aggregated effects of proposed changes to the forest level rather than describing the site-specific effect for each road or trail. For instance, the "Fisheries" section describes the overall effects of reducing the places people could drive. It does not list every route and predict the effects at that particular site. Specialists, however, sometimes used individual sites as examples.

The analysis in this chapter focuses on the effects of the proposed changes to the current designated system. It does not analyze the effects of the whole designated system. To use a hypothetical example, the effects analysis looks at what happens when 2,000 miles of roads are closed to motorized use, not what happens on the miles that remain. The Travel Management Rule does not require the Forest Service to revisit parts of the motorized system it wants to keep as is (36 CFR 212.50(b)).

Most specialists used GIS to calculate the miles and areas affected, or to model habitats. We describe other models specialists used if it is other than GIS. The purpose of the effects analysis is to compare alternatives, not to make exact predictions about the future.

To compare "apples to apples," we assume that motorized use would occur where it is proposed. This way, the effects analysis describes the effects resulting from the change between where people are driving now (alternative 1) and where people would drive (alternatives 2 through 5).

This analysis contains uncertainty. For example, the exact location of every road and trail proposed is not likely precise, but certainly is close. We don't know exactly where hunters drive to retrieve big game. The number of people with health problems caused by dust from the forest is not known. The condition of every stream crossing has not been assessed. This kind of precise data is not needed to make an informed decision because the effect of reducing motorized use is well documented. The trends in effects for each alternative are sufficient for the forest supervisor to base her decision on.

Amendments to the "Santa Fe National Forest Plan"

By law, actions we propose must be consistent with our forest plan or the plan must be changed. For instance, the forest plan prohibits motorized cross-country travel in Management Area I. If an alternative proposes a fixed-distance corridor for motorized access to dispersed camping in Management Area I, then the forest plan would need to be amended because the corridor allows people to drive off the road to camp. When alternatives are consistent with the forest plan, no amendments are needed.

Amendments to the forest plan can have effects because they propose changes in the management of the forest. Not allowing motorized use in places that used to allow it is an example of a change in management that might cause effects for future projects. These effects, like those from the proposed action and alternatives, are disclosed as part of the effects analysis for each resource.

Assumptions and Limitations Common to All Resources

The forest's specialists made assumptions in situations where they didn't have all the information they needed to include in the effects analysis. These assumptions were applied consistently

throughout the effects analysis to ensure the outcome was not skewed toward a singular conclusion.

These assumptions and limitations apply to all the resources analyzed. Some specialists made additional assumptions pertaining to their resource.

1. For the purposes of this analysis, the amount of current and future motorized travel on roads and trails is held constant among alternatives.

    - **Discussion:** The Travel Management Rule and the recreation specialist report document an increase in motorized use on national forests nationwide, including the Santa Fe National Forest. Indeed the increase in unmanaged motorized use gave rise to the rule. Economic conditions, population increase or decrease, and the public's recreational preferences could increase or decrease the overall amount of motorized travel on the forest over time. The effect of these factors, however, would be impossible to predict or accurately quantify for this analysis. By holding the amount of motorized use constant among alternatives, the interdisciplinary team can better display the effects of the alternative on their resource.

      As discussed in the specialist report for roads (USDA Forest Service 2012d), the amount that traffic would change is not known due to limitations in the way traffic is measured.

      We propose to close only 5 to 6 percent of the passenger car roads (maintenance levels 3 and 4), depending on the alternative. These roads receive most of the traffic, and use on these roads is not expected to change. Depending on the alternative, 55 to 70 percent of roads for high-clearance vehicles (maintenance level 2) would be closed to motorized use. It is expected that closing these wouldn't cause a noticeable increase in concentration of traffic on the routes remaining open. For example, on a high-clearance vehicle road left open, one car per week could increase to two cars per week. This situation illustrates a 100 percent increase in use during the time measured, but one that we nonetheless regard as a low concentration of use.

2. Publishing a system of motorized routes on a map may cause an increase in motorized use on the forest, but for the purposes of this analysis we assume a constant amount of use.

    - **Discussion**: Some people commented that displaying previously unknown routes on a map that's available nationwide will draw more motorized use to this forest. No evidence exists either in the body of scientific research focusing on this subject, nor from less formal, site-specific studies of motorized use on public lands (Christensen and Watson 2006). Since every national forest in the country is expected to publish a motor vehicle use map, the Santa Fe National Forest is not unique in this regard. Because so many variables—such as fuel prices, personal preferences, and changes in the technology of motorized vehicles—exist, it wasn't reasonable to assume either an increase or decrease in the overall amount of motorized use of the forest.

3. The capability to enforce and the public's compliance with the motor vehicle use map would increase over the present situation for all action alternatives.

- **Discussion:** Experience of forest staff shows that after an initial educational period, compliance with new rules and regulations increases over time.

4. The condition of roads and trails kept open for motorized use will stay the same, or slightly improve, over current conditions and over time.

   - **Discussion**: Roads and motorized trails will continue to be maintained as the forest's budget allows. Fewer miles of roads would be designated at the higher maintenance level, so funding could be used on more miles of road or at more frequent intervals (USDA Forest Service 2012d). For motorized trails, the forest anticipates engaging the public to develop additional volunteer and partnership opportunities to assist with trail maintenance.

5. The types of effects of motorized trails are the same as the effects of roads.

   - **Discussion:** At localized scales, motorized trails and roads have the same types of environmental effects, such as erosion, reduced plant cover, and others, and the rates of each effect are similar (Stokowski and LaPointe 2000). For example, one square foot of motorized trail and one square foot of road, with all other variables being equal, will have similar erosion rates. Motorized trails and roads do differ in the magnitude of effect at localized scales. Because roads tend to occupy more area than motorized trails, the magnitude of their effects tends to be larger (Dissmeyer 2000). Due to the unmanaged nature of the forest's motorized trail system, many motorized trail widths are as wide as roads, or have two tracks like roads. Excessive motorized trail widths can be caused by poor trail location, gullying, trail sloughing, and braiding. Since many motorized trail widths on the forest resemble road widths, for the purpose of this analysis, the effects of motorized trails and roads are considered the same.

6. All motorized vehicles, such as motorcycles, ATVs, trucks, and cars, cause similar impacts to resources. There may be some exceptions for some resources.

   - **Discussion:** All motorized use causes similar types of impacts to forest resources—trampled vegetation, emissions, erosion, and others (Ouren et al. 2007, Stokowski and LaPointe 2000).

7. The approximate 6 acres of areas proposed for motorized dispersed camping will continue to be used for dispersed camping.

   - **Discussion:** It is likely the areas would continue to be used for dispersed camping since they have been used in this manner for upward of 20 years.

8. In corridors designated for motorized dispersed camping, the use will be motorized dispersed camping.

   - **Discussion:** Experience of forest staff shows that after an initial educational period, compliance with new rules and regulations increases over time.

9. Not every acre of corridors designated for motorized dispersed camping and motorized big game retrieval would be driven on.

   - **Discussion:** Slope and vegetation limit motorized access in many places within the corridors. We proposed fixed-distance corridors in such a manner as to improve

peoples' ability to read the map. For instance, the scale of the map does not facilitate designating corridors less than ½ mile in length. As a result, some designated corridors include places where people wouldn't be able to drive (figure 16).

Figure 16. An example of a place in a designated camping corridor where vehicles couldn't drive because there are too many trees and it is too steep. Other parts of the corridor are conducive to driving to get to campsites.

10. The estimated number of motorized trips to retrieve a downed big game animal would not change among alternatives, except for alternative 3, which would not allow it.

    - **Discussion:** We estimate the average number of big game animals taken to be 438 per year (USDA Forest Service 2009j). This estimate is likely low. Because the forest does not have data on the locations of where big game is retrieved, we assumed that it occurs everywhere outside of wilderness, recognizing that not all of these acres are conducive to driving due to slope, terrain, or vegetation.

      Regional guidelines state that hunters should make the minimum number of trips to retrieve an animal (USDA Forest Service 2008c). Specialists assumed that people would make less than four trips (up to two in and two out).

11. With a restriction on public use, the amount of driving on roads used for administrative purposes will be less than the existing use.

    - **Discussion:** The forest does not have data on the frequency with which the administrative roads are presently used, but it is reasonable to assume that by not allowing the public to drive on the roads, use will be less than what occurs now.

12. Temporary roads, trails, and areas built to support emergency operations or temporarily authorized in association with contracts, permits, administrative use, or leases are not intended for public use. Any proposal to add these temporary roads, trails, and areas to the system will require a separate NEPA decision and is not part of this analysis.

13. Any routes not included in the decision are not precluded from being added or removed from the forest's transportation system in future travel management decisions.

14. Routes that would not be kept as part of the system would receive no maintenance. Routes closed to all motorized use, but needed for administrative purposes, would only receive basic custodial maintenance sufficient to keep damage to adjacent resources to an acceptable level.

15. An increase or decrease in visitation to the forest because of population change is not predictable.

    - **Discussion:** Though visits to the forest have increased over the last 20 years; however, the future trend cannot be predicted with certainty due to unknown variables like fuel costs, population and demographic change, and personal preferences.

16. Motorized big game retrieval in designated corridors would not result in the creation of new routes.

    - **Discussion:** Retrieving a downed big game animal is not likely to result in repeated trips in the same place year after year because animals are not taken in the same places every year.

17. The amount of administrative motorized use of National Forest System roads is not expected to change among alternatives.

    - **Discussion:** The access and maintenance needed to administer forest activities is expected to remain constant after changes to the designated motorized system are made. Permits for firewood collection, which could include motorized cross-country travel, would continue until specific collection areas are designated (expected over the next 2 to 5 years). Because the administrative and permitted uses are exempt, they are not included in the analysis.

18. The fixed-distance corridors created for alternative 1 capture the vast majority of the existing motorized dispersed camping on the forest. People do drive and camp outside of the corridors shown in alternative 1, but this occurs infrequently enough to be considered insignificant at the scale of the forest.

    - **Discussion:** The motorized dispersed camping corridors displayed in alternative 1 show the results of data collected by forest staff in 2008 and 2009. The protocol directed the district staff to identify and inventory the roads, trails, and areas where people currently drive to camp (USDA Forest Service 2008d). The data collected reflects the majority of those places (USDA Forest Service 2009g).

19. For the purposes of this analysis, the number of motorized dispersed campers is assumed constant among alternatives.

    - **Discussion:** Some people commented that designating motorized dispersed camping on a map that's available nationwide will draw more motorized use to this forest. We are not aware of studies or data documenting a change in the amount of motorized use on a forest following publication of its motor vehicle use map. Since every national forest in the country is publishing a motor vehicle use map, the Santa Fe

National Forest is not unique in this regard. Because so many variables—such as fuel prices, personal preferences, and changes in the technology of motorized vehicles—exist, it wasn't reasonable to assume either an increase or decrease in the overall amount of motorized use of the forest.

20. In alternative 3, people will continue to camp in the corridors displayed in alternative 1. The difference is that they won't drive to the sites, but will park next to the side of the road and walk their gear to the sites.

    - **Discussion:** While we can't accurately predict peoples' future behavior, we support this assumption based on experience. For instance, people aren't allowed to drive to the Rio Cebolla because it is blocked by a fence. People park next to the fence, and camp next to the river. Some places on the forest, particularly those next to water, are so attractive that people will continue to camp there even if they can't drive to the site. We also acknowledge that people may not camp in the less "attractive" sites if they aren't allowed to drive there. The reason we use alternative 1 is because this is where people camp now (USDA Forest Service 2009g).

21. The current number of motorized dispersed campers will use the acreage designated in each alternative for this activity.

    - **Discussion:** Where more acres are designated for motorized dispersed camping than the existing condition, people would spread out. Where fewer acres are designated, they would be concentrated. Without data on people's future behavior, this is the most reasonable assumption. Experience has shown that this activity tends to result in bare, hardened ground and new routes in some locations.

22. Almost all routes proposed for designation have an existing footprint on the ground.

    - **Discussion:** Some exceptions exist. Some routes proposed as open to all vehicles for access to private property currently exist as trails. This analysis examines the motorized use of proposed routes and their effects. Additional NEPA analysis would be required on routes needing physical construction or groundwork.

23. Without motorized use, over time some routes would naturally revegetate and others would not. For the purposes of this analysis, we assume no net change at the forest scale.

    - **Discussion:** Processes and impacts associated with the current road and trail system would continue much the same until route surface conditions change or decommissioning activities occur. This is because once a trail or road becomes established, the soil of the tread is subject to the continuing erosional forces of rainfall, running water, wind, freeze and thaw cycles, and gravity, and to some extent is maintained in an unvegetated, disturbed, condition (Leung and Marion 1996). Natural recovery of roads is often impaired by their highly compacted soils (Elseroad et al. 2003).

      A route designation decision does have the potential to affect soil and water resources indirectly to the extent that it affects the concentration of use on roads and trails, the levels of maintenance needed, and the potential for damaged areas to recover. The magnitude of the indirect effects will depend on how well routes closed to public motorized use recover on their own without restoration treatments and how many routes' current condition worsens from lack of attention and maintenance. Since these

factors are unknown at this time, for the purposes of this analysis, the condition of the designated and nondesignated routes on the landscape will be assumed to stay equal to the current condition.

24. For the purpose of this analysis, we assume the unauthorized routes were created by "pioneering," or the repeated driving in the same place. By this we mean that people saw an opportunity, such as a cow trail, a skid trail, or an open field, and drove across it repeatedly until it became a distinct route.

    - **Discussion:** Most of the unauthorized routes proposed for designation weren't designed and built by the Forest Service. Such construction has different effects than those created from people driving over the same place opportunistically. Though people report that some of the unauthorized routes proposed for designation were constructed, we believe the quantity of these is relatively immaterial when compared to the pioneered routes. Some of the unauthorized routes were built by motorized users, with or without the permission of the Forest Service. Some of the unauthorized routes are decommissioned roads that were never physically put to bed and that we now need for access or recreation.

      The unauthorized routes vary in width from single track to normal road width. They vary also in the amount of ground cover. Some can only be found by following cairns, whereas some are plainly visible and completely lack vegetation.

Affected Environment and Environmental Consequences

Spatial and Temporal Bounds of the Analysis

The spatial bounds, except as noted, for the direct and indirect effects are the National Forest System lands within the proclaimed boundary of the Santa Fe National Forest. For cultural resources and lands, the bounds include some places adjacent to the forest easily reached by National Forest System routes. The social and economic analysis includes seven counties, those that make up parts of the Santa Fe National Forest plus Bernalillo County, due to higher population base and proximity to the forest.

The spatial bounds for the cumulative effects analysis are the same, except for the following resources. Air quality considers cumulative effects to the western states. Recreational opportunities are examined for the 7-county area laid out in the "Social and Economic Environment" section. The cumulative effects for motorized access to hunting and camping are considered statewide.

For all resources, the temporal bound for the direct and indirect effects is from publication of the motor vehicle use map, anticipated in 2012, through 2025. The temporal bound for the cumulative effects analysis for all resources is from publication of the forest plan in 1987 through 2025. We chose 2025 because it is the farthest date out we felt it reasonable to identify future actions.

Consistency with the Forest Plan and Other Laws

All the alternatives are consistent with standards and guidelines in the "Santa Fe National Forest Plan" or the plan has been proposed for amendment. The amendments are shown in appendix 1,

and the effects of them analyzed in each section. All the alternatives are consistent with applicable laws, regulation, and policy. Please find details in the individual specialist's report.

The remainder of this chapter discusses the predicted effects of the alternatives by resource.

Recreation – Affected Environment

Everything in this section summarizes the specialist reports for recreation and roads located in the project record.

The public and forest employees had six significant issues[1] (1 through 6) and two other issues (7 and 8) about how the proposed action would affect recreation. Analysis of issue 9 is required by the Travel Management Rule.

1. *Motorized Opportunity:* The reduction in miles of routes and the prohibition on cross-country travel in the proposed action will adversely affect the quantity of public motorized experiences.
2. *Motorized Big Game Retrieval:* Prohibiting motorized cross-country travel will limit the motorized retrieval of big game, perhaps to an unacceptable level.
3. *Motorized Dispersed Camping:* Designating motorized dispersed camping corridors will increase cross-country travel and the resource damage associated with it, and curtail the kind of unrestricted camping that the Santa Fe National Forest currently provides.
4. *Conflicts:* The proposed action, by designating routes uniformly across the forest outside of designated wilderness, will cause conflicts between motorized and nonmotorized users because they will be recreating in the same vicinity.
5. *Wilderness:* Designating motorized routes close to wilderness will detract from the wilderness experience because of noise and trespass.
6. *Inventoried Roadless Areas:* Designating motorized routes through or close to inventoried roadless areas will detract from the potential wilderness characteristics of these areas.
7. *Enforcement:* The motor vehicle use map alone will be an inadequate enforcement tool.
8. *Maintenance:* Any reasonable designated motorized system will require more maintenance than the Forest Service can provide by itself. An unmaintained system will continue to adversely affect forest resources.
9. *Safety:* As required by the Travel Management Rule.

Opportunity (Roads, Trails, Areas, and Seasonal Closures) – Affected Environment

People who ride motor vehicles in the forest raised this issue about opportunity:

[1] The reason six significant issues are listed here is that some of the bullets included in significant issue 1 are itemized separately for the purpose of clarity.

> *"The reduction in miles of routes and the prohibition on cross-country travel in the proposed action will adversely affect the quantity of public motorized experiences."*

The Santa Fe National Forest, at 1.5 million acres, offers something to every kind of outdoor enthusiast. "Developed" opportunities—such as official campgrounds, trailheads, and the ski area—satisfy people who prefer having facilities. Campgrounds have picnic tables, grills, and tent sites. Trailheads have kiosks with maps and information. We aren't proposing to change any access to developed opportunities and won't discuss them further. All routes to developed sites would continue to be open for motorized use.

"Dispersed" opportunities suit people looking for solitude and self-sufficiency. Hunting, collecting firewood, hiking or riding on trails, and camping without amenities are examples of dispersed opportunities. We call some activities, like cutting Christmas trees, dispersed because they are spread out. This project could curtail some dispersed opportunities by restricting the amount of motorized access to and within the Santa Fe National Forest. People use vehicles to get to places where they participate in nonmotorized activities, like hiking, camping, or horseback riding.

Visitors to the Santa Fe National Forest are predominantly local. Greater than 60 percent of visitors come from Santa Fe, Albuquerque, or towns adjacent to the forest such as Jemez Pueblo, White Rock, and Las Vegas. Fewer than 1 percent of visitors are international (Kocis et al. 2010). Over 65 percent of visitors to the Santa Fe National Forest came to the forest for the purpose of recreation (Kocis et al. 2010).

What kind of recreation do people engage in when visiting the forest? The most recent National Visitor Use Monitoring data was collected from October 2008 through September 2009[2]. Nonmotorized recreation accounted for over 90 percent of people's activities. The survey showed peoples' four main activities are hiking or walking (67 percent), viewing natural features (32 percent), relaxing (22 percent), and viewing wildlife (22 percent; table 20). People interviewed for the survey listed hiking and viewing natural features as their top two primary activities.

The 2009 report showed that 0 percent of those who come to the forest do so for the primary purposed of riding off-highway vehicles, though less than 1 percent said they do participate in the sport. About 2 percent of people said they come to the forest to drive for pleasure. Just under 13 percent of people reported engaging in one of the six kinds of motorized recreation listed (table 20).

The National Visitor Use Monitoring (NVUM) survey does have limitations. Surveys are collected at specific recreational sites in the forest; as such, small sites used by few people—such as local motorized use—is not captured. Unrecorded recreational visits may represent a significant contribution to one type of recreation, so the survey results may be low. Visitors who agree to be interviewed are considered to be representative of the entire population of visitors. Survey days are randomly distributed, so seasonal recreation activities (like downhill skiing) can be overreported. Despite these limitations, it is widely accepted that the National Visitor Use Monitoring data is very useful for forest planning and decisionmaking.

[2] The draft environmental impact statement cited results from the 2004 NVUM study. Because of the manner in which the data were collected, the 2004 and 2008 studies can't be directly compared to evaluate trends.

To show how motorized opportunities and access would change among alternatives, we use the miles of roads and trails and the acres of areas open for motorized use as a proxy because these represent the places people can drive.

Table 20. Percent of visitors who participated in 28 different activities in the Santa Fe National Forest during FY 2008[a]

Activity	Santa Fe National Forest FY 2009b	
	Percent Participating	Percent that Consider It a Primary Activity
Developed Camping	5.1	2.3
Primitive Camping	1.9	0.4
Backpacking[2]	1.8	0.9
Resort Use	0.7	0.0
Picnicking	7.7	1.7
Viewing Natural Features	32.4	9.5
Visiting Historic Sites	2.8	0.1
Nature Center Activities	4.2	0.0
Nature Study	10.1	0.4
Relaxing	21.6	4.3
Fishing	9.1	5.3
Hunting	2.3	1.5
OHV Use[1]	0.4	0.0
Driving for Pleasure[1]	11.3	1.7
Snowmobiling[1]	0.0	0.0
Motorized Water Activities[1]	0.1	0.0
Other Motorized Activity[1]	0.0	0.0
Hiking/walking[2]	66.5	50.7
Horseback Riding[2]	0.6	0.1
Bicycling[2]	2.6	2.0
Nonmotorized Water[2]	0.9	0.8
Downhill Skiing[2]	8.5	8.3
Cross-country Skiing[2]	9.4	9.1
Other Nonmotorized[2]	2.2	0.6
Gathering Forest Products	3.2	0.1
Viewing Wildlife	22.2	0.6
Motorized Trail Activity[1]	0.8	0.0
Some Other Activity	3.3	1.9
No Activity Reported	0.2	0.2

[a] From the National Visitor Use Monitoring Results, USDA Forest Service, National Summary Report, data collected FY 2003 through FY 2009, last updated April 25, 2010.

[b] From the National Visitor Use Monitoring Results, USDA Forest Service, Region 3, Santa Fe National Forest, February 2011.

[1] Activities that are specifically considered to be motorized recreation.

[2] Activities that are specifically considered to be nonmotorized recreation.

Roads

The Forest Service has two types of roads:

1. Roads suitable for passenger cars, and
2. Roads suitable only for high-clearance vehicles.

Roads that are suitable for passenger cars are usually paved or have a gravel surface. On the Santa Fe National Forest, most passenger car roads have a gravel surface. Except for the south end of Forest Road 376 and part of Forest Road 263, most paved roads are in campgrounds or lead to them. Passenger car roads are maintained more frequently because they receive the most use.

High-clearance vehicle roads are usually dirt roads. High-clearance vehicle roads receive little maintenance and a pickup truck or a 4-wheel-drive, high-clearance vehicle is required to drive on many of these. Many sections of high-clearance vehicle roads are smooth and level and would be suitable for passenger cars, but are not maintained for that use.

Passenger car roads carry the most traffic on the forest. Forest Road 376 on the Jemez Ranger District, for example, appears to be the most heavily traveled National Forest System road on the forest. Traffic counts at the south end of the road near the tunnels show an annual average daily traffic of around 185 vehicles. For comparison, the New Mexico Department of Transportation shows that the annual average daily traffic through Jemez Springs is around 2,600 vehicles. Farther north on Forest Road 376, the average annual daily traffic drops to around 150 vehicles. This is the number of vehicles that go past the counter, regardless of direction. Many of these vehicles will be counted twice because people drive in and out, and don't necessarily drive a looped route.

High-clearance vehicle roads carry fewer cars, sometimes as little as one or none every 2 weeks. On the Pecos/Las Vegas Ranger District, Forest Road 79 doesn't get as much traffic as Forest Road 376. Forest Road 79 is a dead end road that serves a trailhead and goes to some private property in the Cañada de Los Alamos area. At the south end of the road near the forest boundary, the average annual daily traffic is 30 vehicles, but at the trailhead, the count is only 15 vehicles. In the Glorieta Mesa area, Forest Road 326's average annual daily traffic is 23.

The forest also has roads people created by driving repeatedly in the same tracks (figure 17). These roads, called unauthorized**,** are not tallied in the forest's database and are not part of the official transportation system. We don't have an inventory of all the unauthorized roads in the forest. People who like to drive in the forest told us of 540 miles of unauthorized roads and trails they use[3].

Traffic on all forest roads is low compared with city roads. We estimate that people are using 5,218 miles of roads now.

[3] In this document, the category called "unauthorized" includes unauthorized, decommissioned, and undetermined routes because adding these all add miles to the forest's transportation system. The draft environmental impact statement only listed unauthorized, which is why the numbers differ here.

Figure 17. An unauthorized route leading to a camping spot on the Cuba Ranger District

Trails

Of the 947 miles of system trails in the forest, 460 are in designated wilderness where motorized use is prohibited by law. Most of these trails were designed for stock or hikers. Some were historically used as sheep or cattle driveways. Four hundred sixty miles of system trails built for nonmotorized use exist outside of wilderness (figure 18). Though these trails were built for nonmotorized uses, motorized use hasn't been prohibited on most of them. The other 27 miles are motorized system trails[4]. Some segments of the system trails outside wilderness pass through areas designated in the forest plan for nonmotorized opportunities, or in areas having special closures due to fire, wildlife, or other resource concerns. It is difficult to describe the management direction for system trails in simple terms by using just miles, since many have segments that go through different forest plan management areas with different objectives.

Some portions of the trails built for nonmotorized use cross places where the forest plan or a closure order prohibits motorized use (figure 19). In theory, this means that section would be closed to motorized use, so someone couldn't drive to the end or finish a loop. In practice, however, no one has delineated where the trails cross boundaries into nonmotorized areas, so a driver would not know that motorized use wasn't allowed. Thus, we have not calculated the mileage of the segments that are technically closed (as in the little piece shown crossing the nonmotorized area in figure 19). Instead, they are included with the miles of nonmotorized trail outside of wilderness.

[4] Aspen Loop and Pajarito Trail, totaling 8 miles, are hiking trails, but are incorrectly coded as "open to all vehicles" in the forest's database, which would mean they should be roads. We keep both counted with the motorized trails so that mileages match among reports.

Figure 18. A typical National Forest System trail in the Jemez Ranger District. This one is not in a wilderness area.

Besides the system trails, unauthorized trails exist on the ground but are not part of the forest's transportation system. People driving in the forest create unauthorized routes. For instance, motorcyclists might follow a cow trail, and after several rides it becomes a motorcycle trail. Or, ATVs could cross a meadow and leave tracks that others follow. Over time, this too could become a trail. Some commenters wrote that all unauthorized trails were illegally created and should not be designated. If a driver was in a part of the forest that allows people to drive off roads (53 percent of the forest's area), then the trail was not illegally created. Some unauthorized routes are well located, provide excellent opportunities for outdoor recreation by motorized and nonmotorized users, cause less environmental impact than unrestricted cross-country motor vehicle use, and would enhance the designated system for motorized use. Others are poorly located and cause unacceptable environmental impact.

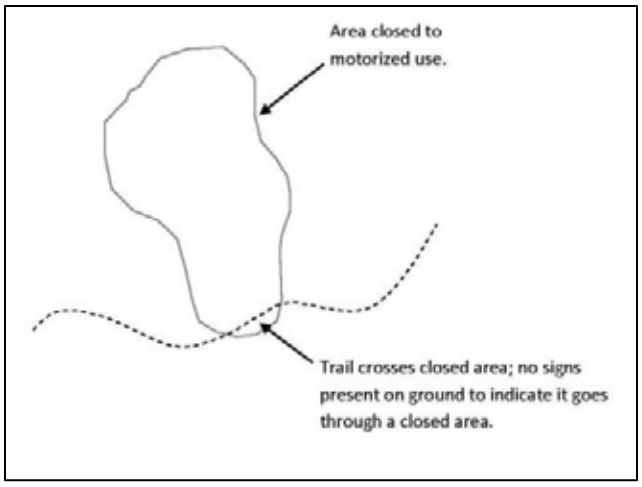

Figure 19. Example diagram showing how some trails cross nonmotorized areas, but for a driver, there would be no way to tell

The forest plan, written in 1987, didn't contemplate the extent to which motorized recreation would become part of the forest's recreational

landscape. This is evident in that the forest currently has only 27 miles of managed system trail and not all are being driven on; most riders are using unauthorized trails instead.

We do not have an inventory of all the unauthorized routes, and the Travel Management Rule does not require that we do. We proposed to designate some of the routes that people who like to ride in the forest gave us. Of the 1,124 miles of routes provided by motorized user groups, about 770 are on system roads. In other words, most of the mileage used as motorized "trails" is either roads or trails that are already part of the forest's transportation system.

The chance that what a motorized enthusiast calls a trail is actually a road in the forest's system is three out of four. The motorized trails that people like to drive on are typically closed roads that link trails together (figure 20). In this report, we keep the miles of roads and trails separate in order to count them only once. **This is important since the miles of trail proposed for designation will appear smaller than where people said they ride.**

We recognize that the opportunity to drive recreationally now is almost unlimited. Few restrictions exist on the 460 miles of system trail built for nonmotorized uses outside of wilderness, and motorized cross-country travel is allowed on 53 percent of the forest. The baseline we use to compare the alternatives is where people drive now, not where they are allowed to drive (table 21).

Table 21. Miles of trails being used now on the Santa Fe National Forest. Does not include any miles of forest system roads, even though roads may connect loops (figure 21) or appear to be trails on the ground.

	Used by Vehicles Less Than or Equal to 50 Inches (motorcycles and ATVs)	Used by Motorcycles Only	Used by ATVs Only
Alternative 1	408 (295 are unauthorized)	17 (3 are unauthorized)	6

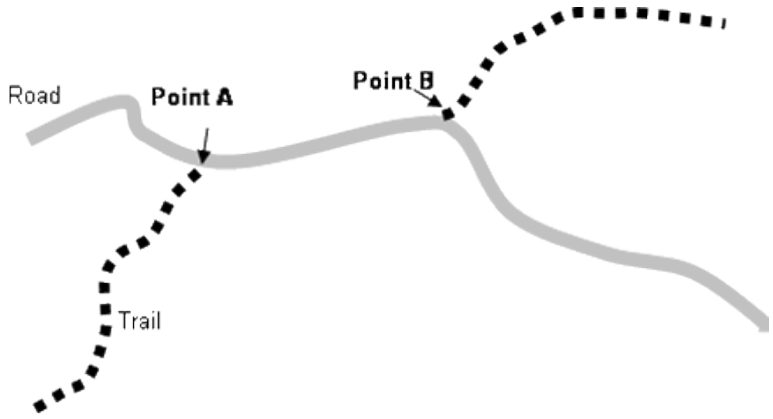

Figure 20. An example where a road connects two trails. To get from Point A to B, you have to drive on a road. To a rider, it might all look like a single, seamless trail.

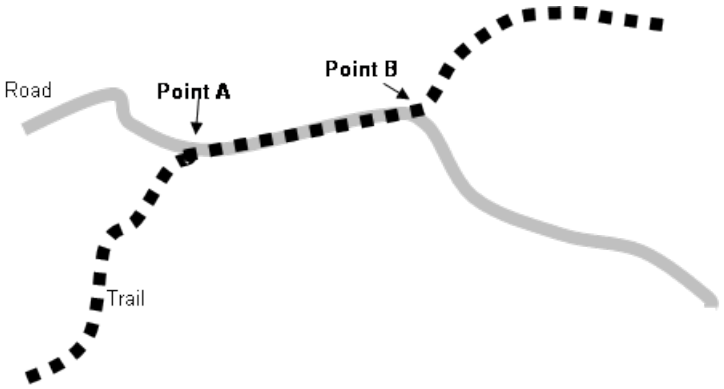

Figure 21. An example of coincident routes. The trail and the road are the same, or coincident, between points A and B.

Roads may complete parts of trails (figure 20) or be coincident with them (figure 21). If a trail is coincident with a road, we counted it as a trail. If we designate a motorized trail that is coincident with a road, we would close the road and convert it to a motorized trail. Only vehicles less than or equal to 50 inches wide would be allowed on a motorized trail (or motorcycles only in some cases).

Areas

Though the "Santa Fe National Forest Plan" allows people to drive off roads on about 53 percent (822,000 acres) of the forest, we estimate that people are only doing so on about 29 percent (444,000 acres). People drive off roads to explore, scout for game, retrieve downed game, drive for pleasure, cut firewood, camp, have motorcycle trials competitions, and get to places where they can hike, bike, ride horses, fish, find a geocache, or rock climb and other activities.

Seasonal Closures

No consistent closures for weather or wildlife exist. Ranger district personnel close some roads when they get wet and muddy, typically in winter but also to protect resources like wildlife during reproductive seasons and other reasons. Other roads close themselves when they have too much snow or otherwise become impassable (figure 22).

Opportunity (Roads, Trails, Areas, and Seasonal Closures) – Environmental Consequences

Direct and Indirect Effects, Alternative 1

The opportunities for driving on roads, trails, and in areas would not change from the current condition as just described. Alternative 1 (no action) provides the most miles and acres for people to drive on. Without uniform seasonal closures, people have access to the forest for the longest period of time.

The existing condition provides much more opportunity for motorized experiences than the current demand, according to the National Visitor Use Monitoring data.

Figure 22. Impassable road due to mud

It is likely that the number of unauthorized routes would grow. Alternative 1 allows travel off routes on more than half the forest. Observations by forest staff show the tracks people leave when driving off road tend to become established paths over time.

The official motorized trail system would remain small at 27 miles. Use on the other 460 miles of trails outside wilderness would be open to vehicles unless posted closed. The Forest Service would not manage these trails for a motorized experience with things like signs, loop markers, and trail maintenance for ATVs and motorcycles. Local riders would have the advantage of knowing where to go, whereas nonlocal tourists may not.

Cumulative Effects, Alternative 1

Many of the past and present actions listed at the beginning of this chapter contributed to the condition of the forest's transportation system today. The reasonably foreseeable future actions are not likely to make large, cumulative changes to the transportation system.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 reduce the places where people could drive on the Santa Fe National Forest (figure 23). Even alternative 4, which leaves the most roads and trails open for motorized use of the action alternatives, still reduces open miles by 46 percent. Having fewer miles of roads and trails open means that people may not be able to drive to places they can now. All the action alternatives prohibit driving off roads except in designated areas and corridors solely for motorized access to dispersed camping or big game retrieval. Some people would consider this a loss of opportunity to enjoy their national forest, especially those who participate in dispersed recreational activities. Others may find a designated, managed system an improvement.

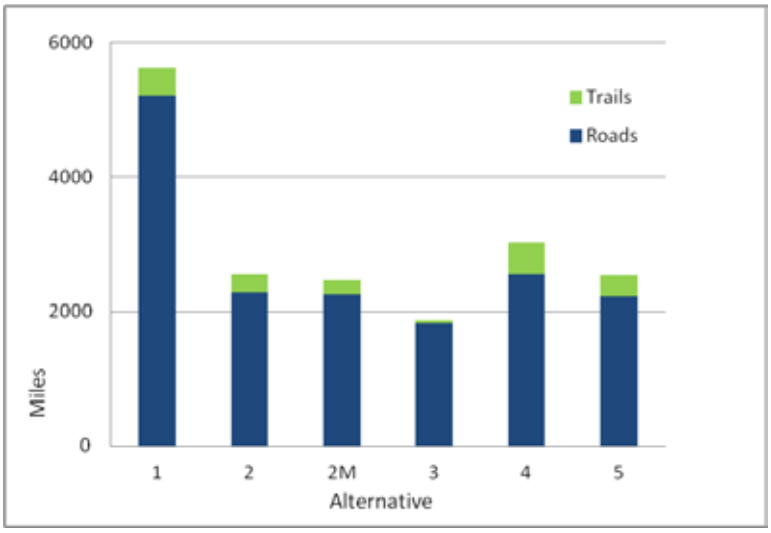

Figure 23. Miles of roads and trails open for motorized use by alternative

All the action alternatives would bring the motorized opportunities more in line with the existing demand as recorded in the 2009 National Visitor Use Monitoring Survey (Kocis et al. 2010).

All the action alternatives propose designating some unauthorized routes. This means that a portion of the roads and trails riders requested would be designated, meeting at least a portion of recreational demand.

Roads

People who use out-of-the-way, challenging, high-clearance roads would no longer have as many of them to drive on. People will no longer be able to ride or explore on infrequently used roads that are not designated. It may be harder for people to go somewhere and be alone, or take longer to get there since they would have to proceed without their car at some point. For people who like to hike, for instance, not being able to drive to an out-of-the-way trail might mean they wouldn't hike there anymore—hiking to the trail would itself become the hike. Restricting where people can drive may affect some hunters who would no longer be able to drive to as many places as they used to. Other hunters who prefer to walk may appreciate that fewer places will allow motorized use.

Closing more than half the roads to motorized use may not be as drastic as it appears because we propose to close roads that people don't drive on or drive on infrequently. We described earlier how passenger car roads get the most use and high-clearance vehicle roads the least. We propose to keep most passenger car roads open; the bulk of roads we propose to close are high-clearance roads that get little or no use (table 22). Nonetheless, closing the high-clearance roads completely removes the potential to use them.

The action alternatives would bring motorized use and dispersed camping in compliance with the "Rio Chama Management Plan," which is part of the forest plan. This means, though, that people won't be able to drive places in the Rio Chama corridor where they do now, and is likely to be perceived as a decrease in their ability to enjoy the Rio Chama.

Table 22. Change in roads open to motorized use by alternative. Passenger car roads carry the most traffic on the forest, and few of them would be closed.

Alternative	Miles Proposed for Designation	
	Passenger Car	High-clearance Vehicle
1	428	4,691
2	408	1,882
2M	406	1,827
3	405	1,424
4	408	2,140
5	403	1,827
Percent Change from Alternative 1		
2	-5	-60
2M	-5	-61
3	-5	-70
4	-5	-54
5	-6	-61

Trails

The Santa Fe National Forest manages only 27 miles of motorized system trails, and alternatives 2 through 5 increase the miles of official motorized system trail to varying degrees. Few restrictions on motorized use exist now, so any designated system restricts the amount of motorized opportunity from what is allowed under alternative 1, the existing condition (table 23, figure 24). Some people will perceive a system of trails designated for motorized use as an increase in motorized opportunities by having maintained, signed trails; others will see it as a decrease because they won't be able to drive to places they used to.

Alternative 4 appears to provide more trails than people drive on now. In reality, many of these trails exist and are being used in alternative 1—it's just that they are National Forest System roads now. Alternative 4, by converting these roads to trails, provides more trails uniquely for vehicles less than or equal to 50 inches in width. (This is also true for the other alternatives. The only difference is that they don't propose more motorized trails than are currently being used.)

Table 23. Change in motorized trails by alternative. Alternative 1 shows the miles thought to be driven on now

Type of Route, Miles Proposed for Designation	Alternative					
	1	2	2M	3	4	5
Vehicles ≤ 50 inches wide	385	123	80	41	243	167
Motorcycles only	17	140	128	12	219	138
TOTAL	408	263	208	53	462	305

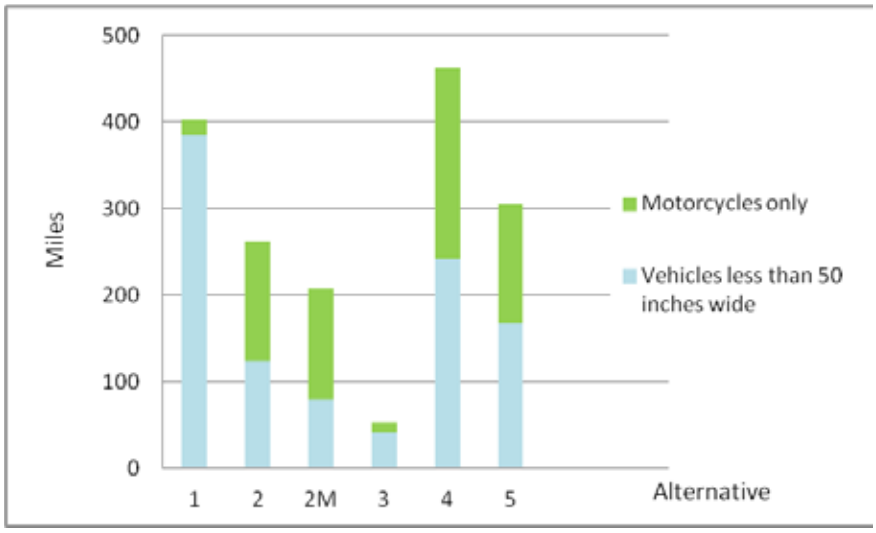

Figure 24. Miles of trail proposed for motorized use by alternative. The resultant system would have more motorized National Forest System trails, but restrict motorized travel from what is happening now.

Alternative 4 also proposes to designate the highest percent of the unauthorized routes motorized users provided, the highest of all the alternatives (figure 25). The rest decrease the trail mileage from what people are driving and riding on now. Alternative 3 includes almost no unauthorized routes. This means that motorcyclists and other drivers who gave us their favorite routes would not be able to drive on them, and instead would need to stay on roads. This, in turn, is not likely to provide the kind of experience riders seek.

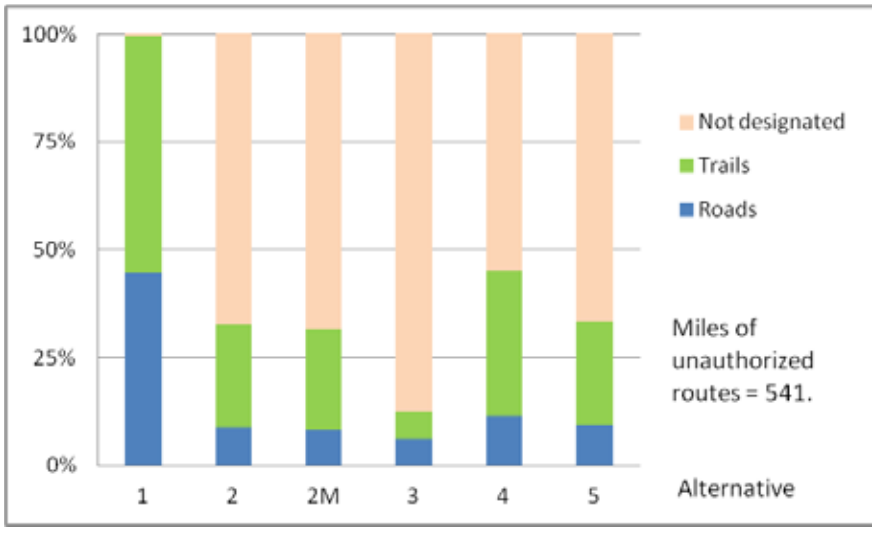

Figure 25. Comparison of how many of the 541 miles of unauthorized routes are proposed by alternative

Alternatives 2, 2M, 4, and 5 propose to allow motorized use on up to 30 miles (depending on the alternative—2M at 3 miles and 4 at 30 miles) of system trails built for nonmotorized uses. Since people ride on most of these trails now, the change would make them formally open for motorized use. If you hike or walk your dog on these trails now, you would continue to encounter motorcycles or ATVs unless alternative 3 is chosen.

Areas

Alternatives 2 through 5 shrink the amount of motorized opportunity by limiting travel off roads to the designated system, meaning that driving off roads would no longer be allowed. (We will discuss motorized big game retrieval and dispersed camping separately.) Alternatives 2, 2M, 4, and 5 propose small areas intended for motorcycle trials and camping, but this is still almost nothing compared to alternative 1, the existing condition (figure 26). The areas proposed are targeted for certain kinds of use—motorcycle trials and dispersed camping—rather than any kind of driving because they've been used this way historically, and there is no indication that future use would change. The trials areas consist of a series of rocky areas connected by single-track trail, without enough room for larger vehicles to travel. The camping areas range in size from ¼ to about 5 acres, typically too small for motorized cross-country travel. As a result, the opportunity for cross-country travel people may be used to in the rest of the forest will be removed.

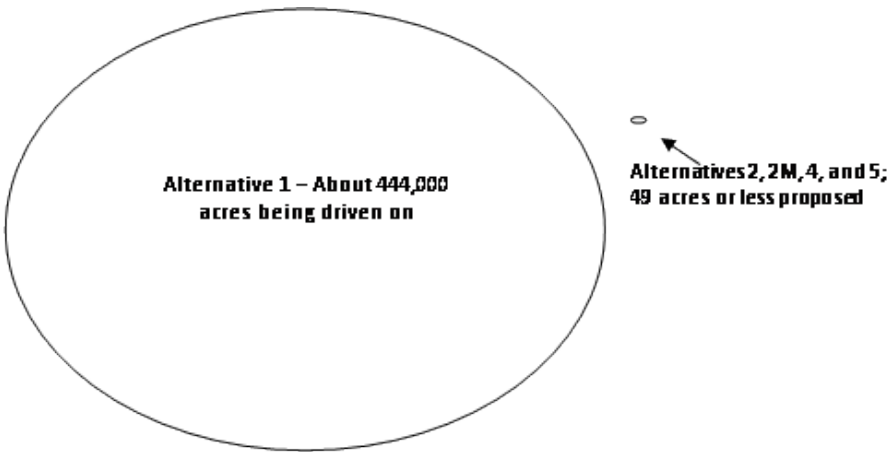

Figure 26. Conceptual illustration of change in acreage open for motorized cross-country travel by alternative (not to scale)

Not being able to drive a vehicle off road means that people's dispersed recreational activities will change. For instance, hunters will not be able to scout for game off roads on ATVs before hunting season, instead having to walk or ride a horse. People will not be able to explore by driving cross country; they will have to park and walk or ride a bike or a horse. People who drive cross country to get to places where they rock climb, ride horses, or bicycle will also have to park next to a road and proceed without their cars. A trip that used to take a day may take longer because of the time required to get to the desired destination without a vehicle. We expect that some people will forego the trip altogether.

The areas proposed for motorcycle trials have been used for it in the past. The dispersed camping areas on the Pecos/Las Vegas Ranger District are also used for dispersed camping now every weekend during the summer and have been for many years.

Seasonal Closures

Alternatives 2 through 5 propose seasonal restrictions in various combinations to protect wildlife and to prevent driving on routes when they are wet. Having uniform seasonal closures limits motorized opportunities because closures will exist where they don't now. All the alternatives, however, keep more than 90 percent of the routes open for 7 months or longer (figure 27, table 24). Snow naturally closes the high country for 5 to 7 months, so people would most notice new seasonal closures at lower elevations.

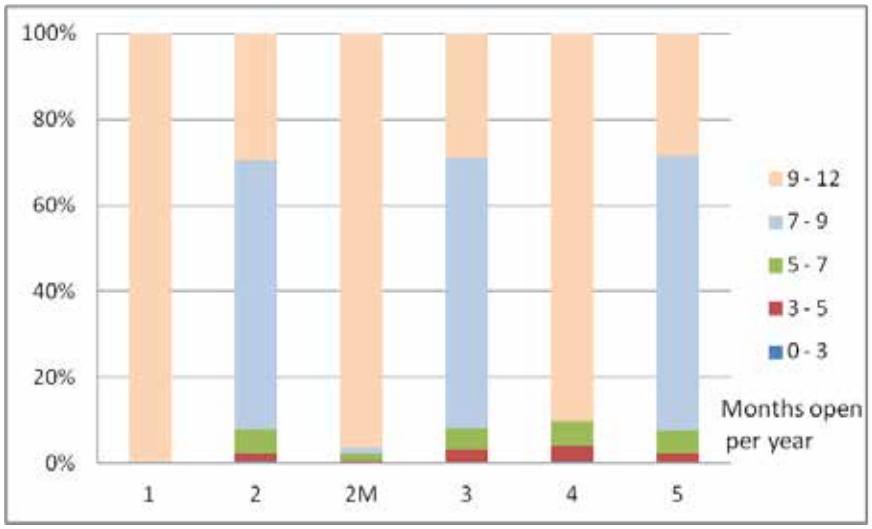

Figure 27. Percent of routes open per year by alternative. Alternatives 2M and 4 keep 90 percent of routes open for 9 months or more. By comparison, alternatives 2, 3, and 5 keep about 30 percent of routes open for 9 months or more.

In alternative 1, the existing condition, all routes stay open 9 months of the year or more (with the exception of some site-specific forest closure orders which close roads during the winter). Alternatives 2M and 4, having 90 percent of routes open 9 months or more, have no uniform closures for weather. This means that people would be able to drive on routes until they were snowed out or until the ranger districts put closure orders on them when they had snow or were muddy. These alternatives provide the most flexibility for keeping routes open, and also the most flexibility for closures when needed, for example during the monsoons. The duration routes are open in alternatives 2, 3, and 5 is about the same—about 60 percent are open 7 to 9 months, and 30 percent 2 to 12 months. With uniform seasonal closures proposed for alternatives 2, 3, and 5, the forest would not be able to open roads earlier than indicated on the motor vehicle use map. Routes also couldn't be closed during wet periods such as monsoons, resulting in rutting and erosion.

Table 24 shows that not all routes would be open all year, as now. It groups roads and trails together to show the percent of routes open for different durations. Table 25 breaks out the kind of

route and shows the percent that do not have seasonal closures. Using alternative 4 as an example: 92 percent of the roads would be open all year in this alternative, as would 59 percent of the trails for motorcycles only. Alternative 3, conversely, keeps 28 percent of the roads and 34 percent of the motorcycle trails open all year.

Table 24. Percent of routes open seasonally by alternative. You can see that alternatives 2 through 5 have fewer routes open all year than alternative 1, the existing condition.

Months Open per Year (approximate)	Alternative (percent of routes open)					
	1	2	2M	3	4	5
3–5	0	2	0	3	4	2
5–7	0	6	2	5	6	5
7–9	0	63	1	63	0	64
9–12	100	29	96	29	90	29

Table 25. Percent of routes with no seasonal closures

Type of Route	Percent of Routes with No Seasonal Closure by Alternative					
	1	2	2M	3	4	5
Roads	100	30	94	28	92	29
Trails for vehicles ≤ 50 inches wide	100	10	84	4	85	12
Motorcycles only	100	17	81	34	59	16
Grand Total	100	28	93	28	89	28

To interpret the effect of seasonal closures, both tables should be considered together. For instance, even though alternatives 2, 3, and 5 only have 28 percent of the routes open all year (table 25), more than 90 percent of all the routes are open 7 months or more (table 24).

Having annual, seasonal closures may represent one of the larger changes experienced by the public. Seasonal closures limit motorized access compared to the existing condition. Closures represent lost motorized recreation opportunity. However, since route conditions will likely be improved by providing the forest with a smaller and, thus, more manageable system of routes, it also represents an increased recreational benefit of easier access and better conditions for motorized recreation.

Cumulative Effects, Alternatives 2 Through 5

The effect of all the action alternatives would be to reduce the opportunity for motorized access and recreation on the forest. The reduction in motorized travel and recreation on the Santa Fe National Forest would cumulatively contribute to a similar reduction in access on other public lands in the 7-county area. The Carson and Cibola National Forests and the BLM are also going through the route designation process, which is expected to also reduce motorized opportunities. Though motorized opportunities on public lands would be reduced overall, they would not be eliminated. The transition to active management may enhance user experiences by providing a higher quality system.

The reduction of motorized access on public lands could be offset by private motorized parks, but the extent of the offset cannot be predicted.

Motorized Big Game Retrieval – Affected Environment

The public raised this issue:

> *"Prohibiting motorized cross-country travel will limit the retrieval of big game, perhaps to an unacceptable level."*

Right now, some hunters use trucks and ATVs for at least two reasons directly related to hunting: to scout for game before the season and to pick up large game they have killed. (Camping is discussed in the next section.) As for scouting with a vehicle, we described in the section on "Areas" that driving off roads or trails to scout for game will be prohibited. Vehicles must stay on roads or trails designated for motorized use unless retrieving a big game animal or camping in designated corridors.

Culturally, hunting is an important activity for the people of northern New Mexico. Early inhabitants hunted and lived off the land. Now their descendants, who make up the majority of the population in rural areas and small towns in northern New Mexico, continue this traditional practice that helps to provide food, is a bonding activity between parents and children, and is a way of teaching children about nature and the land around them.

Sport hunting has emerged more recently. Sport hunting can involve large groups, off-highway vehicles, and hunting camps. Sport hunting can be very social and many hunters return to the forest annually for this activity. The growth of sport hunting has given rise to a community of commercial outfitters and guides. The Santa Fe National Forest is known for its trophy animals, including elk, mule deer, bear, cougar, and bighorn sheep, which draw hunters from all over the world.

Motorized big game retrieval is commonly practiced by big game hunters in northern New Mexico. Although it is illegal to hunt from a vehicle, it is currently legal to retrieve downed and tagged game in parts of the forest where cross-country travel is permitted. The invention of and growth in popularity of off-highway vehicles—ATVs in particular—has led to an increase in off road game retrieval.

The New Mexico Department of Game and Fish identifies mule deer and elk as the two types of big game animals people might need a vehicle to get. Bear, though large, do not qualify because people tend to take just the skin and don't eat the meat. Carrying the skin out does not warrant using a vehicle (USDA Forest Service 2009f).

We estimate that hunters took an average of 438 elk and mule deer, combined, during the 2008 and 2009 hunting seasons (USDA Forest Service 2009j). We think most people drive straight in, dress and pick up their animal, and drive straight out.

Data on where people kill game animals and then go get them doesn't exist. We are confident that locations change every year. The New Mexico Department of Game and Fish doesn't ask people to report the exact location of their animal or the method they used to get it, just the game management unit where they brought it down. We assumed that hunters drive everywhere except wilderness areas to get their game. This totals close to 1,267,000 acres—in reality it must be less

since some places are too steep or the trees are too thick for driving. There are currently winter road closures in some parts of the forest to protect roads from damage during wet weather. These closures go into effect after most hunting seasons are completed, and typically do not affect motorized big game retrieval.

While 438 hunters driving to get game on 1,267,000 acres may not seem like much, it is a lot to those 438 hunters. It could mean the difference between putting food on the table or not. Some people wrote that without driving, they are physically unable to pick up their animals and likewise can't afford to buy or hire horses.

Finally, the Hunting Heritage and Wildlife Conservation Executive Order 13443 directs agencies to encourage and enhance hunting and wildlife habitat.

Motorized Big Game Retrieval – Environmental Consequences

Direct and Indirect Effects, Alternative 1

There would be no change in how or where game animals are retrieved. Hunters could continue to pick up elk and mule deer, as well as smaller game, using vehicles anywhere on the forest where driving is allowed. Whether people think hunting is enhanced by the proposal to reduce the places where people can drive depends on their perspective. For those who need vehicles to retrieve game, alternative 1 would be best for encouraging hunting. On the other side, people who think that vehicles disturb game would consider alternative 1 less than ideal since it allows the most motorized use. Alternative 1 is the least effective at conserving and enhancing wildlife habitat for most species (refer to the "Wildlife" section later in this document). The large area available in the existing condition for motorized big game retrieval combined with the relatively small number of annual trips likely results in dispersed use, which not only limits resource damage, but may also reduce the displacement of game from a specific area.

Cumulative Effects, Alternative 1

The only anticipated, cumulative decrease in opportunity to retrieve game with a vehicle would be through closure orders.

The New Mexico Department of Game and Fish issues hunting licenses based on the population of elk and mule deer. Should those populations increase, so might the number of licenses issued. But simply having more licensed hunters would not necessarily increase the number of motorized trips to get game—hunters need to first be successful and, second, choose to drive to get their animal. If all these are true, then more trips in vehicles could be the result.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 limit the public's ability to retrieve big game with a vehicle. All reduce the distance from a road a person could drive to retrieve a game animal compared to alternative 1, the existing condition (figure 28). This means that a hunter might have to walk all or part of the way to pack an animal out. In alternatives 2, 2M, 4, and 5, a hunter could drive to the edge of the corridor. If the animal was farther than that, they would have to stop at the edge of the corridor and continue on foot. All the corridors proposed are smaller than the area available and used now. Alternative 4 most closely preserves the places where people can drive to get game now. Alternative 3 does not allow anyone to drive off roads, so hunters would have to walk to get their

animals. Alternatives 2 and 2M, which propose corridors 150 or 300 feet from either side of some roads, severely limit opportunities from the current condition. Alternative 5 represents a middle ground.

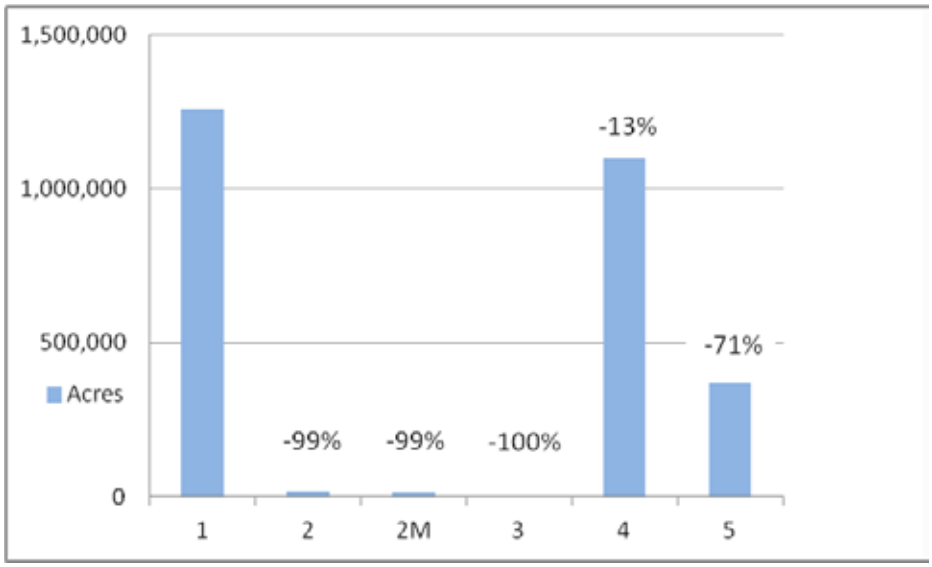

Figure 28. Comparison of acres, and percent change from existing condition, where people would be allowed to drive to retrieve elk and mule deer

If alternative 2, 2M, or 3 is chosen, we anticipate that some hunters would have no way to get their animals due to physical limitations. This would effectively eliminate their ability to hunt and perhaps have meat in the freezer. On the other hand, some hunters would perceive not having motorized big game retrieval as an improvement; little or no engine noise that would startle game would be present more than 300 feet from roads.

Having fixed distance corridors is likely to concentrate use of vehicles within the corridors, especially in narrower corridors (alternatives 2 and 2M) or where there are fewer miles of roads with corridors (alternative 5). Concentrated use in corridors is likely to cause wildlife to avoid the corridors. This could, however, improve hunting away from the roads and reduce conflicts with nonmotorized users, especially where the area of the corridors is a small percentage of the forest. Wildlife avoid recreationists of all sorts, on and off trails and roads (Schultz and Bailey 1978). Elk are particularly sensitive to ATVs and will flee from an ATV more than 1,000 meters away (Preisler et al. 2006, Naylor et al. 2009). Mule deer are also sensitive and can flee from recreationists on trails almost 400 meters away (Taylor and Knight 2003).

Nonmotorized forest users, including those who are hunting, would benefit by having motorized game retrieval confined to the corridors because it would reduce the number of encounters with motorized users outside these areas. If a motorized vehicle spooks an animal that another hunter may be stalking on foot, this creates a lost opportunity and may create a conflict among users. If motorized big game retrieval is limited to corridors, nonmotorized hunters can move outside these corridors where there would be no driving and subsequent spooking of game. Similarly, if motorized big game retrieval is confined to a corridor, nonmotorized users that are not hunters

can also expect not to encounter motorized users outside that area, thus reducing conflicts from the existing condition.

Alternatives 2 and 2M are the only alternatives where camping and game retrieval corridors are identical in location (miles along road) and width. Having these two off-road motorized designations the same fits the recommendation of New Mexico Department of Game and Fish that motorized big game retrieval be designated in the same places and ways as other off-road uses. This would simplify the motor vehicle use map, allowing visitors to easily interpret and comply with it. This is also likely to impact the proximity of game to the corridors as elk and other ungulates avoid all types of recreationists (Taylor and Knight 2003, Preisler et al. 2006, Naylor et al. 2009).

In alternative 3, hunters would be responsible for transporting game from where it was killed to the nearest open route via nonmotorized methods. The absence of any corridors to retrieve downed game may affect the ability of hunters to retrieve game. This may also result in more unretrieved game across the forest. Additionally, alternative 3 may increase the presence of game, and, therefore, hunting by increasing the acreage where motorized vehicles are not allowed. Game would be less likely spooked by vehicles. On the other hand, the number of hunters might decrease because they are not able to use motorized retrieval.

The combination of selected roads and corridor widths in alternative 4 would leave only wilderness areas and small pockets of the forest unavailable for motorized big game retrieval. The alternative would allow cross-country travel for retrieval of game only, and not for scouting of game. Alternative 4 does not follow the New Mexico Department of Game and Fish's recommendation to have parallel designations for all off-road uses. The transition from alternative 1 to alternative 4 would be negligible. We would expect similar levels of dispersion of motorized big game retrieval across the forest and effects of motorized recreation on game as is witnessed with the existing condition.

Similar to alternative 4, corridor widths in alternative 5 would be 1 mile on each side of selected roads. The alternative proposes the second largest acreage for motorized big game retrieval, but one of the smallest in terms of miles of road.

Hunters with physical limitations are likely to prefer alternative 4 or 5 because they provide more places to drive and get game. Hunters who dislike hearing vehicles in the back country because they disturb game are likely to think that alternative 4 or 5 decreases the quality of hunting. Alternatives 2 through 5 would improve wildlife habitat for most species (refer to the "Wildlife" section later in this report).

Cumulative Effects, Alternatives 2 Through 5

Selecting any of alternatives 2 through 5 could cumulatively contribute to a statewide reduction in opportunities for hunters to drive to retrieve game on public land. The Bureau of Land Management and four other national forests in New Mexico (Carson, Cibola, Gila, and Lincoln) are all designating a system of roads, trails, and areas for motorized use. Like in the Santa Fe National Forest, this is expected to limit where people can drive to retrieve game.

The motorized big game retrieval opportunities proposed in the majority of the alternatives would not be affected by actions listed in the reasonably foreseeable future. Because of the wide corridors proposed for alternative 4, it could potentially be negatively affected by any project that

seeks to limit access to, or transfer acreage away from, the forest, for example a mineral lease. Any negative effect, however, from acreage loss would likely be minimal compared to the large amount of acreage proposed in alternative 4.

It is unknown whether the reduction in hunting opportunities on public land would be offset by private game reserves.

Motorized Dispersed Camping – Affected Environment

The public and interdisciplinary team both questioned aspects of motorized dispersed camping. We expressed the issue like this:

> *"Designating motorized dispersed camping corridors will increase cross-country travel and the resource damage associated with it and curtail the kind of unrestricted camping that the Santa Fe National Forest currently provides."*

Motorized dispersed camping is a term used here to refer to the activity often called car camping, where people drive to a camping spot, park, and set up their gear close to their vehicles (figure 29).

Some people expressed a concern that allowing cars to drive off road any distance, even if just for one trip in and one trip out, would damage natural or cultural resources. (Other sections of this document address these types of effects.) Conversely, others felt that limiting where people can camp would change the basic character of camping on National Forest System lands. They didn't like the idea that they wouldn't have unlimited opportunity to drive their cars anywhere outside of wilderness to set up a campsite.

Where do people car camp now? In the summers of 2008 and 2009, we collected data on where people drive to camp (USDA Forest Service 2009g). We found that most camping takes place now along 438 miles of routes. By mapping corridors around the sites people camp in now, we estimate that this covers just over 17,000 acres of the forest (figure 5). Most people tend to set up campsites close to roads, often near scenic areas or water (figure 30). During the popular summer months and fall hunting seasons in the forest's busiest stretches, people set up camp anywhere flat enough to pitch a tent or set up an RV. It is common to see more than three cars, a couple of RVs, several tents, and 20 people in a popular site during the summer months. The Rio Guadalupe corridor (Road 376, Jemez district), the Rio Chama (Road 151, Coyote district), and Pecos River (Road 63, Pecos/Las Vegas) are examples of heavily used camping areas. The Jemez and Cuba Ranger Districts reported having the highest number of sites used frequently, and the Pecos/Las Vegas and Española Ranger Districts reported having the highest number of sites not used very often.

We tend to see three kinds of car camping: smaller, heavily used sites typically next to water; infrequently used sites, usually used by hunters during hunting season; and group campsites about ¼ to 5 acres found on the Pecos/Las Vegas Ranger District.

Figure 29. A motorized dispersed campsite, meaning it has no Forest Service facilities. This site in the Jemez Ranger District is close to trails popular with ATV riders.

Figure 30. A popular camping site near Dalton Creek, Pecos/Las Vegas Ranger District

In most areas of the forest, people can drive and park next to streams to camp (figure 31). Water attracts people, and we commonly see vehicles right next to streams. Through the Respect the Rio Program, we have made a concentrated effort to keep cars out of the riparian areas along the Rio Guadalupe and Rio Cebolla (Jemez Ranger District) (figure 32) and along the Pecos River (Pecos/Las Vegas Ranger District). Buck and pole fencing, backed up by a closure order, allows people to camp close to the water, but blocks vehicles from driving close to streams.

Figure 31. An example of a campsite right next to water

Figure 32. A buck and pole fence that keeps cars away from the stream, but lets people camp close to the stream if they walk

People who prefer isolation drive off roads and camp in the "back forty," often where no one else has camped before. Hunters tend to do this more than the average weekend visitor (figure 33). Ranger district employees estimated that people drive cross country for multiple reasons, including camping, on about 444,000 acres. We observed during the field surveys, however, that the numbers of people who camp farther than 300 feet from roads is relatively small. In this analysis, we treated that use as negligible and focused on the places where people camp next to roads. This way each alternative has "corridors" that people can easily compare.

Figure 33. An example of an infrequently used campsite on the Coyote Ranger District

The Pecos/Las Vegas Ranger District has three sites, ranging in size from 1/2 to 5 acres that people use as group campsites. Together these sites total about 6 acres. On summer weekends, these sites host multiple RVs and vehicles.

The Rio Chama along Forest Road 151 is popular for motorized dispersed camping because it is a wild and scenic river with outstandingly remarkable scenic, recreational, geologic, fish and wildlife, cultural, and other similar values. Because of its popularity, this corridor has high campsite densities with large numbers of campers and hardened sites. The motorized use and motorized dispersed camping isn't consistent with the "Chama River Canyon Management Plan," which is part of the forest plan.

Motorized Dispersed Camping – Environmental Consequences

Direct and Indirect Effects, Alternative 1

There would be no change in the amount of places for motorized dispersed camping under alternative 1, the existing condition. As happens now, we expect most people would continue to camp in their favorite spots next to roads and water, hunters would search out lightly used places during hunting season, and a small number of people would explore and find campsites farther than 300 feet from a road.

Cumulative Effects, Alternative 1

Alternative 1 would not change the amount of motorized dispersed camping available, so there would be no change in cumulative effects.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5, to different degrees, would limit the amount of places where people could drive and camp compared to the existing condition. Having corridors will be new for many recreationists and may affect their sense of having the freedom of choice when camping. Some of their favorites sites may no longer allow vehicles due to resource concerns. (Note that the places where a person can camp will not change—only where they can drive a car to do so. In all alternatives, parking within 30 feet of a road and finding a site on foot is allowed.) The alternatives do this in two ways:

- Not being able to drive off roads farther than the edge of a corridor to find a place to camp. If you like to drive deep into the woods to camp, you won't be able to do this anymore. Instead, you would park next to the side of the road, or at the edge of the corridor, and proceed to find a camping spot without your car.
- Not designating some sites that we think are causing unacceptable resource damage. About 1,000 acres where people camp with their cars now haven't been proposed in any of the alternatives for this reason.

All the alternatives (except 3) propose to keep most of the popular car camping places identified in the 2008–2009 field inventories.

Figure 34 and table 26 compare where people could drive their cars and camp for each alternative. Alternatives 2 and 2M designate most the places where we observe people drive and camp now, so they most closely keep the current opportunities. Alternative 2M, however, includes a 100-foot setback from all water, so people wouldn't be able to drive and camp as close to water. Forestwide, this totals about 260 acres. Alternative 3 is the most restrictive; people could only park next to the side of the road and then move their gear to a campsite on foot—they could not drive to their campsite in any circumstance. Alternative 4 provides more acres for car camping by doubling the width of many corridors proposed in alternative 2 to 300 feet from either side of some designated routes. In this alternative, we'd expect people to spread out and not be as close to others. Alternative 5 proposes about one-third fewer corridors for car camping than where people camp now.

Reducing the places for motorized dispersed camping could result in more concentrated use in the fixed-distance corridors or other designated camping areas, though this varies by alternative, depending on how much change from the existing situation is proposed (assumption 21). More crowded places may not appeal to people who like to camp away from other people. There could be a higher demand for developed campsites if people decide to use them instead of dispersed campsites. Some people may feel a loss of freedom by not being able to drive cross country anywhere on the national forest to find a place to camp. Some of the remote campsites used by locals may no longer be driven to.

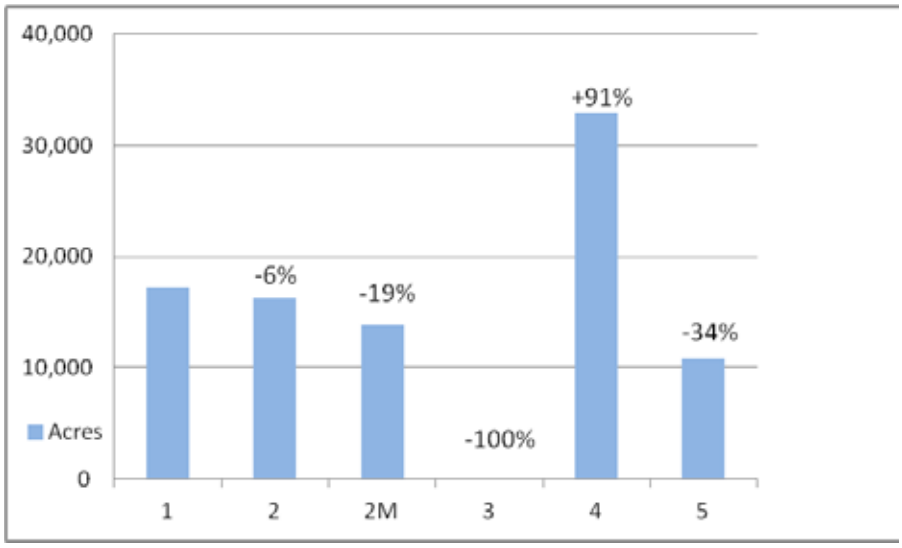

Figure 34. Comparison of acres available for motorized dispersed camping by alternative (acres used in alternative 1)

Table 26. Comparison of acres available (or used—alternative 1) for motorized dispersed camping by alternative

	Alternative					
	1	**2**	**2M**	**3**	**4**	**5**
Total acres of camping corridors	17,195	16,237	13,856	0	32,890	11,422
Percent change in acres of corridors from alternative 1	**--**	**-6**	**-19**	**-100**	**+91**	**-34**
150-foot corridors, miles	398	394	381	0	0	268
300-foot corridors, miles	39	29	0	0	461	26
Acres of areas for motorized dispersed camping	--	5	6	0	5	0

The most popular corridors, as described in the "Affected Environment" section, have been proposed in all action alternatives as a result of their popularity, except alternative 3 where there are no corridors. According to our assumptions, the forest expects no change in visitation to all corridors, even in alternative 3, where people can still park adjacent to the road. Among all the alternatives, there would be no change to people's opportunity to park next to the road and carry gear to a campsite using nonmotorized methods.

Alternative 3 is expected to result in the lowest concentrations of motorized dispersed camping because the activity is not permitted. Because driving to a dispersed campsite would not be allowed, we expect that some people would go elsewhere outside the forest. Others may choose to camp in developed campgrounds or move into day use sites not managed for overnight use. Finally, because there would still be the option to park a vehicle adjacent to the road and walk to a dispersed campsite, this alternative may increase the incidence of roadside parking.

All action alternatives are likely to limit some people's camping experience. For example, along the Rio Chama, some people's favorite spots may be eliminated from motorized access and some

of the more remote corridors may not be available via motorized access. This means that a favorite place may not be accessible in a day anymore because it is too far to walk to it. Alternatives that limit motorized dispersed camping opportunities may encourage people to camp in developed campgrounds, move into day use sites not managed for overnight use, or move off of the Santa Fe National Forest for dispersed camping.

The action alternatives would bring the Chama River corridor into compliance with the forest plan.

Cumulative Effects, Alternatives 2 Through 5

Selecting alternative 2, 2M, 3, or 5 could cumulatively contribute to a statewide reduction in places to drive and camp next to your car on public land. Selecting alternative 4 would provide a small increase on the Santa Fe, which would somewhat offset other reductions. With the Bureau of Land Management, the other four national forests in New Mexico (Carson, Cibola, Gila, and Lincoln) also will have a designated system of roads, trails, and areas for motorized use. As in the Santa Fe, this will limit where people can drive their cars to camp.

Programs such as Leave No Trace and Respect the Rio already encourage people to not drive or camp within 200 feet of water. Alternative 2M would cumulatively add to this concept.

Private landowners offer camping throughout the state. That at least partially offsets any reduction on public lands.

Conflicts Between Motorized and Nonmotorized Uses – Affected Environment

About 10 percent of the people commenting on the proposed action mentioned having problems with vehicles in the woods, or user conflict. To summarize the issue, we wrote this issue statement:

> *"The proposed action, by designating routes uniformly across the forest outside of designated wilderness, will cause conflicts between motorized and nonmotorized users because they will be recreating in the same vicinity."*

Though conflict between motorized users also can occur—for instance between people on ATVs and in full-size trucks driving on the same road—we received few comments about it. Thus, we focus on potential conflicts between nonmotorized uses (hiking, horseback riding, bicycling, and others) and motorized uses (cars, trucks, ATVs, motorcycles, and others). For example, somebody riding a horse may fear that a motorcycle will spook the horse, which could then hurt someone. At the same time, the motorcycle rider may also worry about coming around a corner and spooking a horse and, therefore, not enjoy their ride as much as they would otherwise.

Conflict between recreational users is a common problem in land management (Calvert et al. 2007). Historically conflict existed primarily between commodity developers—minerals, energy resources, timber, and livestock forage—and noncommodity users such as recreationists and preservationists (Laitos and Carr 1999). With forest management shifting away from commodity extraction and toward recreation, conflict has also shifted. It now tends to be among low impact, human powered recreational users and high impact, motorized recreational users (Jubenville 1978, Laitos and Carr 1999, Andereck et al. 2001, Thapa and Graefe 2003, Calvert et al. 2007).

Different levels of conflict exist between different types of recreation. The most often reported conflicts are between motorized and nonmotorized users, displacement of nonmotorized users, and conflicts with private landowners (Dolesh 2004, Government Accountability Office 2009). Studies show, in fact, that conflict predominantly exists between motorized and nonmotorized users (Prey and Kiefaber, Thapa and Graefe 2003, Dolesh 2004, Calvert et al. 2007). In general, peoples' tolerance for other groups was asymmetrical between motorized and nonmotorized; nonmotorized users were more likely to feel conflict with motorized users although the reverse was not true (Badarraco 1976, Jackson and Wong 1982, Noe et al. 1982, Stokowski and LaPointe 2000, Andereck et al. 2001, Albritton and Stein 2007).

Conflict exits for many reasons. Both motorized and nonmotorized users often seek similar qualities from their experience in nature. For example, both types of recreationists prefer trails with scenic overviews and a variety of scenery (Hill and Daniel 2008, Snyder et al. 2008), opportunities for solitude (Behan et al. 2000, Kocis et al. 2010, Hallo et al. 2009), places and trails with close proximity to water (Albritton and Stein 2007), and places with good or desirable trail conditions (Bury and Fillmore 1974). Both groups of users appreciate large areas that allow them to travel long distances and over a variety of terrain (Emmel 1992, Snyder et al. 2008). Both motorized and nonmotorized users have similar concerns about trail management, including lack of ethics by other users, trash, and erosion; however, concerns were ranked differently between the two groups (Andereck et al. 2001). Noise from off-highway vehicles is considered one of the most widespread and difficult causes of user-conflict on trails (Dolesh 2004).

Despite these similarities, conflict between user groups is sometimes caused by differences in desired experiences. Typically, nonmotorized users prefer to have limited exposure to motor vehicle noise and presence (Bury and Filmore 1978, Andereck et al. 2001, Snyder et al. 2008). Motorized users desire a setting that allows them to perceive freedom and access (Hallo et al. 2009) and with interconnecting trails that help them achieve long-distance trips (Snyder et al. 2008). There can be a large variability in values, ethics, and environmental attitudes between users. Recreationists labeled as "appreciative," those participating in activities like hiking, camping, picnicking, mountain biking, or photography, were found to have more environmental leanings. Motorized recreationists showed more of a desire for environmental dominance (Thapa and Graefe 2003).

Conflict also arises from sharing routes or trails with other types of users. Although the majority of trail users nationwide are satisfied with their experience and do not report any type of conflict, most conflicts occur on multiple or shared-use trails (Dolesh 2004). Conflict is expected to grow as the numbers of trail users increase (Dolesh 2004).

In the scoping comments received, we heard that motorcyclists prefer having their own trails. ATV riders expressed little objection to sharing trails with single-track riders. A number of commenters stated that designating a system of trails would concentrate users and result in conflicts. We believe this is unlikely to happen. The number of motorized users in the forest, at 0.4 percent, is not significant enough to anticipate heavy concentrations on any trail (Kocis et al. 2010).

A little more than 10 percent of all comments received on the proposed action mentioned having conflicts with motorized vehicle use. From this, it appears that although user conflict occurs on the Santa Fe National Forest, it is not rampant. The majority of problems seem to be associated with specific routes as opposed to overall experiences. Not unlike what the research suggests,

commenters' problems involved safety, displacement of nonmotorized users, trail damage caused by motorized vehicles, trespass into nonmotorized zones or private property, and disruption of quiet. Finally, the perceived conflict does seem to be asymmetrical on this forest. Comments received from motorized users sometimes minimized or discounted claims of user conflict.

Even professional researchers find measuring conflicts between users complex since it's defined a number of ways. We chose relative route density—the miles of roads and trails in a given area—as a measure for conflicts between motorized and nonmotorized users. Nonmotorized users sent comments saying they want to go places where noise from vehicles is absent. Most preferred not to share routes with motorized users. Intuitively, it seems that higher route densities would spread people out, reducing the likelihood that recreationists would encounter one another. Research, however, has shown that nonmotorized users prefer to recreate in places separate from motorized users, and that motorized users displace nonmotorized users from some shared routes. Therefore, we assume areas with high route densities may not reduce user conflict because nonmotorized users cannot completely avoid drivers. Rather, areas with high route densities increase the overall amount of places considered "motorized," and could limit the opportunities that nonmotorized recreationists have to themselves.

For this measure, we used these route densities, measured in miles per square mile:

- Low = 0 to 0.4
- Medium = 0.5 to 1.5
- High = 1.6 and greater

Places with high route densities allow for lots of motorized experiences, but provide few areas where people can go and count on not seeing any vehicles at all. Similarly, places with low route densities allow for lots of nonmotorized experiences, but provide few opportunities for motorized use. The distribution of places with low, medium, and high route densities also distributes recreational experience and, therefore, potentially reduces conflicts between motorized and nonmotorized users.

Conflicts Between Motorized and Nonmotorized Uses – Environmental Consequences

Direct and Indirect Effects, Alternative 1

We expect that alternative 1 has the greatest potential to cause conflicts between motorized and nonmotorized groups. Close to 70 percent of the forest's acreage has high route densities, meaning someone could expect to see or hear a vehicle in the majority of the forest. Though one quarter of the forest has low route densities, most of this (75 percent) is in the forest's wilderness. The most likely place to avoid hearing or seeing a vehicle, therefore, would be in a wilderness area.

Direct and Indirect Effects, Alternatives 2 Through 5

Regardless of the action alternative chosen, we expect having a system of roads, trails, and areas designated for motorized use would reduce conflicts between motorized and nonmotorized recreationists. Researchers have found that such a system reduces direct conflicts (Filmore and

Bury 1978, Frost and McCool 1988, Albritton and Stein 2007, Snyder et al. 2008). Drivers stay on the system, and everyone else knows where to go to avoid them if they choose.

Alternative 5 is expected to be the most effective at reducing conflict between users. The interdisciplinary team developed it by geographically grouping motorized uses away from sensitive areas, such as habitat, where possible.

Alternatives 2 through 5 reduce the acres having high route densities and shift more of them to medium route densities. They also increase the acres having low route densities to more places outside of wilderness (table 27). Together, this means that people wishing to avoid vehicles would have more places to go, and could avoid them without having to go to a wilderness area.

Alternative 4 has the most even balance between high, medium, and low; all represent about one-third of the forest. Alternative 3 would have no areas with high route densities, and is likely to be preferred by people seeking nonmotorized experiences.

Table 27. Percent of forest acres having low, medium, or high route densities. We anticipate more conflicts in places with high route densities.

Route Density, Miles/square Mile		Alternative					
		1	2	2M	3	4	5
Low (0 - 0.4)	Total acres	390,924	463,585	449,671	465,193	390,924	463,585
	Percent of forest	25	30	29	30	25	30
	Percent of low density places in wilderness	75	63	65	63	75	63
Medium (0.5 - 1.5)	Total acres	80,252	676,018	779,711	1,078,667	463,892	750,557
	Percent of forest	5	44	50	69	30	48
High (1.6 +)	Total acres	1,078,087	409,705	319,926	5,448	694,492	335,167
	Percent of forest	69	26	21	0	45	22

Cumulative Effects, All Alternatives

We expect that alternative 1, cumulatively, would have the most conflicts when combined with the effects of past, present, and reasonably foreseeable future actions described below. We think this because it has the most potential for clashes now, as just described. Alternatives 2 through 5 would all cumulatively reduce the amount of conflicts when combined with the actions below.

Subdivision of private property in the forest probably has contributed to conflicts between users in the past, and will continue to do so in the future. In many cases, people who move to the forest expect a quiet setting and become annoyed by vehicles driving near or through their property. The drivers, on the other hand, are used to being able to drive where they want and do not appreciate fences suddenly appearing.

The past construction of roads for timber sales and oil and gas developments may also have contributed to conflicts by putting in roads where they had not previously existed.

Creation of the Jemez National Recreation Area, three wild and scenic rivers, and educational programs such as Respect the Rio likely reduced conflicts by clearly defining what kinds of uses

could take place within them. Future closure orders and site-specific projects delineating places to camp and travel would have the same effect.

Technological advances in off-highway vehicles have probably increased conflicts by allowing vehicles to get to places where they hadn't been before.

If the population in the Southwest—and its preference for using off-highway vehicles—continues to increase, we would expect an increase in conflicts between motorized and nonmotorized users in alternative 1. People wishing to avoid vehicles altogether might gradually be pushed to wilderness areas exclusively. With a designated system in place, there would be no cumulative change since people would know where to go to avoid vehicles.

Wilderness – Affected Environment

People raised this issue about having motorized use near wilderness areas:

> *"Designating motorized routes close to wilderness will detract from the wilderness experience because of noise and trespass."*

Only Congress can designate wilderness areas. The Forest Service can't create de facto wilderness areas by "buffering" them. This section, then, serves to show the potential effects to someone in a wilderness area. Adverse effects from motorized use can't be used to "extend" wilderness areas.

Congress passed the Wilderness Act in 1964. The definition of wilderness from the act is:

> *"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."*

The Wilderness Act prohibits permanent roads and the use of vehicles and any other forms of mechanized transport in wilderness areas. Even rescue missions need special permission from the Forest Service to land a helicopter in wilderness, and they usually aren't allowed to if there is another way to send help.

The act describes wilderness using these four qualities:

- Untrammeled, meaning free from modern human control or manipulation.
- Natural, where the natural condition of the land, its plants, wildlife, water, soil, air, and the ecological processes are managed, protected, and preserved.
- Undeveloped, retaining its primeval character and influence, and is essentially without permanent improvements or human occupation.
- Solitude or primitive and unconfined recreational opportunities.

Engine noise could carry and disturb somebody in a wilderness area, compromising one or more of these qualities. We chose ½ mile as the maximum distance that engine noise could carry, though it could be less or more depending on topography, vegetation, and the direction of the wind. To measure the possibility of noise reaching wilderness, we tallied all routes and acres within ½ mile of a wilderness boundary for each alternative.

Certainly, seeing a vehicle in wilderness would violate the principles of untrammeled, natural, undeveloped, and primitive. One way a person could drive into wilderness is on a road or trail that dead ends at the wilderness boundary. So, we measured the number of routes that end at a wilderness boundary as a proxy for the potential of illegal trespass. Not all of these, however, are conduits to wilderness. Many end in parking lots and are often impassable to vehicles due to slope, vegetation, terrain, peer pressure, or a combination of these.

Wilderness – Environmental Consequences

Direct and Indirect Effects, Alternative 1

This alternative has the greatest potential for noise to carry into wilderness and for trespass. The number and miles of routes and cross-country travel within ½ mile of wilderness boundaries and any illegal intrusions could affect all four wilderness characteristics.

Alternative 1 has 597 motorized routes totaling 252 miles within ½ mile of the Santa Fe National Forest's wilderness areas (table 28). About 19 routes lead to wilderness boundaries. Some of these, like Road 151 leading up the Chama River Canyon or Iron Gate Road to the Pecos Wilderness, provide access to the wilderness itself. People drive these frequently, especially in the summer. Noise from vehicles could carry into the wilderness depending on the specific situation. The access routes not shown on the forest visitor map are likely not used as often because people don't know about them, so the frequency of disturbance from these would be less.

Table 28. Comparison of motorized use close to wilderness by alternative

	Alternative					
	1	2	2M	3	4	5
Total miles routes within ½ mile of wilderness boundary	267	127	127	94	138	101
Percent reduction	--	-52	-52	-65	-48	-62
Number (count) of routes within ½ mile of wilderness boundary	597	184	167	131	195	131
Percent reduction	--	-69	-72	-78	-67	-78
Number of routes ending near wilderness boundary*	19	3	3	1	2	1
Percent reduction	--	-84	-84	-95	-89	-95
Acres within 1/2 mile of wilderness boundary where travel off roads is permitted (area or corridor)	9,841	0	0	0	6	0
Percent reduction	--	-100	-100	-100	-100	-100

* Some of these are not on the forest visitor map because that map does not show every route in the forest. Some routes do not provide access into wilderness due to terrain (e.g., a canyon) or do not lead to a system trail that goes into wilderness.

Motorized cross-country travel on 9,841 acres within ½ mile of wilderness boundaries would continue. Visitors in wilderness areas might be able to hear or see vehicles—or drivers could trespass into wilderness from these places because they are adjacent—depending on the terrain.

We've not received any complaints from people in wilderness about noise from vehicles, so we believe the use near wilderness and the ability to hear noise is low now. We have received a few complaints of trespass.

Cumulative Effects, Alternative 1

To have a cumulative effect, effects must overlap in space and time. Though alternative 1 has the most potential for engine noise or trespass in wilderness, these events are not likely to overlap in space or time with other intrusive noises or sights. For example, a person in wilderness would have to hear a car and see an airplane passing at the same time for there to be a cumulative effect. This is possible, of course, but would be of short duration. Such an event would cause an instant of manmade sights and sounds, but would not be permanent. The wilderness would quickly return to its untrammeled state. No other present or reasonably foreseeable future projects would add to the potential of noise or trespass in wilderness areas.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 reduce the miles, acres, and number of routes within ½ mile of wilderness boundaries, and the acres where driving off roads would be allowed. Thus, all would reduce the chance that someone in wilderness would see or hear a vehicle from the wilderness by approximately 50 percent or more compared to alternative 1, the existing condition (table 28). The action alternatives differ most in the acres next to wilderness where driving off roads would be allowed. Use is low now; however, removing cross-country travel and routes near wilderness would eliminate the potential for effects in wilderness.

The reduction of places where people could drive would improve all four wilderness characteristics. Reductions in illegal intrusions would reduce the influence of humans on the wilderness, improving untrammeled and undeveloped characteristics. In addition, fewer intrusions would reduce resource damage, improving the natural characteristic. Finally, the decrease in number and miles of routes and acreage available for cross-country travel near wilderness would reduce the encroachment of sights and sounds across the wilderness boundary, improving the opportunity for solitude and primitive recreation.

Cumulative Effects, Alternatives 2 Through 5

Because the alternatives reduce the chance that a person would hear or see a vehicle, the chance of having a cumulative effect is likewise less. None of the reasonably foreseeable future actions are likely to contribute to effects to wilderness because they are located away from it, or mitigations associated with each project would prevent effects.

Inventoried Roadless Areas – Affected Environment

People's concerns about inventoried roadless areas are the same as those they have about wilderness. We wrote the issue this way:

> *"Designating motorized routes through or close to inventoried roadless areas will detract from the potential wilderness characteristics of these areas."*

An inventoried roadless area is a large tract of land whose characteristics resemble wilderness but is usually not as pristine. Though we call them "roadless," many have roads—just not very many compared to other areas of the forest (not including wilderness). States and others have legally

challenged the Forest Service's rulemaking for, and management of, inventoried roadless areas since 2001.

The measures used in this section serve as a proxy of how roads through or near inventoried roadless areas would detract from any of the nine characteristics of roadless areas as defined in the 2001 Roadless Rule. Specifically, each measure does this as explained below.

- Roads within ½ mile of inventoried roadless areas represent the potential to detract from all nine roadless characteristics.
- Seasonal closures are often implemented to protect wildlife during reproductive seasons or soil resources when the ground is soft. Therefore, seasonal restrictions of motorized vehicles can help protect some of the characteristics.
- Designating unauthorized or decommissioned roads is considered building new roads and in violation of the 2001 Roadless Rule. Trails, including motorized trails, are not included in this aspect of the Roadless Rule.

The 2001 Roadless Rule lists nine characteristics often associated with inventoried roadless areas:

1. High quality or undisturbed soil, water, and air.
2. Sources of public drinking water.
3. Diversity of plant and animal communities.
4. Habitat for threatened, endangered, proposed, candidate, and sensitive species and those species dependent on large, undisturbed areas of land.
5. Primitive, semiprimitive nonmotorized, and semiprimitive motorized classes of dispersed recreation.
6. Reference landscapes.
7. Natural appearing landscapes with high scenic quality.
8. Traditional cultural properties and sacred sites.
9. Other locally identified unique characteristics (i.e., social, cultural, or historical characteristics).

Forest staff chose to use the nine characteristics from the Roadless Rule as the standard for analysis when assessing effects to inventoried roadless areas. Since the forest is not regulating motorized travel based on the Roadless Rule—just using a portion of it to aid in decisionmaking—the nine characteristics are the best choice for assessing impacts from motorized travel.

Since the Roadless Rule applies only to roads and not motorized trails, mileages in this section are for roads only. Motorized trails may have indirect effects on some Roadless Rule characteristics, and these are discussed qualitatively.

Roads and motorized trails through inventoried roadless areas alter wilderness characteristics. Roads and motorized trails aren't natural—people build them. They serve as conduits for vehicles, which are not natural or primitive and disrupt solitude with engine noise. Depending on their location and how often people use them, roads and trails can detract from plant, fish, and

wildlife habitat and damage cultural resource sites. The presence of a road or motorized trail in the visual path of an outstanding landscape feature could diminish its beauty.

The Santa Fe National Forest has 55 inventoried roadless areas totaling 241,076 acres. About 293 miles of routes, including system and unauthorized routes, cross them now. We think that people are driving on about 120 miles (41 percent) of these. The roads and trails proposed in the alternatives are for access to private land or for recreational purposes.

Inventoried Roadless Areas – Environmental Consequences

Effects Common to All Alternatives

Roads that go through inventoried roadless areas affect roadless characteristics more than those within ½ mile of them. Noise is not likely to travel more than ½ mile, especially in steep, densely forested places. Only 3 percent or less of the total miles of roads in the forest cross inventoried roadless areas in any alternative. Only 10 percent or less is within ½ mile.

Proposing fewer roads than people are driving on now means that they will be barred from using some places they like.

All unauthorized and decommissioned roads proposed for designation already have a footprint on the ground (figure 35) and are being used. Proposing any of these is not expected to result in a change in use (assumption 1). Even if we close roads to motorized use, traces will likely remain for a long time, especially those on steep slopes where erosion often prevents plants from growing back (refer to the “Soil and Water” section). From this perspective, no difference among the alternatives exists.

Figure 35. The photo on the left is what we mean when we say a route has a footprint on the ground; the photo on the right does not. Neither photo is in an inventoried roadless area.

All alternatives except alternative 1 institute some uniform seasonal closures for weather, wildlife, or both. Seasonal closures improve consistency with roadless characteristics by protecting wildlife habitat and preventing erosion.

Motorized trails through or in inventoried roadless areas may affect the characteristics that allow for dispersed recreation opportunities in solitude and quiet because they can increase noise and

disrupt feelings of isolation. Although not included in the measures, trails may limit the scenic quality of the landscape if they are visible. Finally, they may impact the wildlife species in the area by increasing noise, habitat fragmentation, or ingress of invasive species (as discussed for routes in general in other sections of this chapter).

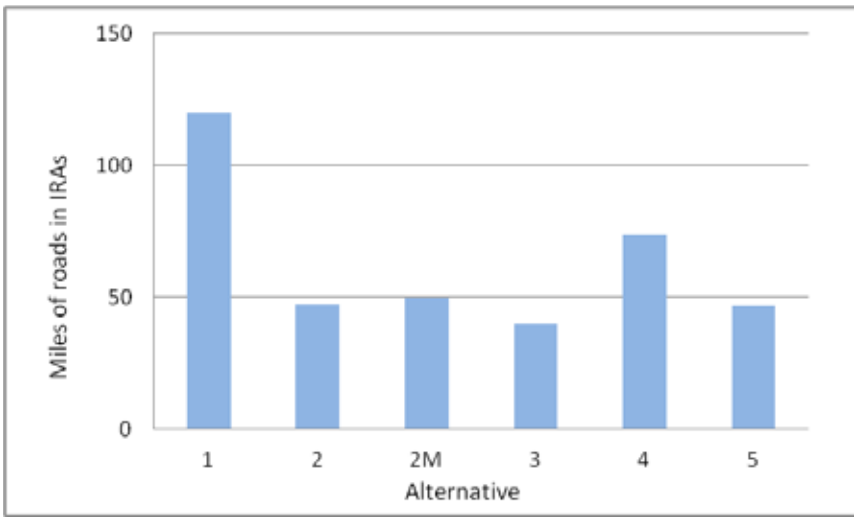

Figure 36. Miles of routes in the forest's inventoried roadless areas by alternative

Direct and Indirect Effects – Alternative 1

No change from the current condition would occur. Alternative 1 is the least consistent with roadless characteristics because it allows the most motorized use in and near inventoried roadless areas.

The majority of the existing roads through inventoried roadless areas in alternative 1 are on existing roads that predate the Roadless Rule, which does not allow for the building of new roads. The Roadless Rule does allow motorized trails in inventoried roadless areas.

Direct and Indirect Effects – Alternatives 2 Through 5

The effect of the action alternatives is twofold. First, existing routes on the land contrast with the characteristics integral to inventoried roadless areas. It is unlikely that removing motorized use will result in most routes healing over within 15 years (refer to the "Soil and Water" section of this report), but it will allow the potential for routes to begin to revegetate. Second, motorized use of routes in inventoried roadless areas causes temporary noise—perhaps 30 seconds or so while the vehicle passes—which is not consistent with the principle of solitude. Reducing the places where people can drive will reduce the places where people will hear noise from engines.

Alternatives 2 through 5 would all be more consistent with roadless characteristics than alternative 1. All shrink the number of routes open for motorized use in and within ½ mile of inventoried roadless areas (table 29). This means the instances where someone could hear or see a vehicle in an inventoried roadless area would also diminish.

By current policy, the adoption of the unauthorized and decommissioned roads would require approval from the Secretary of Agriculture in order to adopt them. Alternative 4 is the only alternative that proposes unauthorized or decommissioned roads for designation.

Table 29. Comparison of routes in and near the forest's inventoried roadless areas by alternative

		Alternative					
		1	2	2M	3	4	5
Miles of roads inside inventoried roadless areas	Roads	120	47	50	40	74	47
	Percent change	**--**	**-61**	**-58**	**-67**	**-38**	**-61**
Miles of roads within ½ mile of inventoried roadless areas	Total	504	222	208	187	242	195
	Percent change	**--**	**-56**	**-59**	**-63**	**-52**	**-61**
Miles of unauthorized and decommissioned roads in inventoried roadless areas	Roads	6	0	0	0	2	0
	Percent change	**--**	**-100**	**-100**	**-100**	**-63**	**-100**

Cumulative Effects – All Alternatives

Noise from vehicles in inventoried roadless areas could cumulatively combine with other noises that are generally considered unacceptable in inventoried roadless areas. Noise from the Gallinas Watershed Thinning Project, airplanes, or helicopters could temporarily add to noise from vehicles, but this effect would be fleeting. Tracks made by machinery in the Gallinas Watershed Project could cumulatively contribute to the appearance of permanent features until the tracks heal over or are removed by the Forest Service.

The preparation of travel management plans and motor vehicle use maps by other national forests is likely to cumulatively improve the characteristics of inventoried roadless areas in the 7-county area.

Enforcement – Affected Environment

The public questioned the Santa Fe National Forest's ability to enforce a system of roads, trails, and areas designated for motorized use:

> *"The motor vehicle use map alone will be an inadequate enforcement tool."*

Implicit in this concern is that if people don't follow the motor vehicle use map, then the effects associated with unregulated motorized use—noise, erosion, conflicts between visitors, harassment of wildlife—would continue.

Currently, three commissioned law enforcement officers (LEOs) and 20 noncommissioned forest protection officers (FPOs) cover the forest. Twelve of the FPOs can write violation notices. These officers are responsible for monitoring all 1.6 million acres of the forest.

Data from 2008 and 2009 indicate that 99 percent of violations for damaging natural resources on the forest were from off-road vehicles (table 30). Violation notices require either paying a fine or a court appearance. Warning notices are written notices of inappropriate, but legal behavior.

Incident reports are written when an FPO observes damage or signs of illegal activity but no one is at the site.

Table 30. Number of violations for resource damage on the Santa Fe National Forest in the past 4 years

Year	CFR Section of Offense	Violation Notice	Warning	Incident	Total
2006	36CFR2619A[1]	1	2	62	65
2007	36CFR2619A	6	1	57	64
2008	36CFR2619A	2	0	1	3
	36CFR26115H[2]	5	7	179	191
2009	36CFR2619A	0	0	1	1
	36CFR26115H	4	4	64	72

[1] 36 Code of Federal Regulations Part 261 Chapter 9 (Property) section (a) states the following is prohibited: "Damaging any natural feature or other property of the United States."

[2] 36 Code of Federal Regulations Part 261 Chapter 15 (use of vehicles off roads) Section H states "It is prohibited to operate any vehicle off National Forest System, State or County roads in a manner which damages or unreasonably disturbs the land, wildlife, or vegetative resources."

The set of regulations under which LEOs may cite people now are not sufficient to prevent resource damage from motor vehicle use. The forest plan was written when off-road vehicles were less powerful and less common, and damage from it was not anticipated to be significant.

Two types of violations of the regulations exist now. The first driving in a manner that damages natural resources, such as in riparian areas or on steep slopes, in places where cross-country travel is allowed (over half the forest). LEOs write violation notices for resource damage only if they can tie the damage to an individual or group beyond reasonable doubt. This is a standard that is difficult to achieve.

The second type of violation of a regulation is driving in an area that is not open for this activity. This can include operation of motor vehicles in designated wilderness areas, or on a trail that has a closure order in place prohibiting this activity. Currently the forest's visitor map conveys what types of motor vehicle use is allowed. The map is divided into eight sections depicting where motor vehicle use is permitted off routes, restricted to roads and trails, seasonally restricted to roads and trails either during or outside of the summer, closed to motor vehicles (both areas and trails), closed to mechanized vehicles, or closed to all. These restrictions, however, are only enforceable where closure orders have been imposed. Most of the forest covered by the restrictions shown on the visitor map does not have closure orders.

The effects analysis discussion focuses on the clarity of the motor vehicle use map rather than how we implement it. People sent us many good ideas for making this project work on the ground: hidden cameras, enforcement "blitzes," signs, permits, officers on ATVs, high fees for violations, self-policing, and others. We will look at these things when we implement this project. For this section, we presume that the easier a map is to follow, the more likely people are to comply with it.

Enforcement – Environmental Consequences

Direct and Indirect Effects, Alternative 1

No single source would tell people where they are allowed to drive. Inconsistencies between the forest's maps (visitor, ORV, firewood cutting) and the forest plan would continue to exist. The forest would remain open to motorized use unless posted closed. Without signed boundaries, people might drive into closed areas by mistake.

Direct and Indirect Effects, Alternatives 2 Through 5

Implementing the Travel Management Rule will change the forest's enforcement context completely. Once the decision is made, motorized use will only be allowed where designated, and LEOs can issue citations for any motorized use in areas or on routes not designated for that use. The New Mexico State Off-Highway Vehicle Statute as amended in 2009 allows State law enforcement officers—including New Mexico Department of Game and Fish officers, County Sheriff officers, and Department of Public Safety officers—to enforce designations on National Forest System land with citations to the State Court system. We are currently working with personnel from Game and Fish to coordinate education of law enforcement officers and the public, and to plan for coordination of enforcement efforts.

The motor vehicle use map will clearly designate routes by vehicle class and season. Having a single source, the motor vehicle use map, to let people know where they can drive would improve compliance and make enforcement easier. The motor vehicle use map follows a national standard, so people's ability to interpret the map would improve because it would be the same for any national forest (figure 37). Driving off roads would not be allowed (except for in designated corridors for camping and retrieving game), so people would not inadvertently drive into closed areas. They would know that any driving off roads is not allowed.

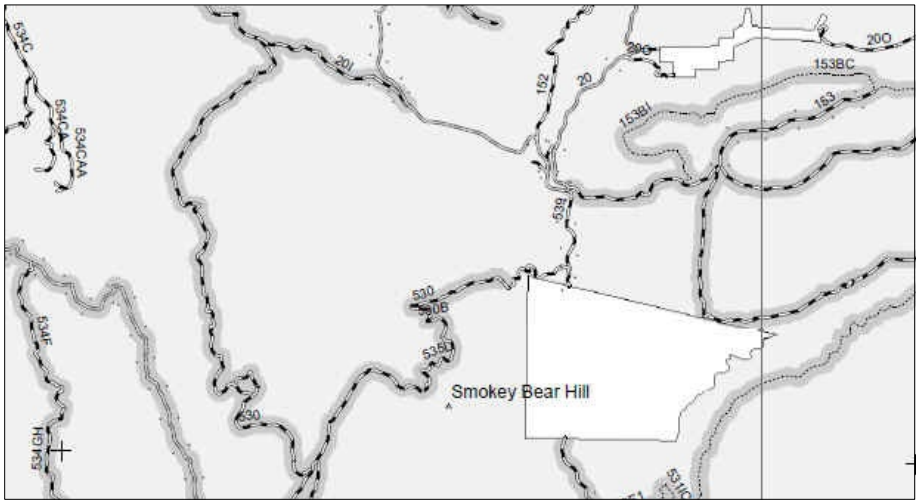

Figure 37. An example of what the Santa Fe National Forest's motor vehicle use map could look like. The symbols and color (black and white) are the same for all national forests.

Despite having a single map that follows a national standard, variations in the alternatives make some easier to read than others (table 31). As a rule, we think it's easier to read maps with fewer variations—the simpler, the better. Thus, alternatives having several corridor widths for different activities would be harder for people to understand. The same goes for seasonal closure dates; having more of them would make the map more difficult to understand. Each time a corridor changes width or closure date, it must be identified on the motor vehicle use map. To do this, we mark each milepost that has a change and put it in a table on the back of the map. This means you would have to flip back and forth between the front and back, and also know exactly where you were.

Using this metric, the motor vehicle use map for alternatives 2 and 2M would be the hardest for people to interpret, whereas alternative 3 would be the easiest. Alternatives 4 and 5 are about the same.

Table 31. Number of map variations by alternative. The more variations, the more complicated the map would be to read.

	Alternative					
	1	2	2M	3	4	5
Number of different dates for seasonal closures	0	11	8	4	5	5
Number of different corridor widths	0	2	1	0	2	3
Total variations	0	13	9	4	7	8

Cumulative Effects, All Alternatives

Having a national standard for the motor vehicle use map should cumulatively improve people's ability to interpret and understand the Santa Fe National Forest's map. Because the map will have the same symbols for all national forests, people won't have to learn new symbols for each map. A forthcoming implementation plan, which includes education, engineering, and enforcement, would cumulatively improve the public's compliance with the motor vehicle use map. Educating people about the proper use of off-highway vehicles in the forest helps them do the right thing in the first place. Same with "engineering" controls—signs, gated or bermed roads—or other such thing help keep people where they are supposed to be. Last, having fines for breaking the rules is a deterrent. All three cumulatively improve the efficacy of the motor vehicle use map.

Maintenance – Affected Environment

As with the topic of enforcement, the public had a lot to say about the Santa Fe National Forest's ability to maintain its route system:

> *"Any reasonable designated motorized trail system will require more maintenance than the Forest Service can provide by itself. An unmaintained system will continue to adversely affect forest resources."*

Roads

In 2009, the road maintenance budget for the Santa Fe National Forest was around $1,500,000. This budget has been stable over the past 10 years. With it, we maintain between 400 and 550 miles of road each year. We spend our money where we have the most traffic—on passenger car

roads. We maintain some high-clearance vehicle roads, too. In 2007, we maintained 88 miles and in 2006, we maintained 49 miles. District rangers and the engineering group decide on priorities for maintenance of these high-clearance roads based on needs for resource protection, access, and condition of the roads. Some receive annual maintenance; others on an as-needed basis.

The Santa Fe National Forest is not funded to maintain all its roads every year. With thousands of miles of roads and the funds to maintain only 400 to 550 miles, the maintenance backlog is obvious.

Road maintenance costs cannot be simplified into a “cost per mile” unit and applied to all roads on the forest. The cost to maintain a mile of road varies by the location and type of road. We can, however, determine average needs for certain types of roads. In 2006, the annual maintenance needs for passenger car roads on the Santa Fe National Forest was approximately $11,000 per mile. This is an average amount that includes the cost of brushing and maintenance of drainage, signs, and surface; it is based on a standard method that the Forest Service uses to determine maintenance needs. It is by no means perfect, but it is the best information we have. From information we gathered in 2005, the annual maintenance needs for high-clearance vehicle roads on the forest was approximately $500 per mile.

Trails

As with roads, the Santa Fe National Forest cannot afford to maintain all of its system trails every year, but maintains some every year. We maintain trails the public uses most often, ones that have health and safety concerns, erosion or resource damage first or more frequently. We maintain the ones that get little use, are remote, or don’t have resource damage less frequently, perhaps every 3 to 5 years. The forest has typically exceeded its goals due to partnerships and volunteers and has maintained between 70 and 220 miles of trails annually in the past several years. For example, in 2011, volunteers accomplished 171 of the 282 miles of trail maintenance done forestwide. We anticipate for this to be the trend over the next several years and are relying heavily on volunteers to help maintain the trails.

Trail maintenance costs cannot be simplified into a “cost per mile” unit and applied to all trails on the forest. The cost to maintain a mile of trail varies by its location and trail class. We can, however, determine average needs for certain types of trails.

To compare the maintenance needs for a motorized trail system, we use two figures. One is the average cost to maintain an existing system trail, and the other is to convert an unauthorized trail to a system trail. We assume the latter costs more since we might have to build waterbars or other basic structures. We’ve assumed the cost to convert a trail is the same as constructing it to Forest Service standards. This is likely an overestimate—most of these routes have a footprint or are on existing National Forest System roads and don’t require starting from scratch—but this is the most reasonable figure we have.

The Santa Fe National Forest does not have enough miles of motorized trail to provide a historical average cost per mile for either maintenance or construction. Costs were derived from the Deschutes National Forest for annual maintenance and construction of class 2 trails for motorcycles and ATVs. Motorcycle maintenance costs are $294 per mile and ATV maintenance costs are $423 per mile. Conversion costs were used at $3,000 per mile, which is conservative.

None of these are absolute figures because the actual cost varies with use, slope, terrain, soil type, and other factors.

Maintenance – Environmental Consequences

Direct and Indirect Effects, All Alternatives

Roads

The road maintenance needs do not significantly vary among the action alternatives (table 32), but all reduce the needed maintenance compared to alternative 1, the existing condition. The forest is not likely to receive funds to maintain all the roads annually no matter what alternative is chosen, but any of the action alternatives should allow the forest to maintain roads more frequently than now. Each alternative has approximately the same number of passenger car miles, and these roads are responsible for the vast majority of the costs. The difference between $5,200,000 for alternative 3 and $5,500,000 for alternative 4 is around 5 percent of the total maintenance needs. This amount could easily be accounted for in the averaging process.

Having seasonal closures would prevent people from driving on wet roads and making ruts. In turn, this would preserve road condition and reduce the need for maintenance. Even though alternatives 2M and 4 propose no weather related closures, district personnel are expected to be able to implement closure orders in a timely manner. This means that roads would be protected when they most need it, while continuing to provide the most flexibility in access.

Table 32. Road maintenance needs on the Santa Fe National Forest by alternative in millions of dollars

	Alternative				
	1	2 and 2M	3	4	5
Passenger car roads	4.7	4.5	4.5	4.5	4.4
High-clearance vehicle roads	2.3	0.9	0.7	1	0.9
Total	7	5.4	5.2	5.5	5.3

Trails

On one hand, alternatives 2 through 5 reduce the anticipated trail maintenance needs by at least 48 percent compared to alternative 1, the existing condition (table 33). (This assumes a consistent level and standard of maintenance across all six alternatives.) Alternative 3 proposes the fewest miles of unauthorized routes, so would have the least cost of all action alternatives.

On the other hand, because all the alternatives increase the miles of motorized system trail, all increase costs from what is now maintained. That is, people drive on trails but little or no maintenance occurs because these trails are not part of the motorized system. Once a trail is part of the National Forest System, we maintain it as funds allow.

Having seasonal closures would prevent people from driving on wet trails and making ruts. In turn, this would preserve trail condition and reduce the need for maintenance. Even though alternatives 2M and 4 propose no weather related closures, district personnel are expected to be able to implement closure orders in a timely manner. This means that trails would be protected when they most need it, while continuing to provide the most flexibility in access.

Table 33. Trail maintenance needs on the Santa Fe National Forest by alternative, in thousands of dollars

		Alternative					
		1	2	2M	3	4	5
Trails for vehicles ≤ 50 inches wide	Maintain	40.6*	47.3	31.3	17.3	93.1	65.1
	Convert	885*	30	21	0	23	15
Trails for motorcycles only	Maintain	4.1*	18.5	13.5	3.2	31.8	19.4
	Convert	9	234	246	3	336	219
Total, in thousands of dollars		938.7*	329.8	311.8	23.5	483.9	318.5
Percent change from alternative 1		**--**	**-65**	**-67**	**-98**	**-48**	**-66**

*These are theoretical costs computed for comparison purposes only. No new trails would be constructed in the no action alternative. These computed costs are what would be required to maintain the existing system of trails at the same standard as assumed for the action alternatives. See the recreation specialist's report for a thorough discussion of the assumptions used in this maintenance cost analysis.

Cumulative Effects, All Alternatives

Roads

Given current levels of funding, we won't be able to maintain every designated road each year in any alternative. None of the past, present, and reasonably foreseeable actions would contribute enough resources to allow us to do so. Cumulatively with other small projects on the forest, more roads would be maintained, but this effect is expected to be negligible when considered over the scale of the whole forest.

People with property in the national forest are responsible for maintaining their roads. Some counties maintain some roads that cross national forest lands, but this is independent of what the Forest Service maintains. In other words, we don't maintain the same roads as the counties do. Transferring land to other entities means the Forest Service would have fewer roads to maintain. Conversely, acquiring lands could give us more roads to maintain. "Legacy roads and trails" projects, as well as other small road improvement projects on the forest, increase the amount of maintenance.

Trails

For all alternatives, volunteers who maintain trails help stretch our maintenance budget. Volunteers enable us to accomplish more maintenance with fewer dollars. Some people wrote to say the forest should designate more miles of trails because volunteer assistance would make up the difference in maintenance. Even with the added help of volunteers, the trail systems we have proposed are the ones we think we are most likely to be able to maintain even with outside help. At that, alternative 4—the costliest—is probably out of our reach to adequately maintain even with volunteers.

Grants and other sources of funding could be viable options for increasing our ability to maintain system trails. Having a designated motorized trail system increases our chances of obtaining grants.

While grants and volunteers cumulatively increase the amount of trails we could maintain, it isn't expected to be enough to maintain every trail on the system each year.

Safety – Affected Environment

Public safety involves the type, amount, and speed of traffic on a forest road. Engineering employees drive the roads on the Santa Fe National Forest on a regular basis and use that information to evaluate public safety. We also use information from accident fatalities.

In the past 5 years, five fatal accidents have happened in the forest. In three, the drivers were either drunk or under the influence of controlled substances. One of the three accidents involved an off-highway vehicle and both people on the vehicle died. The Sandoval County Sheriff's Office determined that the fifth fatality was a suicide—the accident wasn't discovered until months after it happened.

On most National Forest System roads, the quality of the roads limits the speed. On a road with heavy washboarding, it is impossible to safely go much over 10 or 15 miles per hour. A well maintained gravel road allows higher speeds on straight sections, but the curves and hills in the road (the geometry) keep speeds lower. On many dirt roads, you must crawl along at less than 5 miles per hour to keep the wheels out of the erosion channels. The slow speed of traffic usually keeps people from having bad accidents.

Volume refers to the number of vehicles on the road. Except for the main roads on the forest, traffic volumes are low. Even on the busiest roads, it is possible to drive the entire length of the road and not see another vehicle. Having few vehicles on the road also reduces the chance of accidents.

Composition is the different types of vehicles in the stream of traffic. Though we have no data on composition, we do see different vehicles on forest roads. We see pickup trucks the most, but also passenger cars, ATVs, RVs, and motorcycles.

Distribution of traffic generally means directional distribution—how many vehicles go in each direction. We have no data on distribution. It is, however, safe to assume that people drive onto the forest and then leave. This would tend to indicate that distribution is a 50-50 split; half the traffic goes in each direction, even on loops.

The Travel Management Rule requires that we consider compatibility of vehicle class with road geometry and road surfacing. Over 90 percent of the road miles on the forest are dirt. The second most common surface is gravel, at less than 10 percent. Finally, most campground roads and part of Forest Road 376 are paved. The geometry of roads on the forest is fixed. In some cases, we designed the roads and considered things like sight distance and ease of driving. In some cases, the roads came about gradually over many years as people drove on the forest. Sometimes cow trails gradually changed from one track to two tracks and became roads.

Safety – Environmental Consequences

Direct and Indirect Effects, All Alternatives

Alternatives 2 through 5 would be the same as alternative 1, meaning any resultant designated system would be considered safe. None of the action alternatives would change the speed that vehicles travel, so traffic speeds would remain low, which tends to prevent bad accidents.

We don't expect the volume, composition, or distribution of traffic to change after designation. The passenger car roads that carry the most traffic would continue to carry the most traffic. These

roads are safe now, and there is no reason they would become unsafe with changes in route designations.

The geometry of roads would continue to be appropriate for the types of vehicles that drive in the forest. This project proposes no physical construction.

Cumulative Effects, All Alternatives

Past projects shaped the road system we have today, which we consider safe. The action alternatives would keep the same level of safety. None of the present or reasonably foreseeable actions have effects that would overlap in space and time with the safety of a person driving on an individual road. Things the individual could do, like not drink and drive, buckle their seatbelts, and keep their vehicles in proper working order, would cumulatively contribute to an individual's safety when driving a National Forest System road.

Effects of Forest Plan Amendments to Recreation

Proposed Amendments in Table 66 of Appendix 1

All the proposed amendments that are administrative in nature are not expected to have effects to recreation as a result of this project or future projects. These proposed amendments, for the most part, simply update and provide consistent direction for application of the motor vehicle use map.

The proposed amendments that alter off-highway vehicle use within specific management areas have no effect because they keep direction for adding motorized use consistent with the intent as per the current forest plan and travel management regulations. Management areas where cross-country travel has been allowed (Management Areas A, B, E, G, P, Q, R, and S) have no plan amendment changes that restrict the addition of this type of use through the designation of areas or corridors in the future. Management areas where cross-country travel was limited (Management Areas C, D, I, J, K, M, and N) have plan amendment changes that continue to limit the addition of areas and corridors except when consistent with management emphasis for the area. Therefore, none of these amendments are expected to have any effects to recreation in the future.

The proposed amendment to the Jemez National Recreation Area (Management Area X) restricts the ability of motorized vehicles to pull off roads in JNRA - A areas (as per the travel area map, equal to 15,445 acres) to only where motorized dispersed camping or motorized big game retrieval corridors are specifically designated. Although this amendment limits these uses to places designated on the motor vehicle use map, it does not limit the amount of these corridors that can be added in the future and does not represent a big change from current plan direction. Therefore, this amendment should have no effect on recreation.

Proposed Amendments in Table 67 of Appendix 1

Most of the amendments in this table propose to allow the inclusion of motorized dispersed camping corridors and/or motorized big game retrieval corridors in the wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where these uses are currently prohibited. These amendments affect alternatives 4 and 5 only. These amendments would have an impact on recreation, specifically causing more potential for conflict between motorized and nonmotorized recreation users. These specially designated areas currently

prohibit or limit motorized dispersed camping or motorized big game retrieval, and people who recreate in them have come to expect recreation experiences without this type of off-road travel. These amendments allow for the potential expansion of these motorized uses through future designations which may negatively impact the potential enjoyment and desire for solitude that nonmotorized recreationists such as hikers and fishers expect from these parts of the forest. Laws would continue to regulate where within the wild and scenic river areas that corridors could be added, but there is still the potential for effects to recreation, especially in scenic and recreation designated portions.

The effects of amendments to allow for motorized use on specifically identified routes (in Management Areas H and L for varying alternatives) would be identical to the direct, indirect, and cumulative effects presented in this report because they relate to a specific road as proposed and analyzed for each of the specific alternatives.

Social and Economic Environment

People who commented on the proposed action had several concerns that this document addresses in this section:

1. ***Economics.*** *Reducing routes open to motorized use could decrease the amount of motorized recreation in the forest, resulting in negative economic impacts to local businesses.*
2. ***Noise.*** *Any motorized use of the forest could cause undesirable noise from engines, affecting those who visit the forest and in surrounding areas.*
3. ***Property values.*** *The choice of routes designated could affect the property values of lands adjacent or in the forest.*
4. ***Cultural practices and traditions.*** *Reducing routes will limit people's ability to gather forest products like piñon nuts and firewood.*

This section, which summarizes the social and economic analysis specialist report, analyzes all these issues (USDA Forest Service 2012e). The Forest Service also routinely considers environmental justice (how a project could disproportionately affect minority and low income populations) in its analysis.

Economics – Affected Environment

Social and Demographic Environment

Modeling Employment and Income from Motorized Use

To describe the potential economic impacts to businesses from the alternatives, we measure the number of jobs and income generated by motorized recreation in the Santa Fe National Forest.

To get the number of jobs and income associated with motorized recreation, we used two models, IMPLAN (Impact Analysis for Planning, Professional Version 2.0) and RECA (Recreation Economic Contribution Application, called TMECA in the specialist report). These models predict how much employment would result from the demand for goods and services. In this case, the "goods and services" is the opportunity to ride motor vehicles in the Santa Fe National Forest. We assumed that more routes designated for motorized use would lead to more motorized use of

the forest. More motorized use could increase local economic activity by leading more people to stay in hotels, creating more jobs to run the hotels, and by people buying meals in local restaurants or spending money on gear or equipment.

The models need several pieces of information, including the area of potential economic impact, industry sector data (how much economic activity happens in a type of business), and demand (the number of people visiting the forest and the activities they participate in). Because we don't have perfect information about all these things, we used the best available data combined with assumptions[5]. The kinds of information we used to run the models were:

- **Area of potential economic impact.** Six of the seven counties within which the Santa Fe National Forest is located comprise the area of economic impact. These are Los Alamos, Mora, Rio Arriba, San Miguel, Sandoval, and Santa Fe Counties. We excluded Taos County because the 7,000-acre portion contained in the forest is the Pecos Wilderness, where motorized use is not allowed by law. Whether Bernalillo County was included depends on which type of data characterizing "demand" was used, as described in the third bullet. Visitor surveys show that a high number of visitors to the Santa Fe National Forest come from the Albuquerque area (Kocis et al. 2004, p. 8), which is located primarily in Bernalillo County.
- **Industry sector data.** Data from the Bureau of the Census capture most aspects of businesses: shipments, total employment, number of workers, capital expenditures, and imports and exports. These numbers are available in the project record.
- **Demand.** Having data on demand is crucial because the models use it to allocate spending to a motorized or nonmotorized category. Of the model's inputs, data on demand is the most uncertain because it is based on survey data. Two different surveys on how people use the forest exist: NVUM (National Visitor Use Monitoring) and ABV (Attitude, Belief, and Value). The model can only use one dataset at a time. We ran it using both sets of data. Running the NVUM and the ABV produces different results because of each survey's intent and how the data were collected. The ABV data show a higher numbers of jobs and income than the NVUM. Because of these uncertainties, the number of jobs and amount of income are not portrayed as exact predictions; rather, the intent is to show a range and compare the alternatives. The percent change is a better figure to look at since it normalizes the data, comparing numbers on the same scale.

The NVUM dataset, because of how it was collected, is better suited to the models. One aspect of the NVUM dataset is that it focuses on the differences between local and nonlocal spending to illustrate how people spend money while participating in different activities. "Local" is defined as those people living in a place with a zip code 50 miles or less from the point where the survey was taken. As a result, survey participants living in Bernalillo County are not considered local in this survey. Thus, Bernalillo County is not included in the area of potential economic impact when NVUM data are used as the source of demand.

The ABV survey collected information from people living in Arizona and New Mexico, and did not define what "local" meant. Thus, ABV data can be stratified to include Bernalillo County.

[5] Some assumptions used in this analysis differ from the interdisciplinary team's assumptions due to the models' needs. The social and economic analysis specialist report provides the details about the data and the assumptions used.

Including Bernalillo County increases the predicted number of jobs and amount of income, and is represented by the high end of the range shown.

The models do not account for the displacement of or potential increase in nonmotorized recreation that could result from expanding or restricting motorized use on the forest. Thus, this analysis takes a "worst case scenario" approach to assessing economic impacts because it focuses on the jobs and labor income that would be lost from decreases in motorized use, but not from the jobs and labor income that would be gained from increases in nonmotorized use.

Population

Though the population won't change as a result of the proposal to change motorized use in the Santa Fe National Forest, it shows the backdrop in which motorized use occurs.

The analysis area includes almost 1 million people, which is about 60 percent of the population of New Mexico. Slightly over 60 percent of the population in the analysis area is located in Bernalillo County. Between 1970 and 2006, the population here grew at an average annual rate of 2.1 percent (Headwaters Economics 2009). Sandoval County had the highest growth rate, 5.3 percent, likely due to the emergence of Rio Rancho as a major population center. The population of the seven counties is expected to grow 36 percent over the next 20 years, much as a result of retirees attracted by the quality of life (Ulibarrí 2007).

People aged 35 to 54 years old compose the largest portion of the population. Data show the median age of residents is increasing. The largest single age category is 40 to 44 years old at 8.2 percent. The group aged 50 to 54 years old has grown the fastest, while younger age classes are decreasing (Headwaters Economics 2009). Men and women are evenly represented in the area's population. The percent of different ethnicities is becoming more even as the population grows (Ulibarrí 2007).

Employment and Income in General for the Analysis Area

Economic data illustrate four trends in the 7-county area. First, per capita income has steadily increased over the past several decades at the same rate or higher than the national average. Second, service-oriented industries supply most of the economy's growth. Third, nonlabor income—such as social security—contributes the most new income; for instance, it provided over a third of all income in 2006. Fourth, government employment is high compared to the rest of the State and Nation. The analysis area contains federally managed lands, Indian reservations, and Los Alamos and Sandia National Laboratories. This last characteristic would likely limit the economic impacts of changes in forest management since government jobs are not dependent on changes in off-highway vehicle use.

Each county, though following the above four trends, shows differences. For example, the difference in average per capita income between Mora and Los Alamos Counties is among the highest nationally within a region. Los Alamos County has an exceedingly high rate of government employment, whereas Mora County has much higher rate of nonlabor income than any other county (Headwaters Economics 2009e, Headwaters Economics 2009b). Most of the economic growth came from Sandoval, Bernalillo, and Rio Arriba Counties. All counties show a strong trend of growth in the services industry, yet some counties such as San Miguel and Mora show equally or almost as much growth in retail industries (Headwaters Economics 2009b,

Headwaters Economics 2009d). All seven counties have experienced increased unemployment in the recent economic downturn (U.S. Bureau of Labor Statistics 2009).

Employment and Income from Motorized Use

According to the models we used, motorized use contributes between 7.4 and 53 jobs and between $187,823 and $1,367,728 of labor income—as opposed to income from pensions or retirement accounts—to the local economy. Using 2008 county employment estimates, this represents approximately 0.03 percent of all jobs and 0.02 percent of all labor income in the 6-county analysis area model. In other words, the amount of jobs for motorized recreation on the Santa Fe National Forest is less than one-half of one-tenth of 1 percent when compared to the entire local economy.

Motorized Recreational Use in General

Numerous motorized opportunities exist within the 7-county and surrounding areas. Those we're aware of within a few hours' drive of the forest are listed in table 34.

Table 34. Areas with motorized recreation opportunities near the Santa Fe National Forest

Motorized Vehicle Opportunity	Ownership	Approximate Time from Forest
Mescalero Sands North Dune Off-Highway Vehicle Area*	BLM – Roswell Field Office	5 hrs
Haystack Mountain OHV Area*	BLM – Roswell Field Office	5 hrs
Gordy's Hill Special Management Area*	BLM – Rio Puerco Field Office	2 hrs 20 min
Quebradas Backcountry Byway	BLM – Rio Puerco Field Office	2 hrs 20 min
Glade Run Recreation Area*	BLM – Farmington Field Office	2 hrs 10 min
Dunes Vehicle Recreation Area*	BLM – Farmington Field Office	2 hrs
Gallup OHV-Motocross Park*	City of Gallup, NM	2 hrs
Moriarty Motocross*	Private – Moriarty, NM	1 hr 30 min
Mountainair Ranger District	Forest Service; Cibola NF	1 hr 30 min
NVRP Motocross*	Private – Socorro, NM	1 hr 30 min
Sandia Ranger District	Forest Service; Cibola NF	1 hr
Mount Taylor Ranger District	Forest Service; Cibola NF	1 hr
Various BLM Lands	BLM – Rio Puerco Field Office	1 hr
Sandia Motocross Park*	Private – Albuquerque, NM	1 hr
Montessa OHV Park*	Albuquerque Open Space	45 min
"Rio Puerco Area"	Private – Rio Rancho, NM	35 min
San Ysidro Trials Bike Area*	BLM – Rio Puerco Field Office	10 min
Carson National Forest	Forest Service	Adjacent to SFNF boundary

* Specifically intended for OHV use (Source: State of New Mexico 2009)

More information about these and other off-highway vehicle opportunities is available in a report titled "Off-Road Vehicle Recreation in New Mexico, Appendix H: ORV Parks and Recreation

Areas: Supporting Materials"[6]. In 2011, the New Mexico Game and Fish Department also released a brochure entitled "OHVs in New Mexico," which includes a listing and map of where to ride in New Mexico (State of New Mexico 2011[7]).

From 1982 to 2001, driving motor vehicles off road became one of the fastest growing categories of outdoor activity in the country (Cordell et al. 2009). The percentage of people age 16 and older who said they participated in off-highway vehicle recreation increased from 17.5 percent in 2000 to a peak of 23.2 percent in 2003 (Cordell et al. 2008). After 2003, the percent decreased to 19.2 percent in 2007. Hispanic use of off-highway vehicles grew at the fastest rate, more than 160 percent. The rate of participation by American Indians, at 27 percent, was higher than any other racial or ethnic group between 1999 and 2007. Hispanic and Native American represent a high percent of northern New Mexico populations.

Motorized Recreational Use in the Santa Fe National Forest

According to the forest's 2009 National Visitor Use Monitoring (NVUM) report, the two "primary use" activities having the highest percent of public participation are hiking and viewing natural features. Less than 1 percent of the forest's visitors come primarily to ride off-highway vehicles, though about 0.4 percent said they participate in it. Data from the 2006 ABV survey reported a higher percent of off-highway vehicle recreation and driving for pleasure, but still found that hiking was one of visitors' main forest activities. The ABV survey also showed higher participation in viewing historic or prehistoric sites or viewing natural features.

The NVUM dataset is more likely to capture those activities that visitors actually participate in rather than activities they *might* choose to participate in. The site-specific collection method used, however, has its drawbacks. The NVUM method puts data collection points at main intersections or developed recreational facilities. This means that the survey is more likely to collect data from visitors that don't know of lesser used access points. For example, the NVUM is not likely to capture local use originating from private lands or lesser known access points. Since visitors from outside the local area are more likely to use developed sites, it makes sense that the NVUM data shows hiking as a higher use than something like ATV use, which requires knowledge of unmarked, unadvertised routes.

On the other hand, the ABV dataset likely overestimates off-highway vehicle use because it disproportionately surveys members of the general population more likely to participate in off-highway vehicle use. It overrepresents high income households, underrepresents low income households, overrepresents men, and underrepresents women (Begay 2009).

Using both data sources shows that 0 to 25 percent of the forest's visitors use off-highway vehicles, and that 20 to 67 percent of these folks do so purely for recreational purposes. Data from infrared trail counters show motorized use to occur regularly, but at a low level. Vehicle counters placed in Cochiti Mesa, for example, show that the most popular trails average 2 riders on weekdays and 3 to 7 riders on weekends; the highest count recorded in 1 day was 16 (USDA Forest Service 2009bb). When compared to nationally known trails such as the Paiute Trail in Utah that averages 164 riders per day, use on the Santa Fe National Forest is comparatively low.

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[6] Available online at http://www.emnrd.state.nm.us/main/sjm40/SJM40report-01-07-09.pdf

[7] Available online at http://www.b4uride.com/

The survey data show that people do not consider the Santa Fe National Forest a nationally known off-highway vehicle destination. The main riders appear to be local residents familiar with the area. The data from the NVUM and ABV surveys demonstrate that most people think of the forest as a place to relax and "get away to nature." There is a lack of off-highway vehicle businesses tied to the forest. For example, between 2008 and 2009, a company providing dirt bike rentals and tours on the Santa Fe National Forest was unable to survive, because despite all efforts to attract business there was no more demand than approximately 15 customers for the entire year. The NVUM data show little or no demand for additional opportunities for riding off-highway vehicles, though this could be because most of the forest is open to motorized use now.

Economics – Environmental Consequences

Direct and Indirect Effects, Alternative 1

There would be no change from the existing condition just described.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 would result in an almost imperceptible loss of jobs and income from motorized uses considering the scale of the economy in the 6- or 7-county analysis area (table 35). The maximum predicted job loss from any alternative is far less than one-tenth of a percent, and most likely would be less than that. It is likely that the maximums shown are overestimated because they are generated from the ABV data.

These numbers are stated as potential maximum decreases, because the jobs and income would be lost to the local economy only if all motorized users stop this activity on Santa Fe National Forest and all other public lands in the analysis area. More realistically, motorized recreationists would shift to other private or public areas, which may result in a displacement or loss of jobs and labor income. Many people contend that simply the act of designating routes would sharply increase their use; however, scientific and informal studies show no evidence of this (Christensen and Watson 2006).

Table 35. Comparison of maximum amount of job loss and income from motorized recreation by alternative

	Existing Condition Alternative 1	Predicted Decrease by Alternative				
		2	2M	3	4	5
Jobs, number	7 - 53	1 - 13	1 - 13	1 - 27	0 - 5	0 - 13
Maximum percent change from alternative 1	--	-0.0065	-0.0065	-0.013	-0.003	-0.0065
Labor income, dollars (rounded to nearest hundred)	187,800 - 1,367,700	--	--	--	--	--
Maximum dollar loss from alternative 1	--	341,900	341,900	683,900	136,800	341,900

Service industries and government dominate employment sectors in northern New Mexico. Thus, losing such a comparatively small number of jobs to the less developed industry of motorized recreation would further diminish the effect.

Reducing the places where people can drive under any of the action alternatives may have these positive economic impacts:

- Increased nonmotorized recreation in areas previously used for motorized recreation
- Increase in private businesses catering to nonmotorized recreation
- Increase in motorized use of other public lands to offset losses in the Santa Fe National Forest

Though the alternatives are likely to cause a slight loss of jobs and labor income in the economy, they could cause a gain of jobs from an increase in nonmotorized recreation.

Cumulative Effects, All Alternatives

Alternative 1 would not change the management of vehicles in the national forest, so there would be no changes in economic effects. Because there would be no changes in economic effects, there would be no cumulative effects.

For any of alternatives 2 through 5, the economic change resulting from decreasing the amount of routes open to vehicles would be so small as to be overshadowed by larger economic trends. The loss of jobs and income for any would be imperceptible at the scale of the local economy, even when combined with unemployment due to the recent economic downturn and other public lands restricting motorized use.

Since the forest accounts for an estimated 1.3 percent of employment in the adjacent counties (Ulibarrí 2007b), this means any action alternative would result in less than a 0.01 percent change in employment in the assessment area. This very small potential effect on employment would result in a cumulative effect when combined with the national economic downturn since fall 2007, but still remain less than 0.01 percent. Unemployment has approximately doubled from around 3 percent in October 2007 to approximately 6 percent in April 2011. An exception to this is Mora County, which went from 5.8 percent in October 2007 to 15.5 percent unemployment in April 2011 (U.S. Bureau of Labor Statistics 2011).

Noise – Affected Environment

Noise is defined here as any unwanted sound. A person's perception—both their ability to hear the sound and to consider it a nuisance—plays a large role in what "noise" is. We break down noise into four components.

Frequency is how often the sound is heard. For this, we use the traffic count data collected by the forest's transportation engineer. At a given spot, the number of times someone can hear an engine depends on how many times a vehicle within earshot goes by. In the Santa Fe National Forest, the major routes carry more vehicles than the smaller ones, and both carry far less traffic than roads in towns. For example, eight vehicles per hour over an 18-hour period traveled on Forest Road 376 north of the Gilman Tunnels, the busiest road in the forest. On Forest Trail 113 and Crosstown Trail, only three vehicles per day traveled during the week.

Duration is how long the sound can be heard. Sounds from vehicles in the forest usually last 5 to 30 seconds as a vehicle of any sort tends to be in motion while producing noise.

Magnitude is how loud the sound is, described in decibels. For this we used a model called SPreAD (System for the Prediction of Acoustic Detectability), specifically designed to assess how noise travels in a wildland setting. Though it can't provide a clear and definitive statement about the noise from a source such as an off-highway vehicle, it can illustrate where sounds from motorized use would be greatest and at what levels they could occur.

The loudness of vehicles varies first with the vehicle. Engine noise ranges from 75 decibels for automobiles to 83 decibels for motorcycles. It also varies with distance from the source, atmospheric conditions, weather and wind, vegetation, topography, and ambient noise levels.

Flat, dry, hot, sparsely vegetated landscapes tend to carry sounds the farthest because they present the fewest barriers to it. Softer sounds could be heard from farther away in this kind of setting. For example, the Caja del Rio would be more likely to carry sounds than Cochiti Mesa (before the Las Conchas Fire). Caja del Rio is a sparsely vegetated, hot, and dry mesa top, whereas the Cochiti Mesa area is a densely vegetated, higher elevation area with a series of mesas and ridges cut by steep canyons. In Cochiti Mesa, sound from an automobile or motorcycle would be much more muffled because the vegetation and landscape absorb or deflect the noise. Sound from a motorcycle might be heard on the mesa where it is occurring or even may be heard at a lesser magnitude on a ridgetop a mile away, but may not be heard in a canyon from 200 yards away.

Finally, appropriateness refers to sounds that aren't acceptable in a given setting. For this, we measured the miles of routes traversing and close to primitive and semiprimitive nonmotorized areas defined in the forest plan. These are two classes of areas where the probability of isolation from the sights and sounds of people is high, so not having engine noise in these areas is desirable.

Noise – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Motorized use would occur on the greatest number of routes and, thus, would affect the greatest overall area. Alternative 1 is expected to cause the most noise in areas managed to have little or no sounds from people.

Approximately 48 miles of roads and motorized trails exist in "primitive" and "semiprimitive nonmotorized" areas, and an additional 281 miles within ¼ mile of these areas (table 36). The total mileage in and near these areas (329) is more than double the mileage of routes in any other alternative. Motorized use of these routes probably occurs regularly, but not often. Alternative 1 would also have noise from motorized cross-country travel that would infringe on primitive and semiprimitive nonmotorized areas. For example, approximately 66,250 acres of areas open to motorized cross-country travel within ½ mile of designated wilderness exist in this alternative. The frequency and duration of such noise, however, would continue to be low based on estimates of motorized use.

Alternative 1 likely causes noise now in Bandelier Wilderness; currently there are approximately 4 miles of road within a quarter mile of it. These routes are located in the Caja del Rio and Rabbit Hill area, which is north of Dome Wilderness, and are used by off-highway vehicles, likely resulting in motor vehicle noise that can be heard in Bandelier Wilderness.

Table 36. Miles of routes near primitive and semiprimitive nonmotorized areas as a proxy for the appropriateness of noise

Recreational Opportunity Spectrum Designation	Alternative, Miles (unauthorized routes in parentheses)					
	1	2	2M	3	4	5
Miles of routes in primitive ROS	9 (0)	4 (0)	4 (0)	1 (0)	1 (0)	1 (0)
Percent change from alternative 1	--	**-55**	**-55**	**-89**	**-89**	**-89**
Miles of routes in semiprimitive nonmotorized ROS	38 (7)	11 (1)	8 (1)	4 (3)	23 (1)	16 (1)
Percent change from alternative 1	--	**-71**	**-79**	**-89**	**-39**	**-58**
Miles within ¼ mile of either	282 (22)	134 (8)	126 (7)	94 (2)	150 (10)	116 (8)
Percent change from alternative 1	--	**-52**	**-55**	**-66**	**-47**	**-59**

Alternative 1 includes 37 miles of motorized routes within ¼ mile of the Valles Caldera National Preserve. Portions of these routes on the Jemez, Coyote, and Española districts receive use by off-highway vehicles—such as the motorcycle trails in or adjacent to San Antonio Canyon—likely causing engine noise heard in the Valles Caldera National Preserve.

Cumulative Effects, Alternative 1

Since alternative 1 proposes the most routes open for motorized use and keeps the existing motorized cross-country travel across much of the forest, activities like hunting, camping, or use of chain saws from woodcutting would result in a cumulative impact. Roads and trails facilitate access to the forest. Where there is access, there is a greater likelihood for sound-producing activities to occur. As a result, since this alternative includes the greatest amount of routes in primitive and semiprimitive nonmotorized areas, it would likely result in the greatest cumulative noise impact to other forest visitors and those who live in or adjacent to the forest.

Direct and Indirect Effects, All Action Alternatives

All the action alternatives establish a designated system for motorized travel. This means where motor vehicles are used will be predictable, so visitors sensitive to or concerned about noise from motor vehicles can avoid these areas.

Alternatives 2 through 5 would all diminish the instances where inappropriate noise—as defined by the recreation opportunity spectrum—is heard in a primitive area because they all reduce the number of roads and trails where people could drive. Table 36 shows that all the action alternatives would reduce the miles of routes open for motorized travel in and near primitive and semiprimitive nonmotorized areas. This means that the places where driving would be allowed is less than the current condition, and we expect the instances of engine noise to be correspondingly reduced. The action alternatives nearly eliminate motorized cross-country travel, which eliminates it as a source of noise. Compared to the current condition, all the action alternatives limit off-road driving to retrieve big game or camp by placing distance limits (corridor width) or time limits (seasonal restrictions). This means that the instances of engine noise from any of the action alternatives would also diminish. Alternative 3, by not allowing off-road driving for any

reason and designating the fewest routes for motorized use, is expected to reduce the instances of noise the most.

All the action alternatives keep some routes in and near primitive and semiprimitive nonmotorized areas, and most propose to add some unauthorized routes. Because motorized use occurs on these routes now, there would be no change from the current condition in terms of noise generated from driving on them.

We assume that the amount of motorized use is held constant among alternatives because there are no data to show otherwise. Some members of the public, however, stated that motorized use of remaining routes would increase by concentrating drivers in the same places. Data collected in May 2009 on trails in the Cochiti Mesa area show an average of 2.5 off-highway vehicles per day with a maximum of 10. Even assuming traffic would concentrate by 20 percent results in an average increase of only 0.3 off-highway vehicles per day. This increase in use would be overshadowed by eliminating motorized noise from cross-country travel and reducing the number of designated routes.

All the alternatives reduce the miles of routes within a quarter mile of Bandelier Wilderness. Alternatives 2, 2M, 3, and 5 completely eliminate them. This means that noise from current motor vehicle use on routes on the Caja del Rio and in the Rabbit Hill area would be minimized and, thus, would enhance the primitive values of Bandelier Wilderness. Alternative 4 keeps about 4 miles open, so some noise would continue to be heard. Similarly, all the alternatives decrease the miles of routes open to motorized use within ¼ mile of the Valles Caldera National Preserve between 22 and 52 percent, thus decreasing the instances of noise from motor vehicle use on the edges of the preserve and enhancing the values of solitude for which the preserve is managed.

Alternative 4, because it keeps the most miles open for motorized use, would result in more instances of motor vehicle noise than the other action alternatives. It also has the widest fixed-distance corridors for big game retrieval and camping, which means some engine noise in primitive and semiprimitive nonmotorized areas may be heard. This noise is expected, however, to occur at a very low frequency.

All the action alternatives keep between 94 and 100 percent of the passenger car routes, where the majority of the forest's traffic occurs, so the frequency of noise along the forest's main routes, such as Highway 63 in Pecos Canyon or Forest Road 376, would not change.

The duration of time that vehicles travel (when noise could be heard) is not expected to change because no changes in speed limits are proposed. The magnitude of noise would be the same for all the alternatives because no change in the kinds of vehicles driving in the forest is expected. The other things that govern magnitude, like the weather, topography, and vegetation, are not expected to change.

Cumulative Effects, All Action Alternatives

All the action alternatives are expected to reduce the places where noise from vehicles is heard. By establishing a predictable motorized system on the motor vehicle use map, all would allow forest visitors sensitive to noise to avoid it.

Over the past several decades, motor vehicle use from off-highway vehicles has increased, causing more occurrences of noise in popular areas such as the Jemez National Recreation Area,

Hyde Park area, and Pecos Canyon. The increase in vehicle traffic often has been associated with improvements to the recreational facilities. Because little or no change in the number of main routes is proposed, there would be no change in noise from them and, therefore, no cumulative effect.

At the same time, the forest has cumulatively reduced the places where people can drive by establishing closure orders to protect sensitive resources like riparian areas or cultural sites. For example, the Jemez Ranger District has enacted 25 closure orders since 1984. Closing even more areas and routes to motorized use should cumulatively reduce the places where people hear engine noise in the more remote areas of the forest.

Even if motorized use on the remaining routes increased, the noise isn't expected to cause a cumulative impact because all the action alternatives greatly reduce the places where, and the times when, people may drive. For noise from any of the alternatives to cause a cumulative effect, a person would have to hear the vehicle at the same time as other noises, such as chain saws or loud campers. Because the sounds of vehicles are usually less than 30 seconds—the time it takes them to pass by—any cumulative effects would also last that amount of time. Any cumulative effects would not be permanent. Nonetheless, alternative 4 would likely have the most instances where people hear cumulative noise since it has the most places and, therefore, opportunities for motorized use to occur.

Environmental Justice – Affected Environment

Environmental justice means that minority or low income groups do not suffer more from the government's projects than other groups[8]. In 1994, President Clinton issued Executive Order 12898 because agencies were repeatedly allowing companies to put harmful things like dumps for toxic waste in low income or minority communities. The order requires Federal agencies, including the Forest Service, to consider environmental justice when proposing projects.

We used the data from the 2000 census to identify minority populations in the 7-county analysis area. The regulation defining a minority population requires that we look at several scales. Table 37 shows those scales, and also shows the ones that meet the definition of a minority population.

Low income means individuals or households that are below the Federal poverty level. Table 38 shows the percent of the population below the Federal poverty level, and those that meet the definition of low income. The data from the last 10 years show that the percent of people in poverty decreased. To analyze whether any alternative poses issues with environmental justice, we use the projected economic impacts of the alternatives.

[8] The official definition of environmental justice is that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by government programs and activities affecting human health or the environment.

Table 37. Percent of the population by race and ethnicity shown at different scales

Scale or County	Ethnicity		Race		
	Hispanic	Not Hispanic	Native American	White	All Others
State of New Mexico	42	58	10	67	23
Seven-county Analysis Area	44*	56	6	70	25
Bernalillo County	42	58	4	71	25
Los Alamos County	12	88	1	90	9
Mora County	82*	18	1	59	40
Rio Arriba County	73*	27	14*	57	30
Sandoval County	29	71	16*	65	19
Santa Fe County	49*	51	3	74	23
San Miguel County	78*	22	2	56	42

* Meets the definition of a minority population (Headwaters Economics 2009)

Table 38. Percent of the population below the Federal poverty level in 2007 shown at the state and county levels

County	Percent
State of New Mexico	18
Bernalillo	15
Los Alamos	3
Mora*	22
Rio Arriba*	21
Sandoval	10
Santa Fe	15
San Miguel*	25

* Meets the definition of low income (Headwaters Economics 2009

Environmental Justice – Environmental Consequences

Direct and Indirect Effects, All Alternatives

Alternative 1 makes no changes to the current designated transportation system, so there would be no changes in motorized access to the forest or employment related to motorized use. As a result, there would be no effects to minority or low income populations.

Alternatives 2 through 5 would have no measurable effects to low income or other minority populations. The restrictions on motorized use apply to all races and ethnicities, so minorities and low-income populations would not bear a disproportionate burden. Native Americans and Hispanics in the area frequently supplement their household income with the use and sale of forest products with piñon nuts in particular. Though being able to drive fewer places may limit where people are willing to go to collect piñon, no alternative eliminates this activity. Alternative 3, which is the most restricted in terms of access, would have the largest effect on this activity.

The cost associated with owning and operating a vehicle can be considerable. Low-income households are unlikely to own an off-road vehicle just for recreational driving because they do not have adequate discretionary income to afford to participate in the sport. In this regard, changing motorized access won't affect people who don't ride off-highway vehicles recreationally now. Low-income households, however, may use Forest Service roads to acquire firewood and other subsistence products. Because these activities are governed by permit, there would be no change in any of the action alternatives.

Cumulative Effects, All Alternatives

Because there would be no measurable direct or indirect effects from any of the alternatives, there would be no cumulative effects.

Property Values – Affected Environment

The value of private property is tied to people's perceptions. Several studies show that having a natural, protected area like a national forest or national park near private property increases its value (Kim and Johnson 2002). On the other hand, some may perceive activities conducted by the forest or park, such as cutting trees, as undesirable (Kim and Johnson 2002).

People could perceive the reduction of roads, trails, and areas designated for motorized use as either negative or positive. Fewer routes to drive on means less access to places in the forest, and people might perceive this as negative. They also might see it as an improvement in things like scenery or water quality, which would be a positive perception and possibly higher property values.

Some people who live in or next to the Santa Fe National Forest wrote that noise and pollution from off-highway vehicles would decrease the value of their property. No scientific studies show a clear relationship between designating routes for motorized use on public land and property values. In urban environments, studies show that building large infrastructure next to homes (highways and airports, for example) that introduce new noise may decrease or increase property values depending on whether the construction is perceived as a benefit or a nuisance (Bateman et al. 2001, pp. 104–112).

We don't have the capacity to determine how changing where people can drive in the Santa Fe National Forest will change property values, or even how the current designated system affects property values. The forces that influence property values (like noise, air quality, scenery, water quality, wildfire, recreational opportunities, and wildlife abundance) can act in opposing and potentially unforeseen ways. Studies identify a correlation between remoteness, scenery, and property values but don't identify a causal relationship (Sengupta and Osgood 2003). Though a negative relationship between some characteristics and property prices have been well documented, these correlations are from large transportation and infrastructure construction projects such as highways and airports that are much greater in magnitude and intensity than any potential management changes being considered in this analysis.

Property Values – Environmental Consequences

Direct, Indirect, and Cumulative Effects

As a result of this uncertainty and complexity, we conclude that comparing potential changes in property values is too speculative to analyze in detail. It is possible that changes in route designation could have an impact on private property values; however, research in this area is far from conclusive. Even if economic impacts could be tied to route designation, it is unclear if the overall impact would be discernible, positive, or negative. The impacts of route designation on each property would likely differ with the preferences of those interested in buying property in the area. Because we don't know how property values would be affected, we cannot definitively describe cumulative effects. Having information on the effects to property values isn't required by the Travel Management Rule in order to make a decision.

Cultural Practices and Traditions – Affected Environment

The Santa Fe National Forest provides the people living in its surrounding small, rural communities the opportunity to engage in activities, such as hunting and gathering piñon nuts and firewood, that provide or supplement a family's income or food. In a 2000 survey of forest users in the Southwest, 31 percent of respondents reported participating in forest product gathering, and 96 percent said they gathered for personal use rather than for income (Cordell and Tarrant 2002). The ABV survey recorded that people living in or near a national forest in northern New Mexico think the Forest Service needs to respect these uses when planning projects and making decisions.

People depend on the national forest for the following activities:

- Grazing livestock
- Collecting firewood, posts, and other small timber products
- Cutting Christmas trees
- Irrigation
- Special uses, like pipelines for drinking water
- Hunting
- Picking piñon nuts
- Collecting nonwoody forest products, like edible and decorative plants

Most people use vehicles to participate in these activities. Because all except the last three (those on the right side of the page) require permits from the Forest Service, they are exempt under the Travel Management Rule (36 CFR 212.51 (a)(8) and 36 CFR 261.13(h)). This means that people having a permit would continue to be allowed to engage in these activities regardless of which alternative the Forest Service chooses. The permit, however, must specifically authorize use of routes and areas not on the motor vehicle use map. Please note that the "Recreation" section of this report addresses the issue of hunting.

The Santa Fe National Forest has not required or issued permits for picking piñon nuts, herbs, mushrooms, or other plants. To analyze how these might be affected by changing what is designated for motorized use, we measure the miles of roads that go through piñon-juniper woodlands (for piñon nuts) and through mixed-conifer, aspen, and cottonwood forests (for herbs, plants, and mushrooms). Based on observations, we've concluded that people use roads, not trails, to get to places to collect forest products, and we've only analyzed the roads that cross these habitat types.

The extent and magnitude of conflicts between forest visitors engaging in cultural practices and others is well documented (Russel and Adams-Russel 2006), but not well quantified (Cordell and Tarrant 2002). For this analysis, we assume that any conflict most likely occurs in areas having extensive forest product collection and motorized use.

Cultural and Traditional Practices – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Table 39 shows the miles of routes existing in the habitat types examined. Alternative 1 has the highest mileage in both habitat types. In addition, it keeps over half the forest open to motorized cross-country travel. Most of the terrain associated with the piñon vegetation type is suited to motorized cross-country travel, and is used for off-highway driving. The terrain on which mixed conifer, aspen, and cottonwood exists tends to be denser and, thus, less accessible to motorized cross-country travel.

Since alternative 1 would not change the existing condition, there would be no impacts to people's ability to collect piñon nuts, plant materials, herbs, or mushrooms. This alternative, however, could increase conflicts between users—even displacing those collecting—over the next several years with the expected rise in off-highway vehicle use. Stokowski and LaPointe (2000) state, "…noise and intrusion of the modern world into nature often compromises the enjoyment of many user groups. The numbers of motorized recreationists, and their intensity of use, also results in environmental degradation that reduces the pleasure of nonmotorized visitors, potentially resulting in displacement of the nonmotorized users." For example, elevated use by motorcycles in Bland Canyon, Cochiti Mesa, and Peralta Canyon in the Jemez Mountains could eventually displace those who collect herbs, mushrooms, or other forest products such as fir boughs in the same places.

Cumulative Effects, Alternative 1

Because alternative 1 keeps the existing motorized travel system in place, it would have no direct or indirect effect on people's access for collecting piñon nuts, plant materials, herbs, mushrooms, clay or other materials. Because it has no direct or indirect effect on motorized access, there would be no cumulative effects.

Alternative 1 could increase conflicts between forest product gatherers and others, or displace the product gatherers altogether. This indirect effect would be most acute in rural, less populated communities, such as those in Mora, San Miguel, Rio Arriba, and Sandoval Counties, that depend on forest products (Ulibarrí 2007b).

Other activities predicted to cause cumulative increase in user-conflict or displacement of those using the forest for collecting materials are rather limited. Restoration, fuels management, and vegetation management projects could cumulatively restrict access to treatment areas and change the abundance and composition of forest vegetation. These projects, however, generally restrict access for one season or less and often increase the abundance and diversity of forest vegetation more than 1 year after treatment (Dodson et al. 2007). As a result, Forest Service projects might cumulatively restrict access for a season in the treatment areas, but result in cumulatively more forest products a year after projects are finished.

Pumice mining is also likely to cumulatively displace those who use the forest for cultural activities. Specifically, the Pueblo of Jemez has concerns about its impacts to cultural uses in the Jemez Mountains. Pumice mining would cause a long-term loss in forest products since mines strip vegetation. The mines would affect small areas, 2 to 3 acres each, near main forest routes. The terrain around the pumice mines also lends itself to motorized cross-country travel, and unauthorized routes have proliferated around Forest Roads 10, 271, and 266. Together, pumice mines and continued motorized cross-country travel could cause a cumulative displacement of those collecting forest products, or an increase in conflicts between visitors.

Direct and Indirect Effects, All Action Alternatives

None of the alternatives restricts the collection of any forest products, only where a person can drive a vehicle to get to them. There would be no change in motorized access for people having a permit from the Forest Service.

Table 39 shows that all action alternatives reduce the miles of routes in piñon and mixed conifer, aspen, and cottonwood types. In addition, all prohibit motorized cross-country motorized travel except in designated areas. Alternative 3 designates the fewest high-clearance vehicle roads, which are the ones most likely used to collect forest products; alternative 4 designates the most. Camping corridors will be limited in size (less than 2 percent of the forest) and off-road motorized use to retrieve game would be limited primarily to the fall, which would leave many areas where gathering occurs in the spring and summer unaffected. Reducing motorized access is likely to keep different uses separate. Studies show that multiple uses in the same places cause user conflict in some instances in national forests in northern New Mexico (Russel and Adams-Russel 2006).

Table 39. Comparison of designated roads crossing habitats where people collect forest products

Miles of Roads Open to Motorized Use Through Forest Type	Alternative				
	1	2 and 2M	3	4	5
Piñon-juniper (piñon nuts)	874	375	273	451	393
Percent change from alternative 1	--	**-57**	**-69**	**-48**	**-55**
Mixed conifer, aspen, and cottonwood (herbs, plants, mushrooms)	1,252	440	355	641	490
Percent change from alternative 1	--	**-60**	**-72**	**-49**	**-61**

Reducing motorized access is likely to decrease some people's ability to access and engage in cultural or traditional uses. Though still accessible by foot or horseback, traveling to collect products farther off designated routes would take more effort and is, thus, less likely to occur.

On the other hand, reducing the places where people can drive could also reduce conflicts between forest product gatherers and motorized users. Less motorized access means fewer differing activities in the same location, fewer impacts to vegetation, and could help conserve the value of locations used to gather forest products.

Cumulative Effects, All Alternatives

The cumulative impacts of decreased motorized access to gather forest products are considered at the spatial scale of the northern New Mexico region and temporal scale of the next decade.

Alternatives 2 through 5 would incrementally reduce the ease with which people can collect forest products on public land in the state of New Mexico. The magnitude and extent of these traditional practices are not known.

Since 1987, the Santa Fe National Forest has implemented a number of laws, regulations, and orders that restrict motorized access: the establishment of the Jemez National Recreation Area, and the East Fork Jemez and Pecos Wild and Scenic Rivers; the development of the lower Jemez Corridor and implementation of the Respect the Rio Program, which have limited vehicular access in stream buffer zones; land transactions removing parts of the southeast part of the Jemez Ranger District from public access and the legislated transfers and exchanges of portions of the National Forest System to the San Ildefonso Pueblo and the Pecos National Historical Park; and several administrative closures throughout the forest. Adjacent public land, such as the Bureau of Land Management and the Cibola and Carson National Forests, are also restricting the use of motorized vehicles to designated routes. Overall, these cause a cumulative decrease in motorized access.

Effects of Plan Amendments on Social and Economic Environment

None of the amendments in table 65 of appendix 1 have any effects to social and economic values analyzed. They have no effects on social and economic values analyzed because they are administrative in nature or are modifying the forest plan in accordance with current use on the forest.

Proposed amendments that alter motorized use within specific management areas also have no effects on any of the social and economic values analyzed because the direction for adding or limiting motorized use specified by the amendments is consistent with the intent of allowing (Management Areas A, B, E, G, P, Q, R, and S) or limiting (Management Areas C, D, I J, K, M, and N) motorized travel to corridors in the current plan. The proposed amendments would have no additional effects from motorized use in these management areas on jobs, labor income, economy, impacts of noise, or traditional and cultural practices because the amendments do not allow motorized use where it isn't currently occurring at some level.

The amendments in table 66 of appendix 1 that allow future designation of motorized dispersed camping or motorized big game retrieval corridors in management areas currently closed to cross-country travel have potential effects. These amendments occur in the wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area and apply to alternatives 4 and 5 only. The amendments allow for designation of motorized use, specifically areas and/or motorized dispersed camping and motorized big game retrieval corridors where it is currently prohibited. These amendments could result in a possible decrease in nonmotorized recreation and increased motorized noise where nonmotorized uses currently predominate, potentially resulting in local displacement of some recreational users. The proposed amendments would have no additional effects on impacts to traditional and cultural practices.

Lands – Affected Environment

This section focuses on how implementing the Travel Management Rule affects people's access to private land in the Santa Fe National Forest. It summarizes the lands specialist report in the project record (USDA Forest Service 2012i).

Legal Background

As described in detail in the lands specialist report, several laws, regulations, and policies govern access to private land across National Forest System lands. The Travel Management Rule states that the responsible official shall "recognize valid existing rights and the rights of use of National Forest System roads and National Forest System trails under § 212.6(b)" (36 CFR 212.55(d)).

The Forest Service is obligated by law to allow access to private land within the boundary of the national forest[11] (figure 38). The requirement to do so, however, is not unqualified. The Forest Service doesn't have to construct the road or pay for it. How and where the road is placed is based on individual facts and circumstances. The Forest Service does not have to approve access that degrades natural resources. For example, if owners have used a route through a riparian area to get to their property, the Forest Service can ask that a new route be constructed and used. The access to which the landowner is entitled need not be on the most direct, economical, or convenient route for the landowner.

Adequate access may not be on a road in all cases, and alternative modes of access may be considered. The appropriate mode or type of access selected should be one that is both reasonable for the planned use of the private land and, insofar as possible, compatible with resource management objectives for the National Forest System lands.

Figure 38. An example of a short forest system road that leads to private property. The truck is on the main road.

Physical access is usually not sufficient for the "legal access" requirement imposed by mortgage lenders and title companies. Most institutions require a road to have an easement or be an open forest system road. While the law does not obligate the Forest Service to provide legal access, it becomes a practical necessity for landowners whenever they seek to do anything with their land that requires title insurance or a mortgage. The Forest Service authorizes access to private property in three ways: a forest system road open to the public, by special use permit, or by easement. Each type of authorization has benefits and drawbacks, as summarized in table 40.

[11] The law that mandates this is ANILCA, the Alaska National Interest Lands Conservation Act of 1980 (P.L. 96-487, 16 U.S.C. 3210).

Table 40. A summary of the benefits and drawbacks to landowners of different kinds of access to private land. This list may not be complete. Some items were raised by the public during the scoping period.

Kind of Road	Benefits	Drawbacks
Open National Forest System road	• It is recognized as legal access by mortgage and title companies. • It is inexpensive; there is no cost to the landowner to show the road on the motor vehicle use map. • It is quick—the road appears on the motor vehicle use map with the next revision, done annually. • The Forest Service maintains the road.	• The road appears on the motor vehicle use map, meaning the public is allowed to drive on it (cannot be gated). • The maintenance standard for National Forest System roads is resource protection; this often falls short of what landowners desire in an access road.
Private road under special use permit	• The road typically does not appear on the motor vehicle use map, so the public would not be allowed to drive on it. The public could, however, use the road without a vehicle by hiking or biking, for instance.	• It is not recognized as legal access by mortgage and title companies; it is essentially considered a license that does not convey an interest in real property. • It is expensive to obtain a permit; the landowner must pay the Forest Service's time to analyze, prepare, and process the permit. This could be a few thousand dollars for a short road, and many times that for a long or complicated road. It costs almost as much as an easement, but does not carry the legal weight of an easement. • It takes several years for the Forest Service to process and issue the special use permit. • The landowner is responsible for road maintenance.
Private road having an easement	• It is recognized as legal access by mortgage and title companies because it conveys an interest in real property upon transfer. This generally enhances property values. • The road typically does not appear on the motor vehicle use map, so the public would not be allowed to drive on it. The public could, however, use the road without a vehicle by hiking or biking, for instance. • Easements reduce future disagreements about the location and legal status of the road.	• It is expensive to obtain an easement; the landowner must pay for the Forest Service's time to analyze, prepare, and process it, and for a survey and plat; and in some cases, the formation of a road association. This could be quite expensive for even a short road, and prohibitive for most people for a long or complicated road. • It takes several years for the Forest Service to process and issue the easement. • The landowner is responsible for road maintenance. • Easements are not exclusive; the Forest Service may authorize someone else to use the road, and retains the right to use it, too.

The History of Access to Private Land in the Santa Fe National Forest

In the past, access to private lands across the Santa Fe National Forest has often been handled in a casual manner. Though numerous examples of carefully platted and deeded easements exist, it is also not uncommon to find agreements that are generations old, based on nothing more than a handshake.

The forest has not been closed to overland travel, so many routes were historically created by the public over the path of least resistance, often to access private lands. Most patented homesteads within the forest lack an easement for access, and instead rely on public and unregulated roads over forest lands.

Changing cultural and legal requirements now means we're faced with two common problems. In situations where the Forest Service lacks a public road easement across private lands, landowners now tend to gate the road, blocking off all public access, sometimes locking out the public from vast acreages. Conversely, private landowners who have made use of a road without easement across their neighbor's property, now find themselves blocked out and in need of a new road. The Forest Service then is often perceived as the easiest and first choice solution for new access, with the result being many more roads than necessary across public lands.

Figure 39. An example of a historic road that runs through a riparian area leading to private property. It's unlikely this access will be authorized by permit or easement in the future. Another way to the property would need to be found.

Over time, as we sought ways to manage the network of roads on the forest, we assigned numbers to almost all roads for the purpose of identification and classification. One consequence of doing this was to give all of these roads status as legal access in the eyes of mortgage lenders and title insurance companies. As a result, landowners have relied upon these roads as evidence of legal access; properties have been bought, sold, appraised, subdivided, mortgaged, and insured for legal access. This backdrop has left us with the following set of circumstances and expectations.

Maintenance Standards. The Forest Service does not have the responsibility to maintain roads for subdivision purposes, and lacks the resources to maintain most roads to the standard desired by most private landowners. Lacking their own ability to absorb maintenance costs, private landowners commonly demand road maintenance be at a higher standard than we can accomplish. Some are willing to pay for and perform maintenance duties under a road use permit.

Exclusive Use. Many landowners who perform their own maintenance expect to have exclusive access and control over the road. They want their own road, and do not want to share their access road with other landowners or the public. They often want to gate and sign the road at some distance from the edge of their private land, in order to discourage trespass, vandalism, and theft from their homes. Prohibiting public use also eliminates the additional maintenance caused by the road-going public.

Physical Location. Many roads originally established by homesteaders or the general public are located in places that cause harm to natural resources (figure 40). Often running through riparian areas, these roads are not appropriate for access, whether used by the public or private landowners.

Financial Implications. Landowners are finding that in order to continue crossing national forest lands, it will cost them significant sums of money to have private access, a privilege they may have enjoyed free for generations.

Figure 40. Gated private road. If this road has an easement, it would not show on the motor vehicle use map. In that situation, a gate is appropriate because the public is not allowed to drive on the road, but could engage in nonmotorized activities on the public land behind the gate. That would not change under any alternative.

The Santa Fe National Forest's Approach to Providing Access to Private Property Under Travel Management

The Forest Service can satisfy its obligation to allow access to private land in two ways: (1) designating a road for motorized use and publishing it on the motor vehicle use map, so it will be open to everyone; or (2) authorizing a road under easement or special use authorization to the appropriate party and not showing it on the motor vehicle use map. In practice, these two choices may conflict with the desires of private landowners, the historic manner in which private lands

have been accessed, or the need to protect natural resources. Both the rule and the regional guidance acknowledge the existence of numerous grey areas where we must evaluate the specific situation and apply discretion to our decisions. In the short term, the Santa Fe National Forest does not have the capacity to issue authorizations to all landowners who would want or require one if the road accessing their property is not designated for motorized use.

When examining requests for legal access to private property, forest staff must consider who, what, where, when, why, and how. For example:

- Who is applying? Who owns the land(s) being accessed by the road? Who will be maintaining the road?
- What is the motivation for the proposal? What type of access is being requested? What type of access do we believe is reasonable? What other uses can be expected over and across the road?
- Where is the access being requested? Does it cause unacceptable resource issues? Does the proposed location satisfy access for all landowners within a subdivided parcel?
- When does the proponent want the access? Will they need year-round access?
- Why is it necessary to cross NFS lands? Does the proponent have deeded access across adjoining private lands? Has the proponent exhausted all legal remedies if they're landlocked by an adjoining private landowner?
- How does the proponent intend to travel across the roadway? How will the person applying pay for the proposed improvements?

When considering whether to designate system or unauthorized roads to private land, we tried to err on the side of the landowner by including them in alternative 2M, the preferred alternative, when they met certain criteria. It's reasonable to assume that if the forest has historically recognized a road as a system road, then a private landowner would assume he's had legal access by way of this system road. So, if a road had one or more of these characteristics, we included it in alternative 2M: (1) the appearance of providing access to private lands; (2) whether the road is currently identified as a system road, regardless of whether it's open or closed for motorized use; or (3) if a road is currently unauthorized, a review was performed to see if there was any indication that at one time it had been a formally designated system road. Our research identified several "unauthorized" roads that had in fact been system roads in the past. On the other hand, a number of unauthorized roads were deliberately not placed in alternative 2M because they appeared to have been recently constructed without authorization, and there was no indication they had ever been formally part of the forest's system.

Roads to private property potentially causing damage to other natural resources, such as cultural or wildlife, were analyzed individually and included (or not) in the other alternatives, or won't be on the first motor vehicle use map because a mitigation is required.

Motorized Use Near Private Land

There are many private in-holdings within the Santa Fe National Forest. Tension exists between private property owners and recreationists using land near private properties. From the perspective of the private property owner there is a problem when the public trespasses,

intentionally or unintentionally, onto private land. From the perspective of the recreationist, they have the right to use National Forest System lands immediately adjacent to the private property.

Most private property is accessed, at least in part, using forest roads. These roads have varying degrees of maintenance and rights of access. Often, the less traveled roads used primarily to access private land are gated at some distance from the actual private boundary. Some of these gates are authorized while many are not. Frequently, these gates are signed “No Trespassing” and “Private Property,” leading the general public to infer that the roads themselves and all lands beyond the road are private. While this perception is incorrect, it is nevertheless prevalent.

Conversely, other roads that access private lands are heavily traveled and, therefore, receive regular public trespass. In some instances, it can be difficult to determine where private property boundaries start and public land stops. In others, the public trespass is common regardless of boundary marking. These circumstances can prove frustrating to private landowners, who often resort to fencing, signs, and confronting trespassers along their boundary.

Lands – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Alternative 1 is the most likely to provide the access needed to private land because it does not change where people can drive now. Because we lack the extensive title, subdivision, and ownership data for the hundreds of blocks of private land in and adjacent to the forest, we don’t know who qualifies for ANILCA access rights. As a result, we don’t know how many separate access authorizations might ultimately be necessary to address access needs to private lands and, therefore, keeping the system “as is” allows people to continue to get to their land in an unaffected way.

There would be no changes made to the current system of motorized roads, trails, or areas in alternative 1. Therefore, the potential for trespass would remain the same. The current road system is extensive and provides many opportunities for recreation near and even on private property. Visitors are allowed to use all National Forest System lands, including lands adjacent to the private property boundaries. Private property boundaries, however, are frequently not clearly marked or are inaccurately portrayed on the ground. This can have the consequence of increasing the amount of acreage a private landowner effectively controls, thereby limiting recreation for the general public.

Direct and Indirect Effects, Alternatives 2 Through 5

Access

Alternatives 2 through 5 attempt to maintain adequate access across National Forest System lands to private property. But each of these alternatives fails to maintain access to certain parcels—some known, some likely unknown.

Because motorized use of routes and areas by the general public will be restricted to those shown on the motor vehicle use map, the map is likely to be inappropriately used as title evidence demonstrating a landowner’s legal access to their private lands across National Forest System lands. People have done the same with the forest visitor map, only to find out that the access did not exist or was not in the correct location. People should continue to consult with the forest’s lands staff on matters of legal access.

Some landowners are likely to discover that roads they thought were private are on the motor vehicle use map and open for the public to drive on. The road would remain open to the public unless the landowner obtained an easement, which is a costly and time-consuming process. Those roads not needed for public motorized use and for which the landowner prefers (and is willing to pay for) an easement will eventually be granted an easement. Some landowners will not enjoy the same access that once existed because we have removed a duplicate route, or their land does not fall under the scope of our legal obligation to provide access (figure 41).

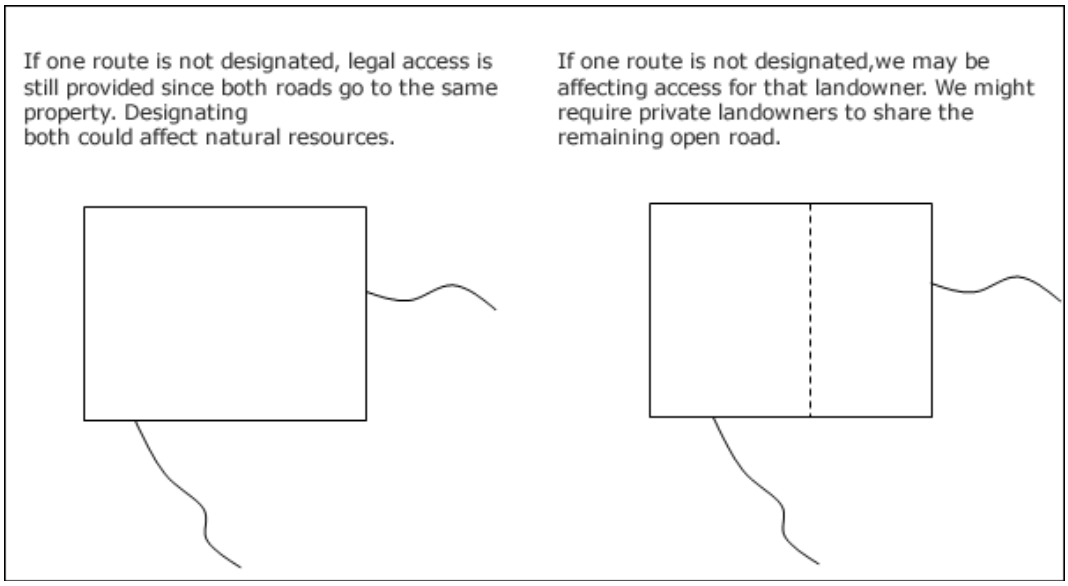

Figure 41. The rectangle represents privately owned land. According to the forest plan, both these situations should only have one road leading to them. In practice, the Santa Fe National Forest has allowed situations like that on the right.

Publishing the motor vehicle use map is expected to generate a number of issues about access all at once. In the past, market forces caused the issues to surface over time. Our capacity to address lands issues is limited, so some people would have an unwanted form of access for an unknown amount of time into the future.

From an access standpoint, alternatives 2, 2M, 4, and 5 all have similar consequences. Because alternative 3 favors resource protection over property rights on certain specific roads, there will be greater interference with access to private lands, if this alternative is chosen.

A few parcels of land, such as those around Bearhead Peak on the Jemez Ranger District or the one near Nambe adjacent to the Pecos Wilderness, are located in inventoried roadless areas. For this reason, alternative 3 does not propose motorized access to these and other parcels in sensitive places, like riparian areas. This is likely to create problems and expense for the landowners should they wish to sell their property.

Alternative 4, on the other hand, does propose motorized access to some of these parcels. As a result, people who are used to hiking to Bearhead Peak could expect to see vehicles, and it would cause motorized use in inventoried roadless areas. We expect that many hikers would consider

this a loss of a hiking trail. Some roads provide historical access to landowners, but are situated in a way that causes damage to natural resources (figure 42). Alternative 4 proposes some of these for motorized use.

Figure 42. Road leading to private property that is causing damage to the stream and riparian area

All of the alternatives take away some discretionary or duplicate roads. By not designating some roads that exist now, we may have inadvertently removed legal access to some property (figure 41). If this is the case, we would correct the motor vehicle use map to provide the needed access.

Use Near Private Land

The number of routes to private property has been reduced in alternatives 2 through 5, which would reduce the potential for trespass. Most of these routes, however, will now appear on the motor vehicle use map whereas they may not have appeared on any other publication. Publishing the location of a route on the motor vehicle use map could cause more people to drive on it and, thus, trespass. Alternatively, if the route ends on private property many people would not drive up it. In the current condition, people might follow a route to private property just to explore.

Designating routes to private land as “open to highway legal vehicles only” would reduce the possibility of trespass by ATVs since they would not be allowed on that route. It would also eliminate the ability of private property owners to use ATVs as ingress and egress across Forest Service land to their property.

Alternative 4 proposes the largest number of routes open to motorized vehicles, which increases the opportunity for trespass more than the other action alternatives. In addition, this alternative designates motorized access to a few private parcels currently accessed only by hiking trail, for example Bearhead Peak on Jemez Ranger District. As a result, these properties would be easier to

access than in the other action alternatives, increasing the chance of trespass from the existing condition.

Showing designated routes to private land on the motor vehicle use map could increase motorized travel on those routes. Intentional and unintentional trespass by recreationists onto private property near national forest lands is recognized as a relatively common occurrence. Logically, parcels of private property near National Forest System lands that receive heavy recreational use are likely to see greater numbers of trespassers, simply by virtue of their close proximity to large populations of people. However, remote, unfenced private lands are not immune. Trespass can be limited by gating roads that access private property. Since many people perceive that trespass beyond any gate is prohibited, public access to Forest Service land beyond the gate becomes restricted. The Forest Service does not monitor the rate of trespass onto private property, but it knows through discussions between landowners and law enforcement officers that the situation occurs.

Cumulative Effects, All Alternatives

Because issues of access to private land occur over specific roads, they are unique. No additional actions contribute to access issues that are outside the scope of the original issue, so no cumulative effects exist for any of the alternatives.

Effects of Forest Plan Amendments to Lands

Proposed Amendments in Table 66 of Appendix 1

There are two lands related amendments proposed which would affect access to private lands, and the administration of new special use authorization applications. In both instances, the proposed language refines previous direction by providing more clarity. The amendments also remove language tied to definitive limitations on how we provide access, and the timeframe in which we're to respond to applications as a forest. The new language reflects a historical reality in how we've issued authorizations that if not modified, would leave us perennially unable to meet plan direction. The new language also simplifies administration of new special use authorization applications by stating that we'll follow existing policy and regulation, enabling the forest to maintain consistent forest plan direction, regardless of future changes to policy and regulation. Both proposed changes are advantageous to future management of the realty program.

The proposed amendments that would restrict off-highway vehicle travel in management areas that are currently open to it are likely to result in no effect to the lands program because adding fixed-distance corridors doesn't alter access to private land.

Proposed amendments that authorize designation of additional areas and corridors for motorized travel in Management Areas C, D, I, J, K, M, and N are also not expected to have effects to future management of the lands program because they do not alter private property access.

Proposed Amendments in Table 67 of Appendix 1

These amendments are alternative specific, principally applying to alternatives 4 and 5, and propose to allow the inclusion of motorized dispersed camping corridors and motorized big game retrieval in the wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently prohibited. With the exception of an

amendment for Management Area L in alternatives 2, 2M, and 4, these amendments are not expected to have effects on future management of the lands program because access to private property is protected and regulated by other legislation, such as the Alaska National Interest Lands Conservation (ANILCA). The amendment for Management Area L simply recognizes the existence of this legislation.

The effects of amendments to allow for motorized use on specifically identified routes (in Management Areas H and L for varying alternatives) would be identical to the direct, indirect, and cumulative effects presented in this report because they relate to a specific road as proposed and analyzed for each of the specific alternatives.

Soil and Water – Affected Environment

This section summarizes the soil and water resources specialist report in the project record (USDA Forest Service 2012a). Two of the significant issues raised by the public relate to soil and water:

1. *"Continued motorized use of routes and areas by the public will cause erosion and soil compaction and degrade water quality and watershed condition."*

2. *"Designating motorized dispersed camping corridors will increase cross-country travel and the resource damage associated with it."*

An important part of the Forest Service's mission is to protect soil and water quality. Congress established our national forests in part to protect the watersheds that provide much of the country's drinking water. Intact soils sustain the plant growth that provides forage, fiber, wildlife habitat, and watershed protection. Healthy, functioning watersheds provide a reliable water supply, protect water quality, and prevent or reduce downstream floods.

To compare the effects of the alternatives, we based our measurements on the sixth-field watershed level. The sixth-field level allows the analyst to understand the predicted effects at a more local level. Watersheds form the basic unit of the hydrologic system. They naturally divide the landscape into units, draining rainfall and snowmelt into a common stream, stream network, or body of water. Environmental changes commonly accumulate and appear in watersheds. The U.S. Geological Survey developed the system for describing watersheds by different scales, dividing them into progressively smaller, nested watersheds. The first level is the largest. For example, the lower 48 states contain 18 first-field watersheds. The Santa Fe National Forest has jurisdiction in all or parts of 123 sixth-field watersheds that contain at least 1 square mile of National Forest System lands (USDA Forest Service 2012a). An additional 17 sixth-field watersheds were removed from discussion because they had less than 1 square mile of SFNF ownership. Due to the scale of this project, it was impractical to describe effects on so few acres.

Background

How Routes Affect Soil and Water

Bare or eroding soil causes a number of problems. Plants and trees can't take root in moving soil, so the soil is not productive. Without plant cover or litter, rainwater and snowmelt has nothing to

slow it down, increasing the chances of flooding and sedimentation (figure 43) (MacDonald and Coe 2008).

When it rains or when snow melts, grass and plants catch and filter water so that it seeps into the soil. This replenishes groundwater, checks flooding, and prevents sedimentation, the process where soil is carried by water into streams.

Figure 43. Without plant cover to stop it, rain or snowmelt carries soil down this eroded hillside directly into the stream

Roads and trails increase sedimentation beyond natural conditions (Satterland and Adams 1992). In forested watersheds, roads and trails disrupt a watershed's natural hydrology by presenting ribbons of bare soil that parallel or cross streams (Furniss et al. 2000). If they are unpaved, rain and snow causes them to erode. Paved or unpaved, they concentrate and accelerate runoff until it leaves the route (figure 44). By channeling and accelerating water, routes can increase the amount of water naturally carried by streams, especially during spring snowmelt and thunderstorms (King and Tennyson 1984). With more water than usual, streams widen or deepen, which decreases bank stability, increases sediment, and increases the water's temperature (MacDonald and Stednick 2003).

In compliance with the Clean Water Act, the New Mexico Environment Department lists streams as "impaired" when they exceed certain parameters, such as temperature, sediment, and turbidity. Routes and vehicle use contribute to these three impairments, though other forest activities can, too.

Not all sediment from routes immediately enters perennial streams. Often ephemeral and intermittent channels will capture and temporarily store sediment until a big storm. Then, sediment is flushed and routed to perennial streams lower in the watershed (Bilby et al. 1989).

Where and how routes are constructed and maintained makes a difference. Roads or trails constructed next to streams usually take away riparian habitat and alter ground water storage, which reduces the size and function of these places. Routes on steep or unstable slopes can lead to landslides that put a great deal of sediment into streams at once. Even maintaining roads can increase erosion in the short term by breaking up the armor that develops over time. Routes built on flat ground or having proper drainage features may cause little or no erosion and sedimentation.

The point where routes cross streams causes the most sedimentation because no vegetation exists to filter it (Swift 1985). Because crossings occur over or through water, they deliver sediment directly into streams (figure 45). At low water crossings, wheels going through streams kick up

sediment, but this effect tends to be fleeting. The larger effect is from the road approach to the low water crossing (Taylor et al. 1999).

Figure 44. An example of how roads alter the patterns of runoff in a watershed. Water normally flows down a hill in a sheet. Here, the bar ditch adjacent to the road intercepts the water, concentrating it in one fast channel, which is downcutting and carrying sediment. From an engineering perspective, the bar ditch is doing its job: keeping water off the road.

Figure 45. Route crossing where soil is carried directly into a stream because there is a lack of vegetation to help stop it

In summary, the existence of fewer roads, trails, and stream crossings in a watershed tends to result in better watershed condition.

How Driving Off Routes in Areas and Corridors Affects Soil and Water

Driving off routes across fresh ground causes soil to compact. This lowers the tracks relative to the adjacent ground. The lower surface then intercepts and drains water, channeling it and causing erosion and pooling in low sections (Meyer 2002). Drivers tend to avoid muck holes by driving around them, which widens the route and causes more of the same type of resource damage (figure 46). The compacted soil and loss of plant cover caused by driving off roads and trails leaves the soil vulnerable to erosion. Erosion, in turn, produces sediment that degrades water quality when it enters streams.

Figure 46. Photo illustrating the concept of braiding. When the main road is muddy, people drive to the left, widening the road.

Riparian vegetation is critical for keeping streams healthy by filtering sediment and contaminants, stabilizing banks, reducing water temperature, moderating floods, supplying food for stream organisms, and contributing large woody debris for fish habitat (Obedzinski et al. 2001).

People like to camp close to water. In the Santa Fe National Forest, they often drive their vehicles close to the water's edge to set up camp (figure 47). The effects on riparian soils from vehicles includes compaction, destruction of soil organisms, increased erosion, and the physical alteration of riparian and aquatic habitats (Johnson and Carothers 1982). Motorized use degrades riparian areas by decreasing the ability of ground cover and canopy vegetation to grow (Johnson and Carothers 1982). This loss of riparian vegetation at campsites near water can increase stream temperature and sedimentation, both factors that can cause a stream to be listed as impaired. Recovery of vegetation on campsites close to water is generally slow due to the continual traffic during the growing season.

In summary, less motorized cross-country travel and less motorized use in riparian areas tends to result in better watershed condition.

Affected Environment

Aquatic ecosystems, impaired streams, and soils are the factors that determine the relative health of soil and water resources.

Figure 47. Area where repeated camping and parking next to the stream has caused most of the riparian plants to die, resulting in bare ground and a muddy stream

Aquatic Ecosystems

Aquatic ecosystems are water-dependent systems centered around streams. Streams are classified as perennial, intermittent, or ephemeral:

Perennial stream – A stream that flows continuously or nearly so throughout the year.

Intermittent stream – A stream that flows, in its natural condition, only during certain times of the year or in intermittent years. Intermittent streams have areas with permanent surface water and aquatic flora and fauna adapted to these relatively harsh environmental conditions.

Ephemeral stream – A stream that flows only after precipitation in the immediate area.

The Santa Fe National Forest has approximately 5,570 miles of drainages. Of these, approximately 1,001 miles are perennial streams. The remaining 4,569 miles are composed of intermittent and ephemeral channels. Analyzing the effects of motorized use on ephemeral and intermittent channels is important because these headwater channels often temporarily retain sediment and then route it down to the mainstream perennial channels during high flow events.

Impaired Streams

Section 303(d) of the Clean Water Act (CWA) directs states to list streams with impaired water quality and develop strategies to control the nonpoint source pollutants causing their loss of beneficial uses. The analysis in this report uses the 2010–2012 State of New Mexico CWA §303d/§305(b) Integrated Report as its basis. The State lists approximately 347 miles of impaired streams in the forest boundary. As directed by the Clean Water Act, it is the forest's responsibility to not further degrade impaired streams.

Of the 1,001 miles of perennial streams in the forest, 262 miles (26 percent) are listed as impaired for temperature, turbidity, sediment, or a combination of these impairments with others. Because temperature, turbidity, and sediment are impairments that could be caused by motorized use, we only analyze these 262 miles. In addition to the existence of routes and motorized use, other forest activities can also contribute to these three impairments.

Soils

The "Terrestrial Ecosystem Survey of the Santa Fe National Forest" (TES) maps and describes the forest's soils (USDA Forest Service 1993). It assigns "soil condition limitation ratings," such

as erosion hazard, to each soil type. The rating shows land managers the kinds of uses that could cause detrimental soil loss from that use.

Methodology and Measures

The changes proposed in each action alternative have the potential to influence the quality of aquatic ecosystems, impaired streams, and soils. The changes proposed reduce the places where people can drive roads, trails, areas, and fixed-distance corridors. The measures listed in this section serve as a proxy to show the magnitude of the effects from the changes. We calculated measures using GIS for the 123 sixth-field watersheds that the forest has at least 1 square mile of ownership in. The numbers derived for each measure are not considered absolute or conclusive; rather, they are viewed as relative and a means for comparing the effects of the alternatives by sixth-field watershed.

Table 41 shows the measures used for each change proposed and the reason why. In the discussion that follows, the effects as measured for all 123 sixth-field watersheds are summarized. The tables containing the measures by individual watershed are found in the soil and water resources final report (USDA Forest Service 2012a).

Soil and Water – Environmental Consequences

Summary of Direct and Indirect Effects by Alternative

Of the five alternatives, alternative 2 is the most likely to sustain current soil and water quality conditions. The effects from constructed routes would stay the same, motorized cross-country use would be eliminated in all but two watersheds, and there would be little change to the acres available for motorized dispersed camping.

Alternative 3 is the most likely of the five alternatives to improve soil and water quality conditions. The current effects from constructed routes would stay the same, but motorized cross-country use and motorized access to dispersed camping would be eliminated.

Alternative 2M is the most likely to sustain current soil and water quality conditions, with the potential to improve over time. The current effects from constructed routes would stay the same, motorized cross-country use would be eliminated in all but one watershed, and there would be approximately a third fewer acres available near riparian areas for motorized dispersed camping.

Alternative 4 is the most likely of the five alternatives to decrease soil and water quality conditions. The current effects from constructed routes would stay the same and motorized cross-country use would be eliminated in all but three watersheds. However, there would be over twice as many acres available for motorized dispersed camping.

Alternative 5 is also likely to sustain current soil and water quality conditions, with the potential to improve over time. The current effects from constructed routes would stay the same, motorized cross-country use would be eliminated in all but one watershed, and there would be approximately a third fewer acres available for motorized dispersed camping.

Table 41. Measures used as proxies for showing the effects of the proposed changes

Proposed Change Common to All Alternatives	Measures Used	Reason
Reduce the miles of roads and trails open for driving	Total miles of roads and trails	Routes alter the hydrology of watersheds by collecting and channeling runoff from storms.
	Miles of routes within 300 feet of perennial and intermittent or ephemeral streams	Scientific literature suggests roads and trails close to streams are often primary sediment contributors (MacDonald and Stednick 2003). Routes constructed near streams pose a risk to water quality by increasing the amount of runoff, eroded material, and other pollutants transported to the stream. Being close to a stream means that there is less buffering between the route and the stream. Studies show that road related sediment can move as far as 300 feet via overland flow (Burroughs and King 1989, Belt, O'Laughlin and Merrill 1992).
	Miles of routes within 300 feet of impaired streams	Same as above. All listed impaired streams are perennial.
	Number of places where routes cross perennial and intermittent or ephemeral streams	Crossings efficiently deliver sediment directly into streams. Swift (1985) states, "The stream crossing is the most critical section of the road influencing water quality."
	Open route density by watershed, expressed as miles per square mile	Open route density is the miles of roads and trails within a given area. Open route density signals the relative amount of runoff, erosion, modified hydrology, and water quality impacts. High route densities, for example, compound the effects of heavy rainfall by rerouting it and increasing the amount of sediment and pollutants deposited in streams (Gucinski et al. 2001, Trombulak and Frissell 2000, Furniss et al. 2000). Only routes on and land owned by the Santa Fe National Forest were used for the calculations.
Reduce the area open for motorized cross-country use	Acres of areas	Driving off road creates routes and compacts soil, which subsequently alters a watershed's hydrology.
	Acres of motorized cross-country use on soils having a "wheeled off-road vehicle limitation" rating of severe (USDA Forest Service 1993)	A rating of severe means that the risk of losing soil productivity from off-road vehicle use is high, and that any such use will result in significant site degradation. (USDA Forest Service 1993)
	Acres of motorized cross-country use within 300 feet of perennial and intermittent or ephemeral streams	Scientific literature suggests roads and trails close to streams are often primary sediment contributors (MacDonald and Stednick 2003). Sediment is one of the causes of stream impairment.
	Acres of motorized cross-country use within 300 feet of impaired streams	Same as above. All listed impaired streams are perennial.

Table 41. Measures used as proxies for showing the effects of the proposed changes

Proposed Change Common to All Alternatives	Measures Used	Reason
Designate fixed-distance corridors for access to motorized dispersed camping	Acres of motorized dispersed camping corridors	Driving off road creates routes and compacts soil, which subsequently alters a watershed's hydrology.
	Acres of fixed-distance corridors for motorized access to dispersed camping on soils having an "erosion hazard" rating of moderate or severe (USDA Forest Service 1993)	Erosion hazard is the probability of soil loss when vegetation and litter is completely absent. A moderate rating means that a site's productivity will decrease as a result of unchecked soil loss. A severe rating means that soil loss is likely to lower site productivity faster than mitigating measures can be applied (USDA FS 1993). Without measures to prevent it, topsoil loss will be faster than soil-forming processes can replace it.
	Acres of fixed-distance corridors for motorized access to dispersed camping within 300 feet of perennial and intermittent or ephemeral streams	Motorized dispersed camping corridors near streams are likely to be a primary sediment contributor for the same reason that routes are.
	Acres of fixed-distance corridors for motorized access to dispersed camping within 300 feet of impaired streams	Same as above. All listed impaired streams are perennial.
	Acres of fixed-distance corridors for motorized access to dispersed camping within 100 feet of perennial streams	This indicator serves as a proxy for the acres of motorized dispersed camping corridors within riparian habitat. Forest Service Manual Section 2526.03, Riparian Management Policy, defines the riparian area as being at least 100 feet from the edges of streams, lakes, and other bodies of water. Riparian vegetation filters sediment and provides shade to streams. Removal of this vegetation due to motorized dispersed camping activities reduces the capability of the riparian habitat to function and, thus, jeopardizes water quality.

Direct and Indirect Effects Common to All Alternatives

This section describes the effects to aquatic ecosystems, impaired streams, and soils from changing the motorized use on routes, areas, and in fixed-distance corridors.

Forest System Routes

Removing traffic from National Forest System roads and trails is not expected to change aquatic ecosystems, impaired streams, or soils from the existing condition within the 15 years this project analyzes. Table 42 predicts, at the forest level, no change in the existence of the footprints of roads and trails during that time. This means that the effects from the footprints of existing National Forest System roads and trails are the same for alternatives 2 through 5 as for alternative 1 for the next 15 years. The only difference is that alternatives 2 through 5, by removing traffic from about half the National Forest System routes, allow for the possibility of natural revegetation or future route decommissioning. Table 42 shows the changes in the measures related to forest system routes.

It is unknown how well routes closed to public motorized use recover on their own without active restoration, how many routes' current condition worsens from lack of maintenance, and what level of use occurs on the remaining open routes. Thus, for the purposes of this analysis, the condition of the designated and nondesignated routes on the landscape is assumed to stay equal to the current condition.

Table 42. Changes in the measures for forest system routes

Measure	Where People Drive Now	Action Alternative				
	1	2	2M	3	4	5
Routes within 300 feet of all streams, miles	1,766	819	785	624	951	827
Percent change from alternative 1		**-54%**	**-56%**	**-65%**	**-46%**	**-53%**
Routes within 300 feet of a perennial impaired stream, miles	64	35	31	32	38	37
Percent change from alternative 1		**-45%**	**-52%**	**-49%**	**-41%**	**-43%**
Number of stream crossings	7,254	3,026	2,912	2,215	3,567	3,101
Percent change from alternative 1		**-58%**	**-60%**	**-69%**	**-51%**	**-57%**
Open route density, miles per square mile	2	1.0	0.9	0.7	1.1	1.0
Percent change from alternative 1		**-50%**	**-55%**	**-65%**	**-45%**	**-50%**

The presence of roads and trails alters the natural hydrological patterns of a watershed. Even without motorized use, the impacts from roads and trails persist until the route is "disconnected" from the water source (Leung and Marion 1996). For the effects of roads and trails to entirely

disappear, the routes would have to be restored to their natural slope (not have a “bench” that serves to intercept and transport water) and be fully re-vegetated, having little or no bare ground. When some vegetation grows on routes, there is a corresponding improvement, but some effects to soil, water, and natural hydrological processes will continue until the route is returned completely to its original, natural state (figure 48).

Figure 48. Example of a National Forest System road on the Coyote Ranger District that has partially recovered, though bare ground is still present. Having some vegetation, however, is an improvement over having none.

The footprint of engineered roads—those that the Forest Service intentionally builds or maintains, including its main roads and skid trails—last for a long time, and so do their effects to soil and water. (We discuss unauthorized routes in the section on “Areas,” below.) The reason for this is that route construction and maintenance compacts soil and removes organic material (replacing it instead with things like base course or gravel) so that they are drivable. Highly compacted soils without organic material are not conducive to plant growth (Elseroad et al. 2003).

Removing traffic from engineered routes allows for the possibility of reclamation, either by natural revegetation or physical decommissioning. Whether plants will colonize an abandoned, engineered route depends on each route’s condition, soil type, and location. We expect the time it would take for plants to naturally revegetate on an engineered route would be longer than the 15 years this analysis considers, and could be much longer (figure 49). This is because the tread is subject to the continuing erosional forces of rain, running water, wind, freezing and thawing, and gravity that keeps plants from establishing (Leung and Marion 1996). The soil compaction can persist for years before natural, soil loosening processes can restore the soil’s texture to a point where it supports vegetation.

Figure 49. A National Forest System road that has been closed to use, but continues to erode. There is an erosion channel starting above the horse's right ear and leading to the top of the photo.

Routes closed to traffic won't be maintained (assumption 14), and this means that some roads and trails with problems could continue to erode and deposit sediment into streams (figure 50).

Figure 50. A system trail that is incised, forming a channel through which water flows. As the water flows, it pulls more soil down with it. Even without motorized use, this system trail is not likely to revegetate on its own within 15 years.

As stated in the “Recreation” section, most of the system routes proposed for closure in the action alternatives are for high-clearance vehicles, and are used infrequently now. Even with infrequent use, most still appear on the landscape, illustrating the principle that it takes a long time for engineered routes to naturally recover.

Some routes, in order to completely return to natural, would require the Forest Service to decommission them (figure 51). Closing them to motorized use is the first step, and it is likely that the forest would decommission some routes within the next 15 years. Sometimes, though, even physical decommissioning does not return a route back to a completely natural state.

Figure 51. Example of a route that the Forest Service physically decommissioned

Unauthorized Routes

As is the case with the National Forest System routes, none of the action alternatives (2, 2M, 3, 4, or 5) would immediately affect the footprint of the unauthorized routes on the landscape. The processes and impacts just described also apply to the unauthorized routes. This means that the effects would continue much the same until route surface conditions change or physical restoration activities occur. Table 43 displays the measures related to the unauthorized routes proposed for addition to the forest transportation system.

Stream Crossings

Removing traffic from stream crossings on National Forest System roads and trails is not expected to change aquatic ecosystems, impaired streams, or soil from the existing condition within the 15 years this project analyzes because it is the physical presence of the stream crossing that causes the biggest effect to soil and water quality (Taylor et al. 1999). Low water stream crossings are not likely to heal themselves because it is difficult for streambanks to rebuild themselves at crossings. Because this project would not remove or repair any bridges, culverts, or

low water crossings, the number would not change between alternatives and, therefore, effects wouldn't either. The table shows the changes in stream crossings that would be open to motorized use.

Table 43. Changes related to soil and water by adding unauthorized routes to the forest transportation system

Measure	Where People Drive Now	Action Alternative				
	1	2	2M	3	4	5
Routes within 300 feet of all streams, miles	157	40	37	15	59	46
Percent change from alternative 1		**-74%**	**-76%**	**-91%**	**-63%**	**-71%**
Routes within 300 feet of a perennial impaired stream, miles	11	3.9	3.5	2.4	4.5	4.2
Percent change from alternative 1		**-65%**	**-68%**	**-78%**	**-59%**	**-61%**
Number of stream crossings	694	164	175	60	248	199
Percent change from alternative 1		**-76%**	**-75%**	**-91%**	**-64%**	**-71%**

Direct and Indirect Effects by Alternative

Motorized Big Game Retrieval

Alternative 1

At the forestwide scale, the impacts to aquatic ecosystems, impaired streams, and soil from retrieving 438 big game animals with a vehicle on an annual basis are likely to be negligible. Taking up to four trips is not likely to compact soil to the point that permanent tracks remain, and hunters take animals in different places every year. Without repeated use, permanent tracks are not likely to form. Alternative 1, however, without a restriction of driving off roads, is the most likely to result in new permanent tracks because people tend to explore by driving on tracks others have made.

Alternatives 2, 4, and 5

Effects to aquatic ecosystems, impaired streams, and soils from motorized big game retrieval across the forest are expected to result in minimal impact at the sixth-field watershed scale. The alternatives could have impacts in specific locations if people drive on sensitive soils, through wet meadows or riparian areas, or ford streams to retrieve game.

Alternative 2M

Effects to aquatic ecosystems, impaired streams, and soils from motorized big game retrieval across the forest are expected to result in very minimal impact at the sixth-field watershed scale. This alternative prevents motorized access in the designated corridors within 100 feet of water, so fording streams or driving in wet meadows or riparian areas would be prohibited. This means that even localized impacts would be less than alternatives 1, 2, 4, and 5.

Alternative 3

There is no motorized big game retrieval proposed for alternative 3, which means the impacts associated with motorized cross-country travel on aquatic ecosystems, impaired streams, and soils would be eliminated.

Areas

Table 44 shows that, for the action alternatives, the motorized cross-country use proposed is likely to remove most impacts relative to soil and water resources. This means their condition would stay the same or improve.

Table 44. Measures for motorized cross-country travel as they relate to soil and water resources

Measure	Where People Drive Now	Action Alternative				
	1	2	2M	3	4	5
Acres of motorized cross-country use on soils with a wheeled off-road vehicle limitation rating of "severe"	220,848	13	13	0	14	13
Percent change from alt. 1		**-100%**	**-100%**	**-100%**	**-100%**	**-100%**
Acres of motorized cross-country use within 300 feet of all streams	99,014	5.1	5.7	0.0	6.1	5.1
Percent change from alt. 1		**-100%**	**-100%**	**-100%**	**-100%**	**-100%**
Acres of motorized cross-country use within 300 feet of impaired streams (perennial)	2,563	0	0	0	0	0
Percent change from alt. 1		**-100%**	**-100%**	**-100%**	**-100%**	**-100%**

Alternative 1

Alternative 1 is the most likely to degrade aquatic ecosystems, impaired streams, and soils because it would allow people to drive off routes on 53 percent of the forest. Currently, motorized cross-country use occurs in 113 of the 123 watersheds analyzed in this report. Approximately 50 percent of this use is on soils rated as "severe" for the category "Wheeled Off-Road Vehicle limitation." This means that these soils have likely been impaired by cross-country use. Ouren (2007) states that, "The generally impervious nature of soils compacted by OHV traffic enhances gully formation, thus promoting additional flows of sediments and suspended solids into aquatic systems, effectively extending the drainage network of a given watershed." Just over 20 percent of the current motorized cross-country use takes place within 300 feet of streams. One positive, however, is that less that 1 percent of it takes place within 300 feet of streams impaired for temperature, turbidity, or sediment.

Alternative 2, 2M, 3, 4, and 5

All of the alternatives considered in this analysis reduce motorized cross-country use to almost nothing. This means that effects to aquatic ecosystems, impaired streams, or soils would stay the same or improve, but not get worse.

Alternative 3 eliminates it completely, while the other four alternatives isolate it to a few very small motorized use areas. All of the measures related to motorized cross-country use show drastic reductions. For instance, the number of acres located on soils having a "Wheeled Off-Road Vehicle limitation" rating of "severe" is reduced to less than 15 acres across all of the alternatives. The acres within 300 feet of streams impaired for temperature, turbidity, or sediment is reduced to zero for all alternatives.

The effects associated with past use—such as the two tracks that exist on the landscape now—are likely to continue for some time into the future. Removing motorized use in areas would allow the possibility of natural revegetation, but the subsidence associated with compaction may remain. Because the routes created by cross-country use are not engineered, however, they are more apt to naturally revegetate in a shorter period than constructed routes (figure 52). Some routes may begin revegetating within the 15 years considered in this analysis, but it isn't likely they would completely recover in that time. Again, having some vegetation grow on the routes would incrementally reduce the erosion and sediment that degrade soil and water quality.

Figure 52. Area that used to be a two-track route to a livestock watering tank (the horse in the picture is standing at the livestock tank). It probably existed in 1987 when the forest plan was adopted, but it has since grown over.

Motorized Dispersed Camping

Table 45 shows the measures for motorized access to dispersed camping as they relate to soil and water resources.

Alternative 1

The effects to aquatic ecosystems, impaired streams, and soils from motorized dispersed camping under alternative 1 is likely to remain the same or become worse over time because it keeps the existing opportunities in place and does not limit future expansion into new places unless closure orders are issued.

The majority of the watersheds where motorized access to dispersed camping currently occurs have much of this use on soils with an erosion hazard rating of "moderate" or "high," and it occurs mainly within 300 feet of streams. This means that where motorized dispersed camping is happening now, there is a high probability of soil loss due to the removal of vegetation and litter, and a high probability that these areas deliver sediment directly to streams (table 45, figure 53). The proximity of campsites and bare ground to water means that sediment doesn't have far to travel before entering streams.

Table 45. Changes in measures for motorized access to dispersed camping as they relate to soil and water resources

Measure	Where People Drive Now	Action Alternative				
	1	2	2M	3	4	5
Acres of motorized dispersed camping corridors on soils with an erosion hazard rating of moderate or severe	16,559	15,843	13,609	0	32,144	11,091
Percent change from alt. 1		**-4%**	**-18%**	**-100%**	**94%**	**-33%**
Acres of motorized dispersed camping corridors within 300 feet of all streams	6,006	5,350	4,241*	0	10,723	3,711
Percent change from alt. 1		**-11%**	**-29%**	**-100%**	**79%**	**-38%**
Acres of motorized dispersed camping corridors within 300 feet of impaired streams (perennial)	354	262	195*	0	510	256
Percent change from alt. 1		**-26%**	**-45%**	**-100%**	**44%**	**-28%**
Acres of motorized dispersed camping corridors within 100 feet of riparian habitat	628	454	0	0	884	378
Percent change from alt. 1		**-28%**	**-100%**	**-100%**	**41%**	**-40%**

*These values do not take into account the 100-foot setback from perennial water.

The majority of the watersheds have very few acres within 300 feet of an impaired stream.

The majority of the watersheds have less than 15 percent of the existing motorized dispersed camping acres within 100 feet of riparian habitat. Some watersheds, however, have considerably higher acreages of dispersed camping corridors in riparian habitat. This is an important indicator because riparian vegetation filters sediment and provides shade to streams. Removal of this vegetation due to motorized dispersed camping activities reduces the capability of the riparian habitat to function and, thus, jeopardizes water quality.

Figure 53. Example of where motorized dispersed camping has had detrimental effects on the riparian area. At this site along the Rio de las Vacas, motorized access to the dispersed campsite has compacted the soil and removed all vegetation. Motorized use goes all the way down to the streambank, and the riparian vegetation has been removed within the vicinity of the site.

Effects Common to All Action Alternatives

The intensity of the effects of people's activities on soil and water resources from camping under alternatives 2 through 5 would not change from alternative 1, the existing condition. None of the action alternatives prohibit or limit camping itself, only where vehicles are allowed. The effects of camping itself (aside from the vehicles), varies only by whether people would continue to camp in places that they could no longer drive to.

Because camping itself is not expected to vary greatly, the rest of the effects analysis focuses on where vehicles would be allowed. Overall, experience of forest staff shows that having vehicles next to water causes more degradation of soil and water quality than does people's activities while camping. For example, as part of the Respect the Rio Program, we built buck and pole fencing that allows people to camp next to water, but prevents them from driving close to the stream (figure 54). Without the presence of vehicles—but still having campers—riparian vegetation is returning (U.S. Environmental Protection Agency 2010).

Alternative 2

Alternative 2 results in a 5.5 percent reduction in total acres of motorized dispersed camping corridors from the current use. This by itself is not enough to improve water and soil resources currently impacted by motorized dispersed camping corridors. There is, however, an 11 percent reduction in acres available within 300 feet of all streams, a 26 percent reduction in acres available within 300 feet of streams impaired for temperature, turbidity, or sediment, and a 27 percent reduction in acres available in riparian habitat.

Figure 54. This photo illustrates how, in alternative 2M or 3, people would not be able to drive their vehicles into their campsite. No bare ground is evident in the campsite, and the riparian vegetation in the middle right part of the photo is present.

Alternative 2M

Of the alternatives that propose fixed-distance corridors for motorized dispersed camping, alternative 2M is the best for soil and water resources. It eliminates vehicles in close proximity to streams or on riparian vegetation by not allowing motorized use within 100 feet of perennial water in areas or fixed-distance corridors. This would result in a 100 percent improvement in motorized dispersed camping corridors within riparian habitat. In practice, there would still be some motorized dispersed camping within riparian habitat because people would be able to pull off any road within 30 feet to park. It is difficult to know how much use within riparian habitat this would result in. Nonetheless, the effects caused by parking would likely be much less than currently occurs in riparian habitat. For example, keeping vehicles off the Rio Cebolla resulted in a positive change in riparian vegetation (U.S. Environmental Protection Agency 2010). Alternative 2M reduces the total acres available to drive and camp by 19 percent, acres on soils with an erosion hazard rating of moderate or severe by 18 percent, acres within 300 feet of all streams by 29 percent, and acres within 300 feet of impaired streams by 45 percent.

Alternative 3

Alternative 3, because it proposes no driving off roads or trails for any reason, is the most likely to maintain or improve soil and water resources. The effects associated with past use, however, are likely to remain. Places currently compacted and devoid of vegetation would continue in that condition until, over time, natural processes or active restoration efforts took place. Removing motorized dispersed camping corridors in all watersheds would allow the timeframe to start on these natural processes.

We expect that alternative 3 would also have fewer camping activities (not just fewer vehicles) because it allows no driving off roads, and some people are, therefore, likely to forego a camping trip entirely.

Alternative 4

Alternative 4 is the most likely to degrade soil and water resources by what it proposes for motorized dispersed camping. It proposes to increase access to motorized dispersed camping from what happens now to accommodate future use, or to allow people to spread out. Most of the new acreage proposed would be on soils with an erosion hazard rating of moderate or severe. Also, many of these new acres are located within 300 feet of streams. A high potential for soil loss and proximity to streams means that there is a higher probability that some of these sites would deliver sediment to stream systems.

Another concern is that much of the increase is in riparian habitat. As previously stated, this is important because riparian vegetation filters sediment and provides shade to streams. Removal or degradation of this vegetation due to motorized dispersed camping activities reduces the capability of the riparian habitat to function, thus jeopardizing water quality.

Even though the number of motorized campers is expected to remain the same (assumption 19), it is expected that the increase in acreage in the motorized dispersed camping corridors would be used due to recreational displacement. Green (1998) states:

> "Deterioration of recreational sites has negative impacts on the recreation experience. As a site becomes increasingly damaged, recreationalists might be displaced. Recreation displacement is defined as a change in recreational behavior in response to changes in the recreational environment. Displacement of recreation to other less damaged areas might increase the real extent of damage."

Alternative 5

In alternative 5, many of the watersheds having a reduction of total acres for motorized dispersed camping corridors see a corresponding reduction in acres located on soils with an erosion hazard rated as moderate or high, and those within 300 feet of streams. This should reduce the amount of sediment delivered to streams. The total acreage of motorized dispersed camping corridors in riparian habitat would be reduced by 40 percent. These reductions would help improve conditions in riparian habitat which, in turn, would help improve water quality over time.

Cumulative Effects, All Alternatives

Summary

Although some programs and activities may have local, negative effects on soil and water resources, the cumulative effect of past, present, and reasonably foreseeable programs and activities, including the reduction of open, motorized roads and trails and motorized cross-country travel through designation under the Travel Management Rule, are generally beneficial. Forest staff will continue to target degraded locations for restoration.

Activities considered in this cumulative effects analysis include those directly and indirectly modifying soil and water resources.

Past and Present Actions (1987–2011)

Some activities have had little effect on soil and water resources. Examples of activities which, when carried out consistently with existing regulations and best management practices, produce negligible cumulative effects to soil and water resources include:

- Forest product collection
- Special uses and other administrative use
- Noxious weed management

Other activities, including wildfire, livestock grazing, recreation management, road management, and prescribed fire, have the potential to create cumulative effects.

- **Wildfire** - Wildfires tend to increase sediment delivery for 10 years or more. The size, location, and severity of the fire affects the land's rate of recovery. Severe burns consume duff and cause physical damage to the surface layers of soil. Rates of sediment delivery from past fires vary from gully cutting, to bedrock and debris flows, to virtually no erosion on low severity fires.

  Roads and trails may compound the effects of fire. Roads and trails concentrate upslope flow and deliver it to streams. On severely burned landscapes, water from high intensity storms concentrates on roads and trails and runs downslope. Soils made bare from a fire can erode greatly due to the concentrated water (figure 55).

Figure 55. The Las Conchas Fire burned intensely uphill of this road, removing all vegetation and litter. After a storm, the runoff collected debris and impacted this road.

Many burned areas from older fires have sufficiently healed to the point they are no longer affecting soil and water resources on a watershed scale. The more recent fires including Bear Paw, Tecolote, South Fork, Pacheco, and Las Conchas will continue to have negative impacts on soil and water resources for a considerable amount of time.

- **Livestock Grazing** - Cattle grazing has occurred in the forest for hundreds of years. The upland effects of livestock grazing are usually restricted to small areas around water developments, salt locations, and where cattle trail from one location to the next. The soils in these places tend to be compacted and bare, which renders them more susceptible to erosion. Grazing along streams and within riparian areas occurs in many of the forest's allotments (figure 56). This may affect water quality by increasing fine sediments delivered to streams, reducing shade along streambanks, and altering riparian habitat. These effects are not universal, but they are distributed throughout the analysis area.

Figure 56. An example of livestock grazing in riparian areas in the forest

Livestock grazing occurs along many of the impaired stream miles—those impaired for temperature, turbidity, or sediment—that are also affected by motorized use. Thus, reducing the component caused by motorized use should result in a cumulatively beneficial effect.

- **Recreation Management** - Multiple decisions, such as the Jemez National Recreation Act, establishment of three wild and scenic rivers in the forest, reconstruction of recreational facilities, and implementation of Respect the Rio, have decreased the impacts recreational use can have on soil and water resources. These management actions better direct recreational activities away from sensitive areas like riparian habitat.
- **Road Management** - Road management in the forest encompasses maintenance, closure, and decommissioning. Budgets for road maintenance have declined compared to the past. Lack of maintenance leads to rutting, loss of surfacing, erosion, and sedimentation.

Lack of maintenance affects closed roads as well. Closed roads aren't maintained, and simply closing a road to use doesn't necessarily eliminate hydrologic impacts. The disturbed road surface takes years to stabilize. Closed roads may continue to produce sediment until they are fully revegetated, which often takes a long time due to the forest's soils and climate.

Road decommissioning stabilizes and restores unneeded roads to a natural state. Because of imprecise tracking, it is difficult to know how many miles of forest system roads have been physically decommissioned in the past.

- **Prescribed Fire** - Thousands of acres in the forest have been treated with prescribed fire. Prescribed fire sometimes has detrimental impacts to soil when burn severities are too high. The majority of prescribed fires, however, are designed to minimize severe burning of soils, which minimizes the risk of impacts to water quality.

Reasonably foreseeable actions include reauthorizing livestock grazing permits, treating vegetation mechanically and with prescribed fire, improving and maintaining roads and trails, improving riparian and wildlife habitat, mining for oil and gas, pumice, and possibly geothermal. All will undergo NEPA analysis, where their effects on soil and water resources will be analyzed. If negative effects are expected, best management practices will be established to prevent or diminish the effects.

Effects of Forest Plan Amendments on Soil and Water

Proposed Amendments in Table 66 of Appendix 1

The proposed amendments that are administrative in nature are not expected to have effects to soil and water resources as a result of this or future projects. These proposed amendments, for the most part, simply update and provide consistent direction for application of the MVUM.

The proposed amendments that alter off-highway vehicle use within specific management areas have no effect because they keep direction for adding that use consistent with the intent as per the current plan and the travel management regulations. Management areas where cross-country travel has been allowed (Management Areas A, B, E, G, P, Q, R, and S) have no plan amendment changes that restrict the addition of this type of use through designation of areas or corridors in the future. Management areas where cross-country travel was limited (Management Areas C, D, I, J, K, M, and N) have plan amendment changes that continue to limit the addition of areas and corridors except when consistent with management emphasis for the area. Therefore, none of these amendments are expected to decrease soil productivity, increase erosion, or further contribute sediment to streams because the proposed changes continue motorized use that is consistent with the travel management regulations and management emphases for the areas.

The proposed amendment to the Jemez National Recreation Area (Management Area X) restricts the ability of motorized vehicles to pull off roads in JNRA - A areas (as per the travel area map, equal to 15,445 acres) to only where motorized dispersed camping or motorized big game retrieval corridors are specifically designated. This amendment will be a benefit to soil and water resources as it will likely limit the amount of future motorized use off of roads in parts of the JNRA. This limitation would decrease the amount of area that could experience soil compaction and erosion caused by off-road motorized vehicle use.

Proposed Amendments in Table 67 of Appendix 1

Most of the amendments in this table propose to allow the inclusion of motorized dispersed camping corridors and/or motorized big game retrieval corridors in the wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where these uses are currently prohibited. These amendments apply to alternatives 4 and 5 only. These amendments may have an impact on soil and water resources as this type of use can lead to further degradation of soil and water resources through erosion and sedimentation into streams and rivers. These specially designated areas currently prohibit or limit motorized use associated with areas, motorized dispersed camping, and/or motorized big game retrieval, whereas the proposed amendments allow for the potential expansion of these motorized uses through future designations. This may lead to direct and indirect effects to soil and water resources. Impacts from motorized use can include modifications to the soil's physical, chemical, and biological characteristics. Motorized use can also adversely affect water quality and alter riparian health and vigor.

The effects of amendments to allow for motorized use on specifically identified routes (in Management Areas H and L for varying alternatives) would be identical to the direct, indirect, and cumulative effects presented in this report because they relate to a specific road as proposed and analyzed for each of the specific alternatives.

Consistency with the Forest Plan and Legal Requirements

Appendix 3 contains a detailed analysis of each alternative's consistency with the "Santa Fe National Forest Plan" and other laws. In sum, alternative 4 is the least likely to move the soil and water resource toward a desired condition, and alternative 3 is the most likely to. Alternatives 2M and 5 are expected to maintain or improve current conditions. Alternative 2 would maintain current conditions.

Fisheries

Some people raised the issue that continued motorized use of the Santa Fe National Forest would impair habitat for fish. This section, which summarizes the fisheries specialist report (USDA Forest Service 2012-l), analyzes the effects to threatened, endangered, sensitive, management indicator, and native fish species.

Table 46. Fish in the Santa Fe National Forest having special management status

Species	Management Status
Rio Grande cutthroat trout	Management indicator and Regional Forester's sensitive species
Rio Grande silvery minnow	Endangered species
Rio Grande chub	Regional Forester's sensitive species
Rio Grande sucker	Regional Forester's sensitive species

Effects of Routes and Motorized Use on Fish Habitat

The issue related to routes, the use of vehicles, and fish habitat is sediment. Sediment is soil, usually carried by water that gets into streams. When excessive sediment gets into streams, it does a number of things that degrade fish habitat. Sediment changes the shape of the stream,

either widening it so it's shallow and warm, or causing it to become a fast, straight channel. Neither is suitable for fish to live in. Fine sediment covers up pebbles and rocks that fish lay their eggs in, reducing their chance of reproductive success. Sediment also hides food sources for fish, making it harder for them to survive and compete with other fish, especially nonnative species.

Here's how motorized use directly and indirectly increases the chance for sediment to reach streams:

A route's footprint. Much research exists showing that roads and trails increase erosion and sediment delivery to streams (Gucinski et al. 2001). Driving on unpaved routes disturbs soils and increases the potential for erosion and sediment delivery to streams (Furniss et al. 1991). Roads and trails act like funnels that deliver sediment to streams. When it rains (or during snowmelt), water flows across a slope until it reaches a road or trail. Once it's on the route, water follows the route downhill, collecting sediment as it goes. In the forest, many dirt routes cross streams. When the sediment filled water reaches the stream, all the water and sediment is deposited into the stream.

Routes that are close to streams tend to contribute the most sediment because it doesn't have far to travel. Vegetation acts like a filter and catches sediment. If little or no vegetation is present, then the chance of sediment getting into the stream is greater. If routes have sufficient drainage, water can be diverted before it reaches streams (figure 57) (Furniss et al. 1991). This helps keep sediment out of streams.

Figure 57. Example of a ditch that carries water off the road, so it prevents sediment from being carried to streams

Roads and trails also pose barriers to migration, increase water temperature by decreasing vegetation and slowing the flow of water, and altering the stream's natural shape and movement. Improperly placed culverts at stream crossings can reduce or eliminate fish passage (Belford and Gould 1989). One study documented a positive correlation between the

number of culverts and stream crossings and amount of fine sediment in stream channels, and a negative correlation with fish density and numbers of culverts in the Medicine Bow National Forest (Eaglin and Hubert 1993).

People's activities near water. Routes are conduits for people, and people's activities sometimes contribute to poor fish habitat. When people camp near water, they tend to use large pieces of wood for things like campfires and makeshift benches. These large pieces never make it into the stream as "large woody debris." Fish use large woody debris for cover. They feed on the insects that colonize large woody debris. These large pieces of wood create habitat when the water rushes over and around them and scours out new habitats. Camping often causes the ground to become bare, exposing soil that is then free to move into the adjacent stream. Vegetation on the ground acts like a filter and catches sediment before it hits streams. Without vegetation, there is nothing to stop it. Unintentionally, people may pollute streams with food, dripping oil from cars, or other things.

Driving off roads. Driving off roads and trails causes the soil under tires to compact. Plants have a hard time growing in compacted soil. Without plants, soil is easily mobilized into wetlands and streams via runoff. With repeated use, these areas of compaction may become channels that transport water and sediment to streams. Sometimes, two tracks become unauthorized routes. Poorly placed unauthorized routes often direct sediment to streams.

Routes that cross streams. In general, low water crossings don't block fish passage. Culverts do, however, if they are perched, undersized, or too long. Having more crossings increases the potential for having one or more that pose a barrier to fish movement. This reduces genetic variation by promoting inbreeding. Stream crossings make isolated populations more vulnerable to extirpation by extreme events such as mass wasting or ash flow. They have high amounts of fine sediments that cover food sources and habitat. Driving through streams disturbs soils and increases the potential for erosion and sediment in streams. It directly impacts habitat for fish and their prey by disturbing riffle spawning and feeding habitats.

Methods

As just shown, roads, trails, areas, and fixed-distance corridors can degrade fish habitat. Depending on the species analyzed, we use one or more of the following measures as a proxy for effects to fish habitat:

- The miles of open, motorized roads and trails within 300 feet of streams occupied by the species analyzed.
- The acres of land available for motorized dispersed camping and motorized cross-country travel ("areas") within 300 feet of streams occupied by the species analyzed.
- The number of stream crossings for open, motorized roads and trails on fish-bearing streams.
- Combined open road and motorized trail densities in watersheds (10-digit Hydrologic Unit Code) that are source to the Middle Rio Grande designated critical habitat for Rio Grande silvery minnow.

Studies show that roads have the highest potential to contribute sediment over the long term in forested watersheds (Megahan and Kidd 1972; Rice, Rothacher and Megahan 1972). Additional

studies show that road related sediment can move as far as 300 feet via overland flow (Burroughs and King 1989, Belt, O'Laughlin and Merrill, 1992). Based on this information, a buffer distance of 300 feet was selected for examining road and motorized cross-country trails adjacent to streams occupied by fish, as sediment is one of the key threats to habitat quality.

The U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration's National Marine Fisheries use route density to measure watershed condition as it relates to fish habitat. The agencies jointly recommend that a given watershed should have less than 2.5 mi/mi² of roads. While this is not a standard for New Mexico and Arizona, the Forest Service's Southwestern Rgional Office used it to display effects to aquatic species in the "Biological Assessment for the Eleven Land and Resource Management Plans of the National Forests and National Grasslands in the USDA Forest Service Southwestern Region." In keeping with this analyses and the resulting §7 consultation, we use the route density threshold of 2.5 miles per square mile to display the potential effects of each of the travel management alternatives on Rio Grande silvery minnow.

Threatened and Endangered Fish Species

The Rio Grande cutthroat trout, a candidate species, is analyzed in the section "Management Indicator Species" that follows.

Rio Grande Silvery Minnow – Affected Environment

The Rio Grande silvery minnow (*Hybognathus amarus*) is listed as an endangered species. Historically, it was one of the most widespread and abundant fishes in New Mexico. Today, its habitat is about 7 percent of its former range. The silvery minnow appears to live only in a 163-mile reach of the Rio Grande from around Cochiti Dam downstream to Elephant Butte Reservoir, and a 2.8-mile stretch of the Lower Jemez River between the Jemez Canyon Dam and its confluence with the Rio Grande (U.S. Fish and Wildlife Service 2007). No silvery minnows have been found on the Santa Fe National Forest.

In 2002 and 2003, the United States Fish and Wildlife Service identified critical habitat for the Rio Grande silvery minnow between Cochiti Dam and Elephant Butte Reservoir (U.S. Fish and Wildlife Service 2003). The Santa Fe National Forest does not manage lands designated as critical habitat. It does, however, manage three watersheds that feed the middle Rio Grande where critical habitat and the silvery minnow exist. Thus, we look at how the alternatives might protect these watersheds and prevent them from contributing adverse effects downstream.

Figure 58. A Rio Grande silvery minnow (Photo Aimee Roberson, Courtesy of U.S. Fish and Wildlife Service)

To measure the effects of closing parts of the forest to motorized use, we use the density of open roads and motorized trails in watersheds that are source to the middle Rio Grande designated habitat.

Rio Grande Silvery Minnow – Environmental Consequences

Direct and Indirect Effects Common to All Alternatives

There would be no direct effects to Rio Grande silvery minnow under any alternative because the species is extirpated from the forest. Additionally, the Santa Fe National Forest does not manage lands within the area designated as critical habitat. For indirect effects, alternatives 2M and 3 have a determination of **no effect** because of the restriction of not driving within 100 feet of water, or off-road, respectively. Not having vehicles near water nearly eliminates the indirect effects of sedimentation during heavy rains. Alternatives 2, 4, and 5 have the determination of **may affect, not likely to adversely affect** because vehicles would still be allowed to drive near water in these alternatives.

Indirect Effects, Alternative 1

Alternative 1 would have an effects determination of "may affect, not likely to adversely affect" for the Rio Grande silvery minnow and its critical habitat. "May affect, not likely to adversely affect" is one category that is assigned during consultation with the U.S. Fish and Wildlife Service about effects to species classified as threatened or endangered under the Endangered Species Act. While there could be adverse effects to the watershed from localized road or trail erosion, the route density of two Forest Service watersheds feeding into critical habitat for the Rio Grande silvery minnow is well below the agency recommendation, and in the headwaters of Galisteo Creek, the route density is slightly over agency recommendations (3.0 mi/mi^2; table 47). Vehicle use, however, on Forest Service roads and trails here occurs many miles from Rio Grande silvery minnow occupied habitat, and is connected only by intermittent flows. Conchas and other reservoirs serve as a sink for sediment that could negatively affect silvery minnows. As a result, effects should be absent or so small as to be undetectable.

The action alternatives propose to add short segments of unauthorized routes in each watershed. Adding these segments will help ensure that they are brought up to standard, if needed, thereby minimizing potential impacts.

Table 47. Comparison of open route density, by alternative, in watersheds that feed critical habitat for the Rio Grande silvery minnow. Watershed area and route miles are tabulated for the portion of the watershed within the forest boundary only.

Watershed	Alternative					
	1	2	2M	3	4	5
Canada Ancha - Rio Grande	2.2	1.1	1.0	0.7	1.4	0.9
Headwaters Galisteo Creek	3.2	1.2	1.1	0.9	1.5	1.2
Arroyo Tonque - Rio Grande	2.1	0.9	0.8	0.2	1.0	1.1

All action alternatives improve upon the current condition by reducing the miles of roads and trails open to vehicular traffic. Some will revegetate naturally and others won't. Those that do will lessen the amount of sediment that reaches streams.

Sensitive Species – Affected Environment

The Rio Grande chub (*Gila pandora*), Rio Grande sucker (*Catostomus plebeius*), and Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*) are on the Regional Forester's sensitive species list. In the National Forest System, a sensitive species is a species for which population viability is a concern due to a current or predicted downward trend in population numbers or in habitat capability. The Rio Grande cutthroat trout is also a candidate species for the endangered species list and a management indicator species.

Because excessive fine sediment degrades the habitats of Rio Grande cutthroat trout, chub, and sucker, and because roads and trails are a source of sediment, we use the miles of routes and acres of land used by vehicles as a proxy for the effects to these fish species. The streams in which the Rio Grande cutthroat trout, chub, and sucker live vary in their quality for fish habitat from poor to excellent. The fisheries specialist report describes each species' life history in detail.

Rio Grande Cutthroat Trout

The habitat and quantitative analysis for Rio Grande cutthroat trout is described in the "Management Indicator Species" section. Because it is also a sensitive species, the effects determinations for it in this section are inclusive of the Rio Grande cutthroat trout.

Rio Grande Chub

On the Santa Fe National Forest, habitat for Rio Grande chub occurs in several streams of the Jemez, Rio Chama, Rio Grande, Cañones, Rio Puerco, and Gallina watersheds. Approximately 250 miles of 12 streams within or proximate to the forest are currently known to be occupied by the species.

Rio Grande Sucker

On the Santa Fe National Forest, habitat for Rio Grande sucker occurs in several streams of the Jemez, Rio Chama, Rio Grande, Cañones, Rio Puerco, and Gallina watersheds. Approximately 299 miles of 18 streams within or proximate to the forest are currently known to be occupied by the species.

Sensitive Species – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Alternative 1 is not likely to result in a trend toward Federal listing or a loss of species viability. Though it has the most motorized use of the alternatives, the amount of occupied habitat potentially impacted by these roads and trails is relatively small, around 10 percent for the chub and sucker, and about 24 percent for the trout.

The effects to sensitive fish from motorized use described would continue at their present rate. This means that routes, driving cross-country, and people would contribute to habitat degradation in some locations. Other locations would remain inaccessible to people and vehicles and not change. The motorized use in alternative 1 is not likely to greatly improve the conditions of streams—they would remain the same or get worse.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 are not likely to result in a trend toward Federal listing or a loss of species viability—though they may impact individuals—because they improve on the current condition. All reduce the places where people could drive near streams, especially the number of stream crossings open to motorized use and motorized travel off roads (table 48). Having less motorized use near streams reduces the potential for sediment to get to a stream or be stirred up in it, which in turn improves habitat by keeping water clear and not changing the stream's channel.

Table 48. Comparison of the amount of motorized use near streams by alternative

Species	Within 300 Feet of Stream Occupied by Sensitive Fish	Alternative					
		1	2	2M	3	4	5
Rio Grande chub	Miles of routes	31	24	23	22	25	24
	Miles of corridors for camping (DC) or game retrieval (G)	12 (DC)	8 (DC, G)	4 (DC, G)	0	8 (DC) 23 (G)	8 (DC)
	Acres of areas	1,948	0	0	0	0	0
	Number of stream crossings	37	20	17	19	28	26
Rio Grande sucker	Miles of routes	42	28	26	27	29	28
	Miles of corridors for camping (DC) or game retrieval (G)	13 (DC)	9 (DC, G)	4 (DC, G)	0	9 (DC) 28 (G)	9 (DC)
	Acres of areas	2,147	0	0	0	0	0
	Number of stream crossings	69	26	23	25	34	32

Reducing the places where people can drive in the forest would allow some routes to revegetate naturally over time; others would not (refer to the "Soil and Water" section for a description of the time and likelihood of routes and areas regenerating). Routes on steep slopes are likely to continue contributing sediment until they are decommissioned.

Vegetation along streambanks is most likely to recover under alternatives 2M and 3 because they do not allow driving off roads or trails near perennial water. This restriction would effectively eliminate much of the impact associated with motorized dispersed camping near streams within 300 feet of occupied Rio Grande chub and Rio Grande sucker habitats. Having less motorized use near streams reduces the potential for sedimentation in streams, which in turn improves habitat by keeping water clear and not changing the stream channel morphology. For alternatives 2, 4, and 5, motorized use near streams (especially for camping) would not be entirely eliminated, neither would the detrimental effects to habitat associated with it; though there would be an improvement when compared to alternative 1.

Limiting camping to fixed-distance corridors is likely to cause an increase in new hardened sites since people won't be able to spread out as much as they do now (assumption 21). As described, this tends to cause a downward trend in habitat condition.

Management Indicator Species – Affected Environment

The Rio Grande cutthroat trout is a management indicator species, and as such, it represents a larger group of fish species presumed to share the same habitat requirements. Rio Grande cutthroat trout is also a sensitive species and a candidate to the endangered species list.

The Rio Grande cutthroat trout represents the quality of aquatic habitat on the Santa Fe National Forest. We manage 1,072 miles of perennial streams. Of these, Rio Grande cutthroat trout lived in approximately 965 miles before 1896, when streams were first stocked with nonnative fish (Sublette et al. 1990). Data collected in March 2008 by the New Mexico Department of Game and Fish and the Santa Fe National Forest identified 44 streams totaling 141 miles as having Rio Grande cutthroat trout. Of these, 47 miles are considered secure, meaning they aren't invaded by nonnative fish.

Habitat for the Rio Grande cutthroat trout varies in quality according to a qualitative ranking based on a matrix of variables outlined in the USFS Region 3 Stream Inventory protocol (USDA Forest Service 2005). At higher elevations, where recreation and grazing is limited by topography and restrictions associated with wilderness, stream quality is moderate to excellent. At lower elevations used more by people, habitat tends to be poor. Poor habitat conditions are caused by a lack of instream large woody debris, sediment filled pools, loss of undercut banks, depletion of beaver populations, lack of side channel development, and poor riparian health. Decreased water quality can be attributed to soil compaction, road and trail runoff, unstable banks, and delivery of pollutants from nonpoint sources. Motorized use close to streams tends to cause sedimentation, which degrades fish habitat.

As discussed, roads and trails increase sediment delivery to streams. How sediment affects trout varies by the fish's life stage and the quality and quantity of its habitat. Adults typically prefer pools, whereas juveniles use pools, runs, and riffles. When the amount of sediment exceeds the habitat's capacity to absorb it, streams become more wide than deep. This increases the water temperature to the trout's detriment. Incubating eggs require clean spawning gravels; when fine sediments increase in spawning gravels, it lessens the fish's chance for survival (Bjornn and Reiser 1991, Hicks et al. 1991).

Management Indicator Species – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Alternative 1 is not likely to result in a trend toward Federal listing or a loss of species viability. Though it has the most motorized use of the alternatives and the most miles of motorized routes within 300 feet of occupied Rio Grande cutthroat streams, the number of occupied stream systems (and populations) potentially impacted by these roads and trails is relatively small. Many of the occupied systems are located within designated wilderness or high elevation systems with limited access. Nonetheless, the 41 miles of motorized roads and trails that run within 300 feet of occupied Rio Grande cutthroat cross occupied streams 105 times. As shown, this tends to degrade fish habitat and ability to survive.

The effects to fish from motorized use described would continue at their present rate. Of particular concern are some routes that cross and parallel streams occupied by the Rio Grande cutthroat trout, such as one off Forest Road 422 which crosses Polvadera Creek several times and has trail segments that run up the streambed itself (figure 59). The 2010 South Fork Fire burned much of Polvadera Creek's headwaters. Excessive erosion and ash flow during the 2010 monsoon season eliminated much of the fishery and the trail. However, Rio Grande cutthroat trout managed to survive in the upper reach, and the stream is still considered to be "occupied." Keeping motorized use here has the potential to degrade habitat.

Polvadera Creek is home to one of the forest's "core conservation" populations of Rio Grande cutthroat trout, meaning this population's genetic purity is greater than 99 percent and is deemed the "the highest priority for long range conservation management" by the New Mexico Department of Game and Fish.

Figure 59. Example of trail segment running up a streambed

Unfortunately, a number of stressors, including the trail, have combined to create a stream in which riffle sediment content, pool development, and pool quality are not properly functioning. In addition, heightened stream temperatures led to Polvadera Creek being listed as impaired because it is not meeting the designated use set by the New Mexico Environment Department as a high quality cold-water fishery.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 are not likely to result in a trend toward Federal listing or a loss of species viability because they improve on the current condition, though individual Rio Grande cutthroat trout may be negatively impacted. All reduce the places near streams where people could drive, especially the number of stream crossings open to motorized use and motorized travel off roads (table 49). Having less motorized use near streams reduces the potential for sediment to get to a stream or be stirred up in it, which in turn improves habitat by keeping water clear and not changing the stream's channel. This improves fish habitat, which could potentially promote the species.

Alternatives 2, 2M, and 3 don't propose the trail in Polvadera Creek, so these would be better at protecting this core population of Rio Grande cutthroat trout. Alternatives 4 and 5 would retain the motorized trail through Polvadera Creek, with the restriction that this trail would only be open seasonally. Under alternatives 4 and 5, the habitat disturbance caused by wheels in the stream is lessened, but still present. The trail through Polvadera Creek contains known low water crossings. Though the direct effects of operating motorized vehicles across and in an occupied stream are reduced from the existing condition through the seasonal restriction and through the restriction of motorcycles only, the impacts would still be evident. Wheels through streams disturb soils and increase the potential for erosion and sediment transport and deposition in streams. In addition, the motorized use would be allowed during spawning season, so potential impacts include an increase in fine sediment spawning gravels, which is linked to a decrease in fry emergence and juvenile fish densities. Alternatives 2, 2M, and 3, would have no known low water crossings.

Table 49. Comparison of motorized use within 300 feet of streams occupied by Rio Grande cutthroat trout

Within 300 Feet of Stream Occupied by Rio Grande Cutthroat Trout (RGCT)		Alternative					
		1	2	2M	3	4	5
Total miles of routes	Roads	24	7	7	6	7	6
	Trails	17	0.1	0.1	0	4	2
Miles of unauthorized routes only	Roads	2	0.7	0.8	0.5	0.7	0.7
	Trails	3	0.1	0.1	0.1	0.5	0.5
Miles of corridors for dispersed camping (DC) or game retrieval (G)		0.3	0.3 (DC, G)	0.3 (DC, G)	0	0.3 (DC) 13 (G)	0.2 (DC) 0.3 (G)
Acres of areas		1,280	0		0	0	0
Number of stream crossings (RGCT occupied)		105	29	29	28	39	37

All action alternatives improve upon the current condition by reducing the miles of roads and trails open to driving and by nearly eliminating motorized cross-country travel. Prohibiting use of most unauthorized routes, because they are often not constructed in a manner that minimizes sediment delivery to streams or receive routine maintenance, is also expected to reduce sediment delivery. As discussed in the "Soil and Water" section of this chapter, the degree to which closed routes will recover on their own or worsen over time is unknown, so it is assumed the same as the existing condition.

For alternatives 2, 4, and 5, people could drive through wetlands, riparian areas, and across streams inhabited by fish when retrieving big game. This would increase the risk of sedimentation of key instream habitats. The potential impact is limited to the number of big game animals retrieved, which averages 438 per year, and some probably wouldn't need to cross streams. Because retrieving game is limited to hunting season and to the edge of a corridor, it reduces the effects as compared to alternative 1. Alternatives 2M and 3 completely eliminate this possibility because people wouldn't be allowed to drive within 100 feet of water or off road, respectively.

By not allowing driving within 100 feet of water or at all, alternatives 2M and 3 eliminate the largest effect of motorized dispersed camping, which is having vehicles drive and park right next to streams. Alternatives 2, 4, and 5 retain the ability to drive close to water in camping corridors, so aren't as effective at protecting habitat. They all, however, are an improvement when compared to alternative 1.

Alternatives 2 through 5 propose to add unauthorized trails to the forest transportation system, half or less of what is being used now. Their locations were selected to minimize disturbance to fish habitat. As part of the system, they will receive regular maintenance, which is expected to reduce the amount of sediment delivered to any nearby streams.

Fish-bearing Streams – Affected Environment

A number of other native fish live in the streams in the Santa Fe National Forest. These include the red and bluntnose shiners, fathead minnow, longnose dace, river carpsucker, mosquitofish, and bluegill. A few, the American eel, bluntnose shiner, speckled chub, and Rio Grande shiner, are

likely extirpated or are considered a species of "greatest conservation need" by the State of New Mexico.

Like the special status fish just described, most of these require clear water and unaltered stream channels in order to thrive. The fish-bearing streams in the Santa Fe National Forest vary in their quality for fish habitat from poor to excellent.

Fish-bearing Streams – Environmental Consequences

Direct and Indirect Effects, All Alternatives

Alternative 1 would continue motorized use of the forest at its present rate. This means that routes, driving cross country, and people would contribute to habitat degradation in some locations. Other locations would remain inaccessible to people and vehicles. Alternative 1 is not likely to greatly improve the conditions of streams; they would remain the same or get worse.

Alternatives 2 through 5 would all improve on the current condition because they reduce the amount of motorized use near streams, especially the number of stream crossings open for motorized use and motorized travel off roads (table 50). It is difficult to predict exactly where and to what extent habitat in the forest's streams would improve. Some places would heal, others would remain the same, and because these alternatives don't entirely eliminate motorized use, some places could degrade more (refer to the "Soil and Water" section for a description of the likelihood of routes and areas recovering naturally). Alternatives 2M and 3 are the most likely to improve habitat because they don't allow driving within 100 feet or at all, respectively, near water.

Table 50. Comparison of motorized use close to perennial, native fish-bearing streams

Within 300 Feet of Perennial, Native Fish-bearing Streams	Alternative					
	1	2	2M	3	4	5
Miles of routes	387	207	194	177	234	214
Miles of corridors for dispersed camping (DC) or game retrieval (G)	44 (DC)	36 (DC, G)	23 (DC, G)	0	41 (DC) 208 (G)	28 (DC) 28 (G)
Acres of areas	17,215	0	0.6	0	0	0
Number of stream crossings (occupied w/Rio Grande cutthroat trout)	1,044	477	443	354	573	560

On balance, having less motorized use near streams reduces the potential for sediment to get to a stream, which in turn improves habitat by keeping water clear and not changing the stream's channel. This improves fish habitat, which could potentially promote the species.

Cumulative Effects to All Fish Species, All Alternatives

The action alternatives are expected to improve fish habitat by reducing the potential for sediment to reach streams. The cumulative effect with past, present, and reasonably foreseeable future actions vary by the management action, and are described below.

Past and Present Actions (1987 – 2011)

Past actions in the Santa Fe National Forest that are relevant to the discussion of cumulative effects on fish and their habitats include: subdivision and development of private inholdings and access to them, past road construction and stabilization for access across the forest, development of access to oil and gas and mining claims, vegetation management and associated road development, grazing, dispersed and developed recreation and associated authorized and unauthorized road development, trail creation and maintenance, and past wildfires. The cumulative effect of these past programs and activities was to reduce the quality and quantity of aquatic habitat for native fish, including Rio Grande cutthroat, chubs and suckers. These effects are highly variable and localized. Since the last collection of Rio Grande silvery minnow from the Rio Chama was in 1949, and the last collection from the Rio Grande above Cochiti Lake was in the late 1970s following construction of Cochiti Dam, it is unlikely that these activities had much effect on that species.

During the mid-to-latter part of this period, forest staff implemented several programs and activities to improve—or with a side benefit of improving—management of aquatic resources. These included management plans for wild and scenic rivers, creation of the Jemez National Recreation Area, road decommissioning and obliteration, improvements to roads and trails impacting watersheds through the "Legacy Roads Program," and Respect the Rio, an education-based program promoting river friendly camping in the Jemez watershed.

Present programs and activities either maintain or improve fish habitat. These activities include road reconstruction and road decommissioning (i.e., Forest Roads 612, 87, 488, 10J), stream crossing modification (i.e., State Highway 4), modification of range management permits, reduced timber harvest, trail improvements and dispersed campsite modification in the Jemez watershed through Respect the Rio (ongoing partnership), and the future expansion of this program to the Upper Pecos watershed. Watershed and fish population and habitat restoration projects, including the Peralta, San Antonio, and Cañones watershed improvement projects, and the Polvadera CWA §319 partnership, provide locally significant beneficial effects to native Rio Grande cutthroat trout, chubs, suckers, and other native or naturalized fishes.

Reasonably Foreseeable Actions (2011-2025)

Although some programs and activities may have localized, short-term negative effects on fish and their habitats, the cumulative effects of reasonably foreseeable programs and activities are generally beneficial. Degraded aquatic habitats will be targeted for restoration. Management plans and range improvements will be updated in range allotments with degraded riparian and stream habitats, and additional road and stream crossings will be modified to improve aquatic organism passage and reduce impacts to stream channels and fish habitat.

Effects of Forest Plan Amendments on Fish

Proposed Amendments in Table 66 of Appendix 1

The proposed amendments that are administrative in nature are not expected to have an effect on fish resources as a result of this project or future projects. These proposed amendments, for the most part, simply update direction in the forest plan and ensure consistency with implementation of the motor vehicle use map.

The proposed amendments that address off-highway vehicle use within specific management areas where cross-country travel was limited (Management Areas C, D, I, J, K, M, and N) have no effect on fish resources because they retain specific direction for adding motorized use (motorized dispersed camping and motorized big game retrieval) only when it is consistent with the management emphasis as per the current forest plan and travel management regulations. Future projects that add motorized areas or corridors to these management areas would be analyzed through the appropriate level of NEPA, which would include an effects analysis for riparian and fish resources.

Management areas where cross-country travel has been allowed (Management Areas A, B, E, G, P, Q, R, and S) have no plan amendments that restrict adding this type of use through the designation of areas or corridors in the future.

Therefore, none of these amendments are expected to negatively affect fish resources, because the proposed changes continue to maintain off-highway vehicle use that is consistent with the travel management regulations and management emphases for the areas.

The proposed amendment to the Jemez National Recreation Area (Management Area X) restricts motorized travel to designated forest system roads and trails, except to pull off the road for motorized dispersed camping or motorized big game retrieval in designated corridors. This amendment will benefit fish resources, as it would likely limit future motorized off-road travel in parts of the JNRA, which would decrease the number of stream crossings (fords) and riparian disturbance.

Proposed Amendments in Table 67 of Appendix 1

These amendments are alternative specific, applying principally to alternatives 4 and 5. They propose to amend the forest plan to include motorized dispersed camping corridors and motorized big game retrieval in the wild and scenic river corridors (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently prohibited.

These proposed changes to allow motorized travel in areas where it was previously restricted may have an impact on soil and water resources via increased soil erosion and sedimentation into streams and rivers. This would, in turn, indirectly impact fish habitat and fish resources. There is no restriction on dispersed camping within 100 feet of perennial streams in either alternative 4 or 5, so it is likely that motorized travel in the dispersed camping corridors would reduce the amount and vigor of riparian vegetation and, in turn, negatively impact streambank stability and fish habitat. The additional motorized travel may increase direct impacts on fish resources due to vehicles traveling off road and fording streams.

The effects of amendments that allow for motorized use on specifically identified routes (in Management Areas H and L for varying alternatives) would be identical to the direct, indirect, and cumulative effects presented in the fisheries specialist's report, because they relate to a specific road as proposed and analyzed for each of the specific alternatives.

Wildlife

Some people wrote that continued motorized use of the Santa Fe National Forest would damage wildlife habitat. We routinely analyze a project's effects on threatened or endangered species, sensitive species, management indicator species, and migratory birds. All are discussed in this

section, which summarizes the wildlife specialist report, biological assessment, and biological evaluation in the project record (USDA Forest Service 2011a, 2012k, and 2012m).

First, we explain how roads, motorized trails, and vehicles affect wildlife in general. Unless noted, these apply to all species discussed. Then we describe the projects that cumulatively affect all wildlife. Finally, for each species or group of species, we describe its habitat and the anticipated effects from each alternative followed by any cumulative effects specific to it.

Important note: All the tables showing the miles of routes in different species' habitats have a row called "Routes not currently open for motorized use." The kinds of routes compiled in this category are ones that people aren't supposed to be driving on or unauthorized routes (these are the bulk of them)[12].

How Routes and Vehicles Affect Wildlife

The discussion that follows applies to all wildlife species analyzed in this section.

Roads, trails, and their adjacent habitats tend to negatively affect terrestrial animals (Baker and Knight 2000, van der Zande et al. 1980). Roads and trails remove vegetation, which results in habitat loss. They fragment habitats, potentially reducing the genetic variability of a population. Edge effects favor some species over others (Mader 1984, Marcot et al. 1994, Reed et al. 1996). For example, roads give cowbirds the opportunity to invade forested environments, and subsequently decrease populations of neotropical migratory birds through nest parasitism. Roads facilitate wood collection, which causes a loss of important habitat components such as snags and downed logs. Roads bring people, resulting in increased poaching (Wisdom et al. 2000) and harassment. Many animals avoid roads and traffic, which can displace them from their natural habitat. For example, one study showed that bears crossed roads with little traffic more often than those with a volume of traffic (Brody and Pelton 1989).

As described later in this chapter, roads and trails facilitate the transport and establishment of nonnative invasive plants. They are often a weed's first point of entry into a new landscape and serve as a corridor to move farther into the landscape (Greenberg et al. 1997, Lonsdale and Lane 1994).

Because of vehicles' slow speed on most forest roads, large mammals aren't usually killed by being hit, but small species often are (Lyon 1983, Cade and Woods 1997, Taylor and Goldingay 2004). Large animals like elk commonly stay away from roads at least 200 meters (Lyon 1985). The more traffic on a road, the more they avoid them (Wisdom et al. 2000). Small, slow moving, migratory animals like amphibians and small mammals are highly vulnerable when crossing even narrow forest roads. Reptiles seek roads for thermal cooling and heating, and in doing so these species are more vulnerable to mortality from motorized vehicles. Roads often restrict the movements of small mammals (Mader 1984, Swihart and Slade 1984). Consequently, roads function as barriers to population dispersal and movement of some species of small mammals, reducing the gene flow among populations (Oxley et al. 1974).

[12] The specific categories of routes compiled into this row are: closed system, decommissioned, nonsystem closed, system trails built for nonmotorized uses, unauthorized, and undetermined. If any of these are located in a place on the forest where motorized cross-country use is allowed, then use of the route would also be allowed.

The magnitude of noise from a vehicle can vary greatly depending on distance from noise source, atmospheric conditions, weather and wind conditions, vegetation, topography, and ambient noise levels. The noise from vehicles can disturb animals, but this varies widely by species and the cause and effect relationship is poorly understood (Brumm 2004, Gaines et al. 2003, Blumstein et al. 2003). The impacts from noise take many forms, including changing the habitat used, increased stress, diminished ability to fight off illness, reduced reproductive success, and a higher risk of predation (Blumstein et al. 2003, Brumm 2004, Delaney et al. 1999, Gaines et al. 2003). Some species, like chipmunks, jays, and squirrels, become habituated to noise and people, especially where hunting is not allowed or not popular (Singer and Doherty 1985). Motorized use on main roads in the Santa Fe National Forest is considered low compared to cities, and infrequent on high-clearance vehicle roads.

Because studies have shown that routes and vehicles disturb wildlife, we use the miles of roads and motorized trails being used or proposed as a proxy for disturbance. This approach doesn't account for the distance from a road that any given species may be affected. Though the literature recognizes effects from motorized routes expand beyond a route's footprint, it varies widely by type of disturbance and species (Wisdom 2004, Blumstein et al. 2003, Brumm 2004, Delaney et al. 1999). Many studies examine the effects from roads having 10,000 or more vehicles per day (Reijnen and Foppen 1995, Forman and Deblinger 2000). Daily traffic on the forest's busiest roads ranges in the low hundreds of vehicles, and on infrequently used roads is less than ten vehicles per day.

Methods

The forest biologist reviewed scientific literature describing species' habitats and modeled the location of habitat on the forest using GIS. In summary, modeling each habitat entailed reviewing current available scientific literature about the species addressed; identifying physical and biological attributes required by each species for all or part of its life history; modeling the identified attributes in GIS; comparing GIS modeling to the available observation data; and determining the number of miles of motorized routes intersecting modeled habitat for each species by alternative.

The assessment of each habitat was based on the presence of habitat characteristics as described in available scientific literature, previous wildlife surveys, recorded wildlife observations, and from such databases as BISON-M and Nature Serve that are recognized as credible sources of natural biotic information. Some wildlife surveys were conducted specifically for this project and the information is incorporated in this analysis.

The acres of resultant habitat for each species shows where they could potentially be—not where they definitively are—providing a means to compare existing conditions with the action alternatives in a quantitative manner. Where species are closely correlated to specific vegetation types, this method provides a good means to assess the changes by alternative (e.g. meadow (New Mexico) jumping mouse, *Zapus hudsonius luteus*). In other cases, the species may be loosely associated or associated to a broad range of habitats, making the analysis for those species less extrapolative.

Finally, this analysis builds off previous efforts to identify federally listed or sensitive species' habitats. Mexican spotted owl protected activity centers, Jemez Mountain salamander occupied and essential habitat, and northern goshawk post-fledgling areas have already been delineated.

Though these may not identify all available or potential habitats, they still provide a reasonable means to quantitatively assess the different effects to the species by alternative.

Direct and Indirect Effects Common to All Species

Direct and Indirect Effects, Alternative 1

Alternative 1 has the most places where motorized use is allowed. A species' response to routes and vehicles varies, but as just described, is usually negative.

Direct and Indirect Effects, Alternatives 2 Through 5

Alternatives 2 through 5 reduce or eliminate the disturbance caused by vehicles driving off roads by limiting the places where people can drive off roads (in corridors only) and the duration they are allowed to drive off roads (seasonal closures or during hunting season). Alternative 3, because it allows no driving off roads and does not designate any unauthorized trails, is the most protective of wildlife habitat. Although alternative 4 allows for longer travel distances for big game retrieval, based on our assumptions, the number of trips is not expected to be greater and the location of game retrieval trips is not known. For these reasons, it is not possible to analyze the differences in effects to any given species, but the differences would appear to be minimal.

Though none of the action alternatives physically decommissions roads, all action alternatives reduce the amount of disturbance caused by vehicles and people because all reduce the designated motorized system from its current condition. This diminishes the effects listed in the "Affected Environment" section.

Because they keep some routes and add others, the action alternatives do not entirely eliminate the effects from motorized routes and vehicles. Though they all reduce the total miles of routes available for driving in the forest, each alternative proposes to add some unauthorized routes, which adds new miles to the transportation system (even though there is an overall reduction in total miles proposed from now). The unauthorized motorized trails proposed for addition in each alternative have seasonal closures to protect wildlife during breeding season; the closures thus minimize the effects of adding the trails to the system. Adding unauthorized routes to the system is expected to minimize disturbances to wildlife compared to the existing condition because the routes have been selected to be outside of sensitive habitats.

The areas proposed in all the alternatives except 3 minimize effects to wildlife because they aren't located in any sensitive habitats. Limiting motorized cross-country travel to the edge of fixed-distance corridors minimizes effects to wildlife by greatly reducing the number of acres where driving can occur, and also limiting it temporally to hunting season or outside of breeding season.

Cumulative Effects Common to All Species, for All Alternatives

Unless noted under the discussion of each species, these cumulative effects apply to all wildlife. Cumulative actions that pertain to a specific species are discussed with that species.

Past and future actions that either have benefited or may benefit wildlife include: the designation of Mexican spotted owl critical habitat and protected activity centers, closure orders, road obliteration or natural closures, Lower Jemez Complex Development Restoration, designation of wild and scenic river corridors, implementation of the Respect the Rio Program, annual treatment of noxious weeds, and all actions that result in a decrease in motorized use or were habitat

improvement projects. Some past projects—such as hazardous fuels treatments and prescribed fire—may have had short-term, negative effects to wildlife, but with long-term benefits overall. Other reductions in cumulative effects to wildlife resources may come from listing species under the Endangered Species Act of 1973, as amended, providing additional protections to those species.

Past and future actions that either have or may be detrimental to wildlife include: subdivision and development of private inholdings, road construction for timber sales, development of mining claims, increased demand for forest products, advancement in off-highway vehicle technology, increase in the State's population, road maintenance agreements (assuming these agreements result in an increase of road use due to an increase in regular maintenance), and all actions that result in an increase in motorized use or road construction, or projects improving the condition of roads or trails for public use. Actions such as development of private inholdings, road construction, mining, oil and gas leases, geothermal leases, and, to a lesser extent, demand for forest products would cumulatively reduce the amount of land available for wildlife and increase fragmentation of habitat within the project area. The other actions have the potential to cumulative increase disturbance to wildlife through increased traffic on motorized routes.

Threatened and Endangered Species

The federally listed species and their critical habitat (if present) in the Santa Fe National Forest are:

- Rio Grande silvery minnow (*Hybognathus amarus*) (endangered) – addressed in the "Fisheries" section of this report
- Mexican spotted owl (*Strix occidentalis lucida)* (threatened)
- Southwestern willow flycatcher (*Empidonax traillii extimus)* (endangered)
- Holy Ghost ipomopsis (*Ipomopsis sancti-spiritus)* (endangered)

Mexican Spotted Owl – Affected Environment

The U.S. Fish and Wildlife Service listed the Mexican spotted owl as threatened in 1993. Timber harvest and high intensity wildfire caused enough change in the Mexican spotted owl's habitat that its population declined.

Mexican spotted owls live in steep, forested canyons that have high canopy closure, high stand density, a multilayered canopy, snags, and downed logs (USDI 1993). They prefer forests dominated by mature Douglas-fir or white fir mixed with other species of pine. They nest in caves, cliff ledges, or old trees in steep canyons (USDI 1993 and NatureServe 2009).

Figure 60. A Mexican spotted owl (Photo Courtesy of U.S. Fish and Wildlife Service)

Mexican spotted owls nest and breed in protected activity centers (PACs), which forest biologists delineate around nesting sites. The Santa Fe National Forest knows of 50 protected activity centers on about 33,000 acres.

Four designated critical habitat units for the Mexican spotted owl exist (USDI 2004). Critical habitat for the Mexican spotted owl contains at least one primary constituent element, those physical and biological features that support roosting, nesting, and foraging. Examples of primary constituent elements are forests with trees larger than 12 inches in diameter, water, canyon walls with crevices, or a wide range of tree and plant species. The Santa Fe National Forest contains four critical habitat units, totaling approximately 242,000 acres, in the Cuba, Jemez, and Pecos/Las Vegas Ranger Districts. An estimated 10 to 100 breeding pairs of Mexican spotted owls live in the Santa Fe National Forest. People are driving on 708 miles of roads and 97 miles of motorized trails in critical habitat. Of these, 126 miles are unauthorized routes or closed.

Habitat in the Santa Fe National Forest for the Mexican spotted owl is declining. Fewer stands reach old-growth status because of past fire suppression, which has resulted in smaller, overcrowded forests (wildfires thin the forest). Younger forests do not provide the habitat required by Mexican spotted owls.

Mexican Spotted Owl – Environmental Consequences

Routes cause a loss of habitat for the Mexican spotted owl by fragmenting intact landscapes into smaller pieces. Because they serve as conduits for people, routes also contribute to habitat loss through wood collection and because owls tend to avoid people. Alternative 1 represents the most disturbances from routes, vehicles, and people because it has the most motorized use.

The reduction of routes and motorized cross-country travel associated with the action alternatives is likely to improve habitat and promote the recovery of the species (table 51). Alternatives 2 through 5 are all an improvement from the current condition, though alternative 3 reduces motorized routes the most in Mexican spotted owl habitat. Fewer routes means a more intact habitat without edges, less chance of owls being hit by vehicles, and fewer conduits by which people can disturb nests.

Table 51. Comparison of miles of routes and route density in Mexican spotted owl habitat by alternative

		Alternative					
		1	**2**	**2M**	**3**	**4**	**5**
Protected activity centers	Miles of closed and unauthorized routes proposed	24	0.5	0.4*	0	7	3
	Total miles, all routes	124	37	35	26	51	37
	Percent change from alternative 1	**--**	**-70**	**-72**	**-79**	**-59**	**-70**
Critical habitat	Miles of closed and unauthorized routes proposed	198	52	49	15	77	45
	Total miles, all routes	806	324	311	225	408	308
	Percent change from alternative 1	**--**	**-60**	**-61**	**-72**	**-49**	**-62**

*Of these, 0.2 mile is closed seasonally.

All of the action alternatives include seasonal closures on roads and motorized trails—including for unauthorized routes—in Mexican spotted owl habitat, minimizing disturbance and harassment to owls during the breeding season. Selection of any of the action alternatives may negatively impact individual Mexican spotted owls, but is not anticipated to appreciably reduce the likelihood of both the survival and recovery in the wild. Additionally, selection of any of the action alternatives will not appreciably diminish the value of constituent elements essential to the Mexican spotted owl's conservation.

The forest consulted with the U.S. Fish and Wildlife Service on alternative 2M, the preferred alternative (USDA Forest Service 2011a). The U.S. Fish and Wildlife Service concurred with the forest's determination for alternative 2M of "may affect, not likely to adversely affect" the Mexican spotted owl and its critical habitat on June 27, 2011. Among the reasons for this determination are:

- Motorized cross-country travel wouldn't be allowed in any protected activity centers. Since no areas are proposed in protected activity centers, disturbance and harassment of owls is minimized.
- The seasonal restrictions placed on unauthorized motorized trails in protected activity centers would minimize disturbance and harassment to owls. Only 0.18 mile of unauthorized motorized trail would be designated in Guaje Canyon without seasonal restrictions. This trail is located about 0.5 mile from the core area on the mesa along the northern boundary of the protected activity center. The canyon topography of the protected activity center provides a topographic buffer from the core area. The remaining 0.20 mile in Guaje Canyon would be designated with a breeding season restriction (March 1–August 31).
- No roads would be designated in the seven protected activity centers that currently do not have any.
- The five protected activity centers—Joaquin, Lake Fork, Los Utes, Lower Cochiti, and Medio Dia—proposing fixed-distance corridors for motorized dispersed camping propose them on the mesas and along the perimeter of the protected activity centers, providing topographic separation from the core area. Camping is currently taking place in these areas and has been for many years. The amount of camping is not expected to change, and the area designated in any single protected activity center is insignificant compared to the amount of owl habitat available.
- Alternative 2M closes 88 miles, about 71 percent, of motorized routes currently in protected activity centers. This results in 20 of the 50 protected activity centers in the forest having no roads open to the public.
- The prohibition on driving within 100 feet of water in fixed-distance corridors will reduce effects to riparian areas, thereby minimizing disturbance to the owl's foraging habitat.
- In critical habitat, approximately 61 percent—493 miles—of roads now open to motorized use would be closed. About 98 miles of unauthorized motorized trails people use now would also be closed.
- Within critical habitat, only 3,894 acres of motorized dispersed camping corridors would be designated compared to the 5,603 acres being used now, a 30 percent reduction.

> Though the potential exists to remove ground cover, accelerate erosion, and increase soil compaction in the corridors, thereby affecting the primary constituent elements, this effect is negligible compared to the over 200,000 acres of critical habitat on the forest and the over 30,000-acre reduction in disturbance from the removal of motorized routes open to the public. Designating motorized dispersed camping corridors will improve the forest's ability to manage these areas and, thus, minimize disturbance from motorized vehicles to natural resources, providing an overall benefit to the Mexican spotted owl.

The "Travel Management Rule on the Santa Fe National Forest Biological Assessment" contains a detailed description of the reasons for the determination.

Different management actions and natural occurrences have cumulatively increased or decreased Mexican spotted owl habitat. Since 1995, timber harvest in the Santa Fe National Forest in Mexican spotted owl habitat has decreased. The U.S. Fish and Wildlife Service designated critical habitat in 2004. Along with reducing the places where people can drive, less timber harvest and designated, protected habitat would provide a cumulative benefit to the Mexican spotted owl and its habitat.

Tribal and state lands next to the forest potentially contain owl habitat. Activities on them can include vegetation treatments, grazing, and recreation. Activities on adjacent private land vary but include subdivisions, roads, mining, recreation, and grazing. The 2011 Las Conchas Fire contained a number of protected activity centers that were burned. These activities increase disturbance and reduce the quality and quantity of nesting and foraging habitat.

Southwestern Willow Flycatcher – Affected Environment

Southwestern willow flycatchers prefer habitat near gently flowing streams in wide open valleys. They nest in thickets of trees and shrubs and build their nests at ground level up to 13 feet. The average size of a flycatcher's breeding patch is approximately 20 acres, but has been found up to 175 acres in the upper Gila River. Biologists have named several kinds of habitat for the Southwestern willow flycatcher (USDI Fish and Wildlife Service 2005b):

- **Currently suitable habitat** is at least 2.5 acres and consists of dense riparian shrubs and patches of trees, with at least 30 feet of riparian patches.
- **Potentially suitable habitat** occurs in flood plains where dense riparian vegetation could grow, but does not currently exist.
- **Unsuitable habitat** would not support dense riparian trees and shrubs.
- **Critical habitat** – The Santa Fe National Forest is in the Rio Grande Recovery Unit, but does not contain any critical habitat for the Southwestern willow flycatcher.

The Santa Fe National Forest has potentially suitable habitat (about 3,800 acres) along the Rio Grande and Jemez and Pecos Rivers on the Jemez, Española, and Pecos/Las Vegas Ranger Districts.

The Southwestern willow flycatcher is not known to occur in the forest, nor does its designated critical habitat occur (USDI Fish and Wildlife Service 2005b). None has been sighted in the forest.

Southwestern Willow Flycatcher – Environmental Consequences

Studies have shown that developed recreational facilities and off-road vehicles threaten the Southwestern willow flycatcher's habitat (USDI Fish and Wildlife Service 2005a). Roads in riparian areas bisect and, thus, degrade habitat. People engaging in recreational activities remove riparian vegetation (such as for campfires), which reduces the area flycatchers need to breed and grow and inhibit their behavior.

Figure 61. A Southwestern willow flycatcher (Photo Jim Rorabaugh, Courtesy of U.S. Fish and Wildlife Service)

The brown-headed cowbird is a widespread and significant threat to Southwestern willow flycatcher (Sogge 1992). Cowbirds engage in brood parasitism by laying their eggs in flycatcher nests; the unsuspecting flycatcher then raises a cowbird at the expense of her own. Cowbirds thrive in edge habitat along roads and trails. Thus, the number of routes may play a major role in promoting cowbird parasitism.

The miles of routes in potential habitat among alternatives ranges from 6.8 to 8 (table 52). The difference between alternatives, therefore, is small. Alternative 1, because it is most permissive about motorized use off roads, would be least effective at promoting suitable habitat for the Southwestern willow flycatcher.

Table 52. Comparison of miles of routes and route density in Southwestern willow flycatcher habitat by alternative

Potential Habitat for Southwestern Willow Flycatcher	Alternative					
	1	2	2M	3	4	5
Miles of closed and unauthorized routes in potential habitat	1.2	0.7	0.1	0.7	1.1	1.1
Total miles in potential habitat	10.1	8.9	6.0	9.8	11.2	11.2
Percent change from alternative 1	--	**-12**	**-41**	**-3**	**+11**	**+11**

Reducing places where people can drive in riparian ecosystems will increase the quality of potential habitat for southwestern willow flycatcher. Alternative 3 reduces driving along streams the most because no driving off roads is allowed. Alternative 2M wouldn't allow vehicles within 100 feet of water's edge. Though none of the alternatives physically remove any motorized roads or trails, reducing where people can drive would minimize the potential for direct mortality, displacement, or avoidance from vehicular traffic, and human interaction. Eliminating motorized cross-country use will minimize people's ability to randomly drive through streams and the effects associated with it. Over time, the action alternatives are likely to improve potential habitat for Southwestern willow flycatcher to varying degrees, with alternatives 3 and 2M being the most

favorable. Based on this information, and that no Southwestern willow flycatchers have been detected in the forest, the forest biologist determined that selecting alternative 2M—the preferred alternative—would have "no effect" on the Southwestern willow flycatcher.

Holy Ghost Ipomopsis – Affected Environment

The Holy Ghost ipomopsis is a rare plant that lives in a 2-mile stretch of canyon in the Sangre de Cristo Mountains. It prefers dry, steep, west- and southwest-facing slopes in forests containing ponderosa pine, Douglas-fir, Gambel oak, and quaking aspen. The plants have colonized the cut and fill slopes along a National Forest System road, indicating a preference for open, disturbed areas.

Its small population, road maintenance, recreational activities, and high intensity wildfires pose the main threats to the Holy Ghost ipomopsis. The entire population consists of 1,200 to 1,500 plants. About 80 percent live on the cut and fill slopes and the other 20 percent in naturally dry and open habitat higher up on canyon slopes.

Holy Ghost Ipomopsis – Environmental Consequences

This project would have no effect on the Holy Ghost ipomopsis because the road along which it lives would remain the same under all the alternatives. Because there are no direct or indirect effects, there would be no cumulative effects.

Sensitive Species – Affected Environment and Environmental Consequences

A species on the "Regional Forester's sensitive species list" is one that could become threatened or endangered if its habitat is lost. They tend to be less abundant than management indicator species. The Santa Fe National Forest has 43 sensitive species. Three of them—Botta's pocket gopher, Rocky Mountain bighorn sheep, and Lilljeborg's pea-clam—do not live in places affected by this project, so we won't discuss them further.

We divide the sensitive species into amphibians, birds, mammals, and plants when discussing their habitats and the potential effects from changing the forests' designated motorized system. Given the number of species, we have simplified the discussion into tables. Unless noted, the cumulative effects are the same as those described above for all species. The "Wildlife and Rare Plants Biological Evaluation" contains a detailed description of each species' habitat and life history.

Based on the overall reduction of places where people can drive, mitigation measures proposed to protect Jemez Mountain salamander, not allowing vehicles within 100 feet of water, and elimination of cross-country use, the forest biologist determined that selecting alternative 2M, the preferred alternative, may impact individuals but is not likely to result in a trend toward Federal listing or loss of species viability of any of the sensitive species discussed in this section.

Amphibians

None of the action alternatives is likely to result in a trend toward Federal listing or a loss of species viability because all reduce the places where people can drive compared to the existing condition (table 53). Roads, trails, and motorized use tends to negatively affect amphibians as

described in the section "How Routes and Vehicles Affect Wildlife." Individuals may be impacted since motorized use of the forest is not being entirely eliminated. Reducing the places where people can drive in the forest would improve the quality of habitat for amphibians by keeping vegetation in place, lessening erosion, diminishing the chance of being run over, and allowing better movement and dispersal.

Effects to the Jemez Mountain salamander in particular would be minimized because habitat surveys and subsequent mitigations are required prior to unauthorized trails or areas being published on the motor vehicle use map.

Roads, trails, and motorized use affect amphibians by removing the vegetation—including downed logs when people collect wood—that composes its habitat. Roads and trails fragment habitat for these small creatures, which potentially reduces their genetic variability because they can't move freely. Not allowing people to drive near water as proposed in alternatives 3 and 2M would be particularly beneficial to amphibians since they live in moist environments.

Table 53. Comparison of miles of routes in potential amphibian habitat by species and alternative

Species (acres)	Habitat	Miles of Routes in Potential Habitat	Alternative					
			1	2	2M	3	4	5
Jemez Mountain salamander (33,100)	Occupied	Closed and unauthorized routes	17	2	2	0	5	1
		All routes	37	14	13	8	18	12
	Essential	Closed and unauthorized routes	47	8	10	0	17	5
		All routes	104	45	45	24	52	33
	Occupied and essential	Total	141	58	57	32	70	45
		Percent change	**--**	**-59**	**-60**	**-77**	**-50**	**-68**
Northern leopard frog (57,600)	Springs, marshes, wet meadows	Routes not currently open for motorized use	64	22	22	16	34	28
		Total	356	200	188	170	224	205
		Percent change	**--**	**-44**	**-47**	**-52**	**-37**	**-42**

Birds

None of the action alternatives is likely to result in a trend toward Federal listing or a loss of species viability because all reduce the places where people can drive compared to the existing condition (table 54). Roads, trails, and motorized use tend to negatively affect birds as described in the section "How Routes and Vehicles Affect Wildlife." Individuals may be impacted since motorized use of the forest is not being entirely eliminated. Reducing the places where motorized use may occur in the forest would improve the quality of habitat for birds by reducing fragmentation, having fewer interactions with humans, and lessening the chance of direct mortality. Designating the unauthorized trails would minimize disturbance to sensitive bird species because the trails are already being used, they have been chosen to be in locations away from sensitive habitats, and are fewer than what is being driven on now. Designating the areas is expected to have no impact on sensitive bird species because the areas proposed aren't located in their habitat and are inconsequential in size when compared to the entire forest.

No bald eagle nests are known on the forest, and wintering habitat is limited. Thus, no change is expected by implementing any of the action alternatives. Because of these reasons, the forest biologist determined there would be no effect to the bald eagle.

An activity that could cumulatively offset benefits to the peregrine falcon from the action alternatives is the collection of eyases (young hawks) for falconry; the New Mexico Department of Game and Fish permits the collection of up to two eyases annually.

Table 54. Comparison of miles of routes in potential bird habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
White-tailed ptarmigan	Alpine ecosystems above 10,500 feet elevation	137,300	Closed and unauthorized routes	3	0.3	0.5	0.3	0.7	0.7
			Total	81	30	31	25	32	27
			Percent change	--	**-62**	**-62**	**-69**	**-60**	**-67**
Northern goshawk	Coniferous forests in a variety of structural stages	26,900	Closed and unauthorized routes	18	6	5	3	7	5
			Total	95	44	39	33	51	45
			Percent change	--	**-54**	**-59**	**-65**	**-46**	**-53**
American peregrine falcon	Variety of grasslands and forests with cliffs	236,100	Closed and unauthorized routes	144	29	31	8	62	27
			Total	518	256	245	200	303	243
			Percent change	--	**-51**	**-53**	**-61**	**-42**	**-53**
Western yellow-billed cuckoo	Mature riparian cottonwood and willow woodlands	2,200	Closed and unauthorized routes	3	1	2	1	2	1
			Total	8	4	3	4	4	4
			Percent change	--	**-50**	**-63**	**-50**	**-50**	**-50**
Burrowing owl	Grasslands, open shrublands, and woodlands	69,800	Closed and unauthorized routes	28	2	3	1	14	10
			Total	476	207	206	164	258	235
			Percent change	--	**-57**	**-57**	**-66**	**-46**	**-51**
Boreal owl	Spruce-fir forests above 9,500 feet elevation	195,200	Closed and unauthorized routes	50	23	23	4	35	26
			Total	189	94	94	60	116	96
			Percent change	--	**-50**	**-50**	**-68**	**-39**	**-49**
Gray vireo	Piñon-juniper woodlands with various shrubs and grasses	199,400	Closed and unauthorized routes	61	11	12	6	28	23
			Total	379	173	164	118	202	189
			Percent change	--	**-54**	**-57**	**-69**	**-47**	**-50**

*Rounded to nearest hundred.

Mammals

None of the action alternatives is likely to result in a trend toward Federal listing or a loss of species viability because all reduce the places where people can drive compared to the existing condition (table 55). Roads, trails, and motorized use tends to negatively affect mammals as described in the section "How Routes and Vehicles Affect Wildlife." Adding unauthorized motorized trails will minimize disturbance to individual species by reducing the places people can drive compared to the existing condition, and because the routes have been selected in locations not expected to significantly impact species or their habitats. Designating the motorized areas is expected to have no effect because they aren't located in sensitive species habitats. Individuals may be impacted since motorized use of the forest is not being entirely eliminated. Reducing the places where motorized use may occur in the forest would improve the quality of habitat for mammals by reducing fragmentation and barriers to movement (this improves genetic variation), having fewer interactions with humans, keeping vegetation intact, and lessening the chance of direct mortality.

For the New Mexico meadow jumping mouse, grazing by livestock could cumulatively offset some of the benefits gained from closing routes to motorized use.

Table 55. Comparison of miles of routes in potential mammal habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
Cinereus (masked) shrew	Riparian areas in subalpine coniferous forest	268,500	Closed and unauthorized	76	33	31	8	48	29
			Total	425	180	172	131	225	183
			Percent change	--	**-58**	**-60**	**-69**	**-47**	**-57**
Dwarf shrew	Talus and rocky areas in Douglas-fir forests	334,500	Closed and unauthorized	233	83	73	11	129	72
			Total	1,193	491	471	334	612	466
			Percent change	--	**-59**	**-60**	**-72**	**-49**	**-61**
Water shrew and Preble's shrew	Near perennial streams in SFNF mountain ranges	76,900	Closed and unauthorized	64	22	22	16	34	29
			Total	359	200	189	170	225	206
			Percent change	--	**-44**	**-47**	**-53**	**-37**	**-43**
Spotted bat	Variety, including riparian, woodlands, and forests	76,900	Closed and unauthorized	64	22	22	16	34	29
			Total	359	200	189	170	225	206
			Percent change	--	**-44**	**-47**	**-53**	**-37**	**-43**
Pale Townsend's big-eared bat	Areas having caves	302,600	Closed and unauthorized	94	24	22	16	55	39
			Total	765	340	337	291	428	366
			Percent change	--	**-56**	**-56**	**-62**	**-44**	**-52**

Table 55. Comparison of miles of routes in potential mammal habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
Pika	Talus slopes adjacent to meadows	86,400	Closed and unauthorized	1	0	0	0	0	0
			Total	39	16	16	13	16	13
			Percent change	**--**	**-60**	**-60**	**-66**	**-60**	**-66**
Goat Peak pika	Talus slopes adjacent to meadows in the Jemez Mountains	7,400	Closed and unauthorized	5	2	18	1	2	2
			Total	17	10	9	7	10	10
			Percent change	**--**	**-41**	**-49**	**-60**	**-41**	**-41**
Snowshoe hare	Dense spruce-fir forest with dense understory	124,700	Closed and unauthorized	3	0	0	0	1	1
			Total	44	15	16	14	19	17
			Percent change	**--**	**-65**	**-65**	**-69**	**-58**	**-62**
Yellow-bellied marmot	Sloped alpine tundra, subalpine and montane meadows	34,600	Closed and unauthorized	3	1	1	1	2	1
			Total	42	24	24	22	25	23
			Percent change	**--**	**-44**	**-44**	**-48**	**-40**	**-45**
Gunnison's prairie dog	Short and mid-grass prairies	143,100	Closed and unauthorized	78	16	16	8	37	27
			Total	936	421	414	331	519	466
			Percent change	**--**	**-55**	**-56**	**-65**	**-45**	**-50**
NM banner-tailed kangaroo rat	Desert grasslands with scattered shrubs	94,900	Closed and unauthorized	39	5	5	3	18	13
			Total	548	232	231	179	297	277
			Percent change	**--**	**-58**	**-58**	**-67**	**-46**	**-49**
Southern red-backed vole	Cool, wet sites in spruce-fir forest	497,000	Closed and unauthorized	254	94	84	15	142	83
			Total	1,288	541	520	367	668	517
			Percent change	**--**	**-58**	**-60**	**-72**	**-48**	**-60**
Western heather vole	High-altitude montane forests with dense grasses	291,700	Closed and unauthorized	22	7	3	3	14	5
			Total	325	111	107	95	148	113
			Percent change	**--**	**-66**	**-67**	**-71**	**-55**	**-65**
Long-tailed vole	Coniferous forest with a grassy floor and near meadows	76,900	Closed and unauthorized	64	22	22	16	34	29
			Total	359	200	189	170	225	206
			Percent change	**--**	**-44**	**-47**	**-53**	**-37**	**-43**

Table 55. Comparison of miles of routes in potential mammal habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
Meadow (NM) jumping mouse	Near perennial streams in places with wet soils and riparian vegetation	28,900	Closed and unauthorized	45	16	15	12	25	21
			Total	180	102	96	86	116	106
			Percent change	--	**-43**	**-47**	**-52**	**-36**	**-41**
American marten	Old-growth spruce-fir forest	269,100	Closed and unauthorized	76	40	35	8	55	39
			Total	351	177	169	114	211	175
			Percent change	--	**-50**	**-52**	**-67**	**-40**	**-50**
Ermine	High altitude mixed conifer forest	367,800	Closed and unauthorized	159	64	547	18	97	65
			Total	874	414	397	302	497	412
			Percent change	--	**-53**	**-55**	**-65**	**-43**	**-53**
Mink	Close to permanent water sources, such as large rivers	110,400	Closed and unauthorized	80	27	27	18	42	35
			Total	573	300	286	248	345	311
			Percent change	--	**-48**	**-50**	**-57**	**-40**	**-46**

*Rounded to nearest hundred.

Plants

None of the action alternatives is likely to result in a trend toward Federal listing or a loss of species viability because all reduce the places where people can drive compared to the existing condition (table 56). Alternative 2M, the preferred alternative, nearly eliminates motorized cross-country travel, doesn't allow vehicles within 100 feet of water, and greatly reduces the miles of routes open for driving. Adding the unauthorized trails and designating areas will minimize impacts to sensitive plants because they aren't located through any known populations. Individuals may be impacted since motorized use of the forest is not being entirely eliminated. Though selecting any of the action alternatives would not physically remove any motorized routes, reducing the routes on which people can drive and eliminating cross-country use would reduce the potential for individual plants to be crushed, soil loss, and subsequent competition from nonnative plants. Over time, individual plants could reestablish themselves on routes closed to motorized use.

Table 56. Comparison of miles of routes in potential plant habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
Tufted sand verbena	Hills and ridges of gypsum	9,600	Closed and unauthorized	7	4	5	2	5	5
			Total	37	24	24	21	26	23
			Percent change	**--**	**-36**	**-35**	**-44**	**-30**	**-38**
Greene milkweed	Plains, open hills, and low slopes	32,400	Closed and unauthorized	8	1	1	0	3	1
			Total	205	77	75	55	100	90
			Percent change	**--**	**-63**	**-63**	**-73**	**-51**	**-56**
Chaco milkvetch	Outcrops of sandstone in pinyon-juniper woodland	107,700	Closed and unauthorized	19	8	10	4	15	6
			Total	205	102	99	82	120	94
			Percent change	**--**	**-50**	**-52**	**-60**	**-41**	**-54**
Pecos mariposa lily	High-altitude meadows and aspen glades	52,000	Closed and unauthorized	11	5	6	1	7	5
			Total	46	22	20	11	29	22
			Percent change	**--**	**-53**	**-57**	**-76**	**-37**	**-52**
Yellow lady's slipper	Fir, pine, and aspen forests, usually near water	73,500	Closed and unauthorized	63	19	19	13	30	24
			Total	397	215	205	185	243	218
			Percent change	**--**	**-46**	**-48**	**-53**	**-39**	**-45**
Robust larkspur	Canyon bottoms and aspen groves	103,200	Closed and unauthorized	69	26	25	14	37	30
			Total	372	197	186	160	225	199
			Percent change	**--**	**-47**	**-50**	**-57**	**-40**	**-46**
Pecos fleabane	Rocky, open meadows in subalpine coniferous forest	5,500	Closed and unauthorized	0	0	0	0	0	0
			Total	9	5	5	5	5	5
			Percent change	**--**	**-43**	**-43**	**-46**	**-43**	**-46**
Wood lily	Well-drained soils rich in humus	62,600	Closed and unauthorized	17	4	5	2	7	6
			Total	166	65	60	48	80	66
			Percent change	**--**	**-61**	**-64**	**-71**	**-52**	**-60**
Chama blazing star	Upper Chama River valley on disturbed areas	3,200	Closed and unauthorized	3	0	3	0	0	0
			Total	8	4	7	4	7	4
			Percent change	**--**	**-53**	**-10**	**-53**	**-9**	**-53**

Table 56. Comparison of miles of routes in potential plant habitat by species and alternative

Species	Habitat	Acres of Potential Habitat*	Miles of Routes in Potential Habitat	Alternative					
				1	2	2M	3	4	5
Springer's blazing star	Volcanic pumice in pinyon-juniper woodlands	16,000	Closed and unauthorized	12	1	1	0	6	2
			Total	54	27	25	21	32	27
			Percent change	**--**	**-51**	**-54**	**-61**	**-41**	**-49**
Arizona willow	Sedge meadow and wet drainages in subalpine coniferous forest	14,100	Closed and unauthorized	0	0	0	0	0	0
			Total	3	1	1	1	1	1
			Percent change	**--**	**-77**	**-77**	**-83**	**-70**	**-70**

*Rounded to nearest hundred.

For the tufted sand verbena, an increasing population could increase the demand for this rare plant; collecting plants could cumulatively offset some of the benefits gained by closing routes to motorized use. Similarly, Pueblo people used milkweeds and Arizona willow for food and medicine, and might continue collecting them today. Nonnative people looking to use natural remedies might also put pressure on milkweed and willow populations.

Management Indicator Species – Affected Environment

The Santa Fe National Forest selected its management indicator species to represent certain habitats. A management indicator species acts as a signal for changes in habitat. If the population of a management indicator species changes, it could be a result of forest management. The "Environmental Impact Statement for the Santa Fe National Forest Plan" explains why we chose the management indicator species we did and what habitats they represent. The 2012 "Management Indicator Species Assessment" for the forest is herein incorporated by reference, where additional information on management indicator species and their habitats is found.

The forest's management indicator species are: Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*), Rocky Mountain elk (*Cervis elaphus nelsoni*), Mexican spotted owl (*Strix occidentalis lucida*), Merriam's turkey (*Meleagris gallopavo*), hairy woodpecker (*Picoides villosus*), Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*), pinyon jay (*Gymnorhinus cyanocephalus*), and mourning dove (*Zenaida macroura*). The "Environmental Impact Statement for the Santa Fe National Forest Plan" identifies the habitat types and projected effects of management actions for each species. It states that changes in road density or amount of motorized use will not affect the quantity of habitat for any management indicator species in the forest. Habitat quality, however, for Rocky Mountain elk and Merriam's turkey may be affected by roads. None of the habitats of the other management indicator species are expected to be influenced by changes in road and trail management according to the EIS for the forest plan; thus, the action alternatives have no effect. This section only addresses the effects of the action alternatives to Rocky Mountain elk and Merriam's turkey (table 57).

We analyzed the effects to Rio Grande cutthroat trout in the "Fisheries" section of this report. Effects to the Mexican spotted owl—also a management indicator species—are described earlier in the "Threatened and Endangered Species" section.

Table 57. The forest's management indicator species, their habitats and population trends

Management Indicator Species	Habitat Type	Acres of Habitat	Habitat Trend	Population Trend	Comment
Rocky Mountain elk	Variety of forested and open landscapes; shrub cover for calving	574,000	Increasing	1,000 to 10,000 breeding females on the forest. Ranked as common.	NM Department of Game and Fish controls population with special hunts.
Merriam's turkey	Variety of forested land, especially ponderosa pine with a robust understory, with small clearings and mast-producing trees.	603,200	Stable to increasing	1,000 to 10,000 breeding females on the forest. Ranked as common/stable to increasing.	NM Department of Game and Fish controls population by adjusting the length of the hunting season and number of birds allowed to be taken.

Management Indicator Species – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Alternative 1, the existing condition, would have the most motorized use. Despite this, management indicator species except Mexican spotted owl have sustained or increased their population. This is likely due to factors other than roads and motorized trails, which generally have a negative effect on habitats as documented above.

Direct and Indirect Effects Common to All Management Indicator Species, Alternatives 2 Through 5

Since alternatives 2 through 5 reduce the places on the forest where motorized use is allowed, selection of any of the action alternatives is not likely to result in a trend toward Federal listing or loss of viability of any management indicator species. Any of the alternatives may, however, impact individual animals.

The seasonal closures placed on the unauthorized routes serve to minimize disturbance and harassment of the management indicator species during breeding season. The areas proposed in all the action alternatives minimize harassment and disturbance because they are not located in sensitive habitat. Limiting motorized cross-country travel to the edge of fixed-distance corridors minimizes effects to wildlife by greatly reducing the number of acres where driving can occur, and also limiting it temporally to hunting season or outside of breeding season.

Rocky Mountain Elk

Figure 62. Rocky Mountain elk (Photo Courtesy Rocky Mountain Elk Foundation)

Alternatives 2 through 5 are likely to improve elk habitat and, therefore, likely to result in an increasing population trend over time. All action alternatives would lessen the disturbance to elk and their habitat from vehicles and people by limiting the miles of routes in calving areas and crucial winter and summer range compared to alternative 1, the existing condition (table 58). Reducing the miles of routes open to motorized use would reduce the potential fragmentation of suitable habitat, poaching opportunities, and displacement or avoidance. The action alternatives also limit driving off roads to corridors (alternatives 2, 2M, 4, and 5) or eliminate it altogether (alternative 3). This minimizes the effects of motorized use, such as harassment and disturbance, on wildlife described in the affected environment. Seasonal closures on motorized trails for elk calving and in winter range protect the animals from being disturbed by vehicles during these periods of stress. The areas proposed aren't currently used as habitat by elk, and are so small—40 acres or less—as to be immaterial. Thus, the areas proposed minimize disturbance to Rocky Mountain elk.

Table 58. Comparison of miles of routes and route density in Rocky Mountain elk habitat by alternative

		Alternative					
		1	2	2M	3	4	5
Calving areas (170,060 acres)	Total miles, all routes	570	215	209	147	291	217
	Percent change from alternative 1	--	**-62**	**-63**	**-74**	**-49**	**-62**
Crucial winter range (12,997 acres)	Total miles, all routes	36	27	27	19	28	28
	Percent change from alternative 1	--	**-25**	**-25**	**-47**	**-23**	**-23**
Crucial summer range (574,434 acres)	Total miles, all routes	1,288		508	400	649	486
	Percent change from alternative 1	--	**-100**	**-61**	**-69**	**-50**	**-62**

Merriam's Turkey

Reducing the miles of motorized routes and limiting the amount of driving off roads is likely to improve habitat for and lessen disturbance to Merriam's turkey and, therefore, likely to result in an increasing population trend over time (table 59). The unauthorized trails proposed for addition to the system were selected specifically to minimize disturbance and harassment to wildlife.

Table 59. Comparison of miles of routes and route density in Merriam's turkey habitat by alternative

		Alternative					
		1	2	2M	3	4	5
Habitat for Merriam's turkey	Total miles, all routes	1,809	815	782	546	974	772
	Percent change from alternative 1	--	**-55**	**-57**	**-70**	**-46**	**-57**

Reducing the places where vehicles can go would cumulatively benefit Merriam's turkey and its habitat. The forest has improved turkey habitat by thinning, building wildlife drinkers, burning in ponderosa pine, and creating piles of slash for nesting habitat. Most of these projects have been less than 100 acres in size. Low intensity wildfires also benefit turkeys by creating openings. The larger fires, on the other hand, have had a net negative effect because they tend to change the habitat entirely to something else. Livestock grazing is having a slight negative effect, but not enough to affect turkey habitat.

Figure 63. Merriam's turkeys (Photo courtesy of National Wild Turkey Federation)

Migratory Birds – Affected Environment

A migratory bird spends all or part of its life in the United States. It is a nongame bird. Many migratory birds need active conservation measures to prevent habitat loss and reduce their likelihood of being listed under the Endangered Species Act. Others, like Canada geese, are thriving without active conservation measures. The migratory birds we consider in this report are listed in the New Mexico Bird Conservation Plan (NMPIF 2007) and the U.S. Fish and Wildlife Service's Birds of Conservation Concern (USDI 2008). We also looked at important bird areas in the Santa Fe National Forest.

The Santa Fe National Forest lies within the Southern Rockies/Colorado Plateau Bird Conservation Region (NABCI 2007). The Southwestern willow flycatcher, yellow-billed cuckoo, Mexican spotted owl, and gray vireo are ranked high on the list of birds of conservation and biodiversity conservation concern in the New Mexico Bird Conservation Plan. Analyzing the effects of the action alternatives on these bird species reasonably represents that of all the forest's migratory birds. Thus, effects to these species represent the effects from all action alternatives to migratory birds as a whole. Please find the effects analysis for these four species in the "Threatened and Endangered" and "Sensitive Species" sections.

Figure 64. A long-billed curlew, one of the Southern Rockies/Colorado Plateau Bird Conservation Region's migratory birds (Photo Bob Gress, Courtesy of U.S. Fish and Wildlife Service)

The effects to migratory birds from motorized use and the existence of routes is consistent with the discussion in the section "How Routes and Vehicles Affect Wildlife."

The forest's important bird areas are the Chama River Gorge/Golondrina Mesa and the Caja del Rio Plateau. The Chama River Gorge/Golondrina important bird area is in the Chama River Canyon Wilderness, where no motorized use is allowed so this project will not affect it. The Caja del Rio Plateau lies in the southern portion of the Española Ranger District, west of the city of Santa Fe. The Bureau of Land Management and Santa Fe National Forest manage the land in this important bird area. Most of this area is open to motorized cross-country travel now.

Migratory Birds – Environmental Consequences

All action alternatives are consistent with the 1918 Migratory Bird Treaty Act and the Migratory Bird Executive Order 13186. Alternatives 2 through 5 would reduce the places motor vehicles could drive on the forest compared to alternative 1. Reducing the places where people can drive would improve habitat for migratory birds by reducing displacement or avoidance of otherwise suitable habitat. Over time, habitat quality could improve on the unused roads and trails that would naturally reclaim themselves with vegetation, reducing fragmentation and edge effects. The unauthorized trails proposed for addition would minimize disturbance and harassment to migratory birds when compared to alternative 1, because the location of the trails was selected to reduce such disturbance. The areas proposed for designation—about 40 acres or less—are immaterial when considered at the forestwide scale and, compared to being allowed to drive on over half the forest, would minimize harassment and disturbance to migratory birds.

For the reasons just described, the action alternatives would improve habitat for migratory birds and reduce take in the Caja del Rio Plateau important bird area. There would be no effect to the Chama River Gorge/Golondrina important bird area. It lies in the Chama River Canyon Wilderness, where motorized use is prohibited by law. None of the action alternatives changes this.

Effects of Forest Plan Amendments on Wildlife

Proposed amendments to the "Santa Fe National Forest Plan" that restrict motorized travel in management areas that are currently open to it would result in no effect to wildlife resources

when future management projects are implemented. These amendments will only permit cross-country vehicular travel where authorized by the motor vehicle use map or permit and after analysis through the appropriate level of NEPA.

Modifications to the "Santa Fe National Forest Plan" that permit the addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) for management areas currently closed to cross-country vehicular travel (Management areas J, K, M, and N) would also have no effect to wildlife resources when future management projects are implemented because these modifications specify that these additions must be consistent with the management emphasis for the area. Some amendments propose that designating areas or corridors in these management areas will be minimal. This is not expected to cause any impacts to wildlife during future projects because the intent of keeping these areas free of cross-country vehicles is preserved. Also, future projects that add areas or corridors to these management areas would be analyzed through the appropriate level of NEPA including affects to wildlife resources.

Amendments in table 2 of appendix 1 specific to alternatives 4 and 5 propose to allow the inclusion of camping and/or motorized big game retrieval corridors in the wild and scenic river areas (East Fork, Rio Chama, and Pecos) and the Jemez National Recreation Area, where cross-country use is currently prohibited. This would likely lead to an increase in cross-country use or establishment of new trails that would increase the amount of ground disturbance, increase fragmentation of wildlife habitat, and increase disturbance to wildlife species through motorized use. This would also likely increase the spread of weed species. This could especially have an effect in areas that are occupied by the Jemez Mountain salamander (East Fork Jemez and Jemez National Recreation Area) by facilitating removal of surface logs used by salamanders, compaction of soil, and turning (disturbing) surface habitat. However, future addition of areas or corridors would be analyzed by the appropriate level of NEPA.

All other proposed amendments not discussed specifically above (e.g., removal of lower thresholds for road density standards, eliminating the closures and restricted areas on the forest visitor map because of the motor vehicle use map, etc.) are administrative and, therefore, not expected to have effects on wildlife resources, so there would be no change by designating these routes and making them part of the system.

Nonnative Invasive Plants – Affected Environment

This section summarizes the nonnative invasive plant specialist report, located in the project record (USDA Forest Service 2012g).

The Forest Service has identified the spread of invasive species as one of the four major threats to the Nation's forests (http://www.fs.fed.us/projects/four-threats/). An "invasive" is defined as "a species that is nonnative (or alien) to the ecosystem" where found and whose "introduction is likely to cause economic or environmental harm or harms to human health" (Executive Order 13112 1999). Though thousands of plants that are productively used for agricultural and horticultural purposes without problems have been introduced into the United States, other nonnative plants have become invasive. These plants severely threaten biodiversity, habitat quality, and ecosystem functions.

Roads and trails provide pathways along which invasive, nonnative plant species can move from one area to another, crossing barriers that would normally stop or slow their spread. Most nonnative species prefer highly disturbed sites such as areas along rivers and streams, trails, trailheads, roadsides, building sites, wildlife bedding grounds, overgrazed areas, and campgrounds (Sheley and Petroff 1999). Russian and spotted knapweed (figure 65), nonnative thistles, hoary cress, and yellow starthistle are common examples of invasive plants along roads in the Santa Fe National Forest.

Figure 65. Spotted knapweed (photo from Noxious and Nuisance Plant Management Information System, USDA-ARS)

The public expressed this concern about nonnative invasive plants:

> *Continued public motorized use of routes and areas described in the proposed action will adversely affect forest resources. These effects include the spread of invasive plant species.*

Wind, water, livestock, wildlife, vehicles, pets, and human foot traffic all spread invasive plants. On the Santa Fe National Forest, however, the vast majority of nonnative invasive plants occur along roads and trails. The disturbed ground along roads and trails and in camping areas provides habitat most conducive to invasive plants. Vehicles tend to carry and distribute invasive weeds and their seeds farther and more easily from offsite sources. Thus, motor vehicle use of roads and trails would likely lead to an increase in the number and scale of weed populations; this effect has been well documented (Hansen and Clevenger 2005, Montana Department of Transportation, 2006).

To illustrate the potential spread of invasive plants from motorized use among alternatives, we use three measures.

Measure 1: Miles of designated routes and fixed-distance corridors traversing known populations of invasive species. Vehicles are more likely to transport seeds where they encounter existing populations. This measure shows the relative opportunity of weed spread from vehicles crossing existing invasive plant populations.

Measure 2: Miles of routes open to any kind of vehicle use. This shows the difference in potential pathways. It includes any route open to any kind of motorized use since all vehicles are capable of spreading invasive plants. For example, roads proposed open to highway-legal vehicles only—but closed to ATVs—are counted here because cars and trucks can spread weeds. Routes closed to motor vehicle use are not counted in this measure because they no longer provide pathways from vehicles for invasive species.

Measure 3: Acres of areas open to motorized cross-country travel. This measure includes areas and the acres in fixed-distance corridors because the latter allows limited travel off roads for the specific purposes of dispersed camping and retrieval of big game. Driving off road can spread weeds into areas where they did not previously exist, so this measure

illustrates the potential for new populations. New user-created routes increase the risk of transport, introduction, and establishment of new populations of invasive species.

Nonnative Invasive Plants – Environmental Consequences

Effects Common to All Alternatives

All alternatives, because they allow people to use the forest, have the potential for new populations of invasive species to become established. The number of new weed populations on the Santa Fe National Forest tends to be greater at lower elevations and in areas with higher open road and trail densities. These sites are warmer, drier, and typically exhibit some level of soil disturbance (USDA Forest Service 2005). Table 60 displays the measures for each of the alternatives, and the relative change from the existing condition, alternative 1.

Table 60. Measures for invasive species analysis

Measure	Alternative					
	1	2	2M	3	4	5
Miles of roads and trails traversing an existing invasive species population	131	90	89	82	97	89
Percent change from alternative 1	**--**	**-31**	**-32**	**-37**	**-26**	**-32**
Miles of routes open to any kind of vehicle use	5,626	2,552	2,463	1,869	3,017	2,537
Percent change from alternative 1	**--**	**-55**	**-56**	**-67**	**-46**	**-55**
Acres where driving off road is allowed (area or fixed-distance corridor)* **Percent change from alternative 1**	1,266,910 **--**	16,278 **-99**	13,897 -99	0 **-100**	1,065,440 **-16**	377,175 **-70**

*The nonnative invasive plant report, pages 5-6, provides an explanation of how the acres in this row are calculated.

The potential increase in invasive plant infestations measured here would be a direct result of seeds being transported along roads, trails, and areas having motorized cross-country travel. Once established, weed populations may spread other ways, like wind, water, livestock, wildlife, and humans (Center for Invasive Plant Management 2003). In the forest, many of the known invasive plant populations are associated with existing roads and trails, with new infestations being inventoried each year. We recognize risk exists for the introduction and transport of invasive plants through nonmotorized means, but locally, motorized use is one of the dominant mechanisms for weed dispersal.

The establishment of invasive species is closely associated with ground disturbance. The more disturbed a site, the greater the potential for establishment when a seed source is introduced. Areas regularly used for dispersed camping, for instance, have a high likelihood of becoming infested with invasive species because they tend to have extensive ground disturbance (see photos in the “Soil and Water” section).

All alternatives that allow cross-country motorized vehicle use—including in fixed-distance corridors—would result in an increased potential for invasive species transport, introduction, and establishment. Fixed-distance corridors to retrieve big game are expected to have less risk of weed establishment as compared to dispersed camping because the use is expected to be much less and have minimal ground disturbance. Nonetheless, some weed populations are expected to

expand into new areas wherever motorized cross-country use is permitted. The likelihood associated with big game retrieval is expected to be slight because trips are limited to one time in and out, occur infrequently across the forest, and are seasonally limited.

All the action alternatives propose designating unauthorized routes. The potential for invasive species populations to establish and spread from designating unauthorized routes is the same as along any system route. The unauthorized routes proposed for designation, ranging from 7 to 38 percent of those currently being used, still reduce the places where people can drive compared to alternative 1.

Direct and Indirect Effects, Alternative 1

The likelihood and potential extent of weed spread from motorized vehicles is highest under alternative 1, the current condition. Of all the alternatives, it permits the most motorized use on the Santa Fe National Forest. The potential for weeds and seeds to be spread by vehicles is greater due to the high number of open roads and trails in this alternative.

Not having any seasonal restriction on motorized cross-country travel may increase the potential for invasives to be transported into previously “clean” areas. It is not possible to predict how many new weed populations would be established as the result of motorized cross-country travel, but they would likely expand into new places. Off-highway vehicle tracks, with repeated use, can become established routes, which then provide habitat conducive to invasive species establishment. In Glacier National Park, for instance, exotic plant species showed a continuous distribution along road and trail corridors in the majority of study transects (Tyser and Worley 1992).

Cumulative Effects, Alternative 1

There would be no change in the rate of spread of weeds under alternative 1, the existing condition. Even with direct treatment of weeds, the cumulative effect of alternative 1 is that invasive plants are likely to increase in extent and number.

Most of the past, present, and reasonably foreseeable future actions on the Santa Fe National Forest tend to increase the risk of new weed infestations. On the other hand, the direct treatment of weeds can reduce or control weed populations. Currently, the forest can treat weeds if it does a site-specific analysis. It is working on a forestwide environmental impact statement that will propose a full suite of treatment methods, including herbicides, at the forestwide scale. Weed control efforts by other agencies and individuals may reduce the spread of weeds by having fewer weeds entering the forest from adjacent properties.

Direct and Indirect Effects, Alternatives 2 Through 5

All the action alternatives are expected to reduce the risk of new weed populations being established, mainly by preventing motorized cross-country travel. It is not possible to precisely predict how many new populations of invasive species would be prevented. None of the action alternatives would entirely prevent the establishment and spread of invasive species because some level of motorized and human use of the forest would continue.

As stated earlier, motorized travel off roads results in an increased potential for invasive species transport, introduction, and establishment. Alternatives 2, 2M, 4, and 5 allow motorized travel off

roads in areas for dispersed camping and retrieval of downed big game and, thus, have a higher likelihood of having new weed infestations. Places used for dispersed camping tend to be more easily infested with weeds than do access routes used for motorized big game retrieval. Camping areas are often highly disturbed, lack vegetation, and used frequently, whereas access routes for big game retrieval are not used repeatedly and tend to have minimal ground disturbance. In addition, motorized big game retrieval is limited to hunting season, and no seasonal restriction for dispersed camping exists unless the route itself is closed seasonally.

The likelihood and potential extent of weed spread from motorized vehicles would be low for alternative 2. The number of open roads and trails is reduced compared to alternative 1. Though it allows motorized cross-country travel in some areas for dispersed camping and big game retrieval, this use is limited in distance (150 or 300 feet from existing routes), intensity (usually one time in and out), and timing (big game retrieval is seasonally limited). All these restrictions reduce the risk of transport and introduction of invasive species compared to the existing condition.

Under alternative 2M, the likelihood and potential extent of weed introduction and spread from motorized vehicles would be low compared to alternative 1. Its limitations on motorized cross-country travel in corridors are more restrictive than those proposed in alternative 2. All corridors are no more than 150 feet from the edge of the road, and no vehicles are allowed within 100 feet of water when in corridors. This restriction is expected to reduce the potential for weed introduction, establishment, and spread along waterways. Limiting areas open to motorized cross-country travel as proposed in this alternative is expected to reduce the potential for invasives to be transported into previously “clean” areas more than alternative 1.

Alternative 3 reduces the likelihood and potential extent of weed spread the most as compared to alternative 1. Overall, it would have the lowest risk of potential spread of all the action alternatives because it reduces the miles of designated routes the most and completely eliminates motorized travel off roads and trails for any purpose.

Under alternative 4, the likelihood and potential extent of weed spread from motorized vehicles is less than alternative 1, but more than any of the action alternatives. The amount of motorized travel off roads is less than alternative 1 because it is limited in space to 300-foot corridors for camping and 1-mile corridors for big game retrieval. The latter is also limited in time to hunting season, but the spatial area covered is most of the forest. Because motorized use in fixed-distance corridors is restricted—a fixed distance from certain designated routes and only for those two purposes—it reduces the risk of transport and introduction of invasive species as compared to alternative 1.

Under alternative 5, the likelihood and potential extent of weed spread from motorized vehicles is less than alternative 1, and considered low to moderate overall compared to the other action alternatives. The amount of motorized travel off roads is less than alternative 1 because it is limited in space to 150- or 300-foot corridors for camping and 1-mile corridors off some main routes for big game retrieval. The latter is also limited in time to hunting season. Because the motorized use in fixed-distance corridors is restricted—a fixed distance from certain designated routes and only for those two purposes—it reduces the risk of transport and introduction of invasive species as compared to alternative 1. Because the motorized big game retrieval corridors in alternative 5 are limited to main routes, they cover less area than in alternative 4.

Cumulative Effects, All Action Alternatives

The proposal to provide for a designated system of roads, trails, and areas for motorized use could offset other activities that tend to increase weed populations. Combined with direct treatment of weeds, the cumulative effect of any of the action alternatives is to reduce the likelihood and potential extent of the spread of new and existing populations of invasive species. It is unlikely weeds would be completely eliminated.

Most of the past, present, and reasonably foreseeable future actions on the Santa Fe National Forest tend to increase the risk of new weed infestations. On the other hand, the direct treatment of weeds can reduce or control weed populations. The forest's ability to use a full suite of treatment methods is limited until a project specific environmental analysis analyzing the use of herbicides is finished and a decision made to authorize the use. Weed control efforts by other agencies and individuals may also be reducing the spread of weeds by having fewer weeds entering the forest from adjacent properties.

Effects of Forest Plan Amendments to Nonnative Invasive Plants

Proposed Amendments in Table 66 of Appendix 1

The proposed amendments that are administrative in nature are not expected to have effects to nonnative invasive species in this project or future projects. These proposed amendments, for the most part, simply update and provide consistent direction for the motor vehicle use map instead of the forest visitor map.

The proposed amendments restricting motorized travel in management areas that are currently open to it travel are likely to result in beneficial effects to nonnative invasive species when this project is, or future projects are, implemented. Restricting the addition of corridors, unless it is consistent with and benefits management area direction is expected to reduce the potential for introduction, transport, and establishment of invasive plant infestations. These amendments would only allow the addition of motorized dispersed camping and big game retrieval areas to the motor vehicle use map if the action is consistent with management area direction and following an appropriate level of NEPA analysis.

Proposed amendments that authorize designation of additional areas and corridors for motorized travel in Management Areas I, J, K, M, and N are also not expected to have effects to nonnative invasive species because all future actions will need to be consistent with management emphasis for the area in which the action is proposed, and are subject to an appropriate level of NEPA analysis. The emphasis for these management areas is to preserve specific high value resources and, therefore, future motorized designations are expected to be minimal.

Proposed Amendments in Table 67 of Appendix 1

These amendments are alternative specific, principally applying to alternatives 4 and 5, and propose to allow the inclusion of motorized dispersed camping corridors and motorized big game retrieval in the wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently prohibited. For this project, these modifications are expected to increase the risk of transport, introduction, and establishment of nonnative invasive species as a result of increased ground disturbance and vehicular traffic. Infestations of invasive plants can negatively affect the diversity of native plant communities,

reduce the quality of habitat for wildlife species, contribute to increased soil erosion, and decrease the recreational quality of the landscape for outdoor enthusiasts.

The modifications to the forest plan amendments specific to alternatives 4 and 5 leave the door open to future additions of areas or corridors to the MVUM and, if done, would be expected to have similar effects to invasive plants as described above for alternatives 4 and 5. However, future actions and the resultant effects will be subject to disclosure in an appropriate level NEPA analysis.

The amendments to alternatives 2 and 2M in Management Areas H and L are not expected to result in measurable increased risk of transport, introduction, or establishment of invasive plants because they are specific to very limited routes or access to private property. Those effects were already analyzed for this project.

Cultural Resources – Affected Environment

This section summarizes the heritage specialist report, located in the project record (USDA Forest Service 2012q).

The Santa Fe National Forest has approximately 10,000 cultural resources recorded in the New Mexico Cultural Resources Information System database. For the analysis conducted for this project, the total number of sites documented in the database is 9,896 located on forest lands, and 48 sites located on system roads outside of forest lands for a total number of 9,944 sites used in the analysis. The sites are widely distributed across the forest with concentrations occurring in certain parts of the forest that were suitable for occupation (figure 66).

Between 9000 and 5000 B.C., Paleo-Indian big game hunters occupied forest lands as indicated by the presence of large projectile points and campsites. Around 5500 B.C., occupation and use of the lands in the Santa Fe National Forest changed from Paleo-Indian to Archaic subsistence patterns. This change was reflected in a reduced reliance on large game exclusively, and more of a reliance on large game combined with use of wild plant foods and small game.

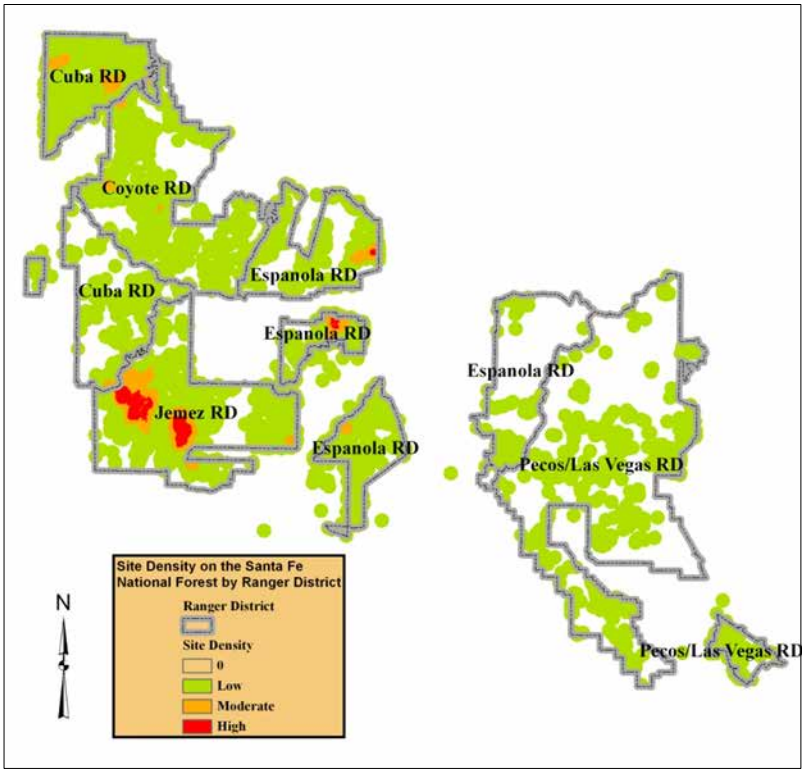

Figure 66. Site density map of cultural resources on the Santa Fe National Forest

No clear transition from an Archaic lifestyle to a pueblo life way is evident. Between AD 600 and 1300, evidence for Ancestral Pueblo use is poorly represented on the forest. By the end of the 13th century, conditions changed radically in upland situations in the Jemez, along the Rio Chama, in the Pecos Valley, and in the Gallina country. During this time, the size of sites grew exponentially, but the number of them declined because people abandoned the small, scattered sites in favor of the larger communities, some with over 1,000 rooms. The mid-15th century represents the pinnacle of Ancestral Pueblo development on forest lands. Similar to earlier times, the Jemez Mesas, Pajarito Plateau, and Rio Chama drainage were the areas occupied. These communities continued to aggregate, grow, divide, grow again, and develop lands into the historic period.

Initial European settlement of areas around the forest occurred in 1598 with an expedition led by Don Juan de Oñate of Zacatecas, who colonized New Mexico in 1595. After 1598, the Spanish established mission communities and awarded land grants. The Camino Real from Mexico provided the lifeline between the seat of Spanish power in Mexico and the far northern frontier in northern New Mexico. In 1680, the pueblo populations along the Rio Grande revolted, forcing the Spanish to leave the area until 1692. In 1692, Don Diego de Vargas led forces back into northern New Mexico to reestablish the Spanish capital at Santa Fe. Pueblo communities reacted differently to the reconquest. Some capitulated, and others established refugee communities.

Mexican independence from Spain in 1821 meant Mexico no longer had the resources to manage its far northern communities. This eventually led to Spanish rule, and for Native American communities, the loss of any special status. Hispanic communities expanded onto tribal land and lands that were to become the Santa Fe National Forest. The process of granting lands increased and led to growth of Hispanic communities. In addition to the Camino Real, the establishment of trade with the United States to the east via the Santa Fe Trail and to the west via the Old Spanish Trail led to further commercial expansion into New Mexico.

Conflict between the United States and Mexico over trade arose. The ensuing conflict ended in 1846 with the signing of the Treaty of Guadalupe Hidalgo, in which the territory of New Mexico became part of the United States. As the population grew, so did use of forest lands. In 1862, the Homesteading Act granted land to people, in many cases on lands that were formerly considered grant lands. Population growth at the beginning of the 20th century resulted in continuing expansion onto forest lands. In 1912, New Mexico entered the United States as the 47th state.

The Santa Fe National Forest was created from the Pecos River Forest Reserve (1892) and the Jemez Forest Reserve (1905) in 1915. Much of the newly formed forest consisted of land grants, which led to conflicts between land grant communities and forest users. Commercialization of forest resources, primarily timber, led to expansion of commercial enterprises on the forest.

The Forest Service also contributed to the historic record by constructing administrative sites such as ranger district offices, lookouts, permitted recreation residences, work stations, recreation sites, and contact stations. Much of this built environment disappeared when locations stopped being used and before historic preservation laws were passed.

Much of the transportation system on the forest resulted from construction of timber sale roads and subsequent use by the public once sales were complete. Many of these roads follow old wagon roads, trails, and access ways developed by Native Americans and Hispanics.

Few national forests have the ethnographic diversity found on the Santa Fe National Forest. Ethnographic use is important because forest activities could affect traditional cultural properties and traditional cultural practices. Native Americans have used and occupied forest land for millennia and, in their eyes, since "time immemorial." Many of the archaeological sites, especially the large Classic Period pueblos, were the homes of modern day pueblo people's ancestors. The modern pueblo communities include the Towa speakers of the Pueblo of Jemez living in the village of Walatowa; the Keres speakers of the modern day villages of Zia, Santo Domingo, and Cochiti; the Tewa speakers of the six villages in the Española Basin including Tesuque, Pojoaque, Nambe, San Ildefonso, Santa Clara and Ohkay Owinge (San Juan); and the Tiwa speaking pueblos of Picuris and Taos.

The pueblos have the strongest connection to forest lands by virtue of proximity and ties to the abundance of archaeological resources. The pueblo way of life is heavily tied to the landscape and incorporates the land into their cosmological understanding of the order of the world. Pueblo life is reliant on ties between sacred locations marked by trails and shrines, as well as other markers. They mark the landscape with prayer and ceremony and incorporate it into their daily lives. Many places on forest lands still retain a sense of importance and function for pueblo communities. Access and use of these places is essential for the continuation of pueblo life.

Nonpueblo Native American communities, including the Jicarilla Apache, Navajo, Ute Mountain Ute, Southern Ute, and Apache, Kiowa and Comanche Tribes, also have ancestral ties to certain sites and areas in the forest. Sites associated with these groups tend to be lower in number because they came to the area later and didn't supplant the existing ancestral pueblo populations. They may have trails and shrines, but the association with their larger life way does not match that of the pueblos.

Hispanic communities adjacent to and surrounded by the forest have strong ties to the land, primarily as a resource base. Lands that were once land grants still provide firewood and other plant resources for those communities. The ancestors of these communities lived by extracting timber, game, and subsistence and medicinal resources from forest lands.

In summary, the Santa Fe National Forest *"…embraces and, in turn, is surrounded by lands within the traditional use areas of many of the Native American and Hispanic communities of northern New Mexico."* (Levine 1996:349).

Three concerns related to cultural resources came up during the scoping period:

1. Motorized use of the forest could damage cultural resource sites.
2. Motorized use of the forest could damage traditional cultural properties.
3. Reducing the miles of designated routes could restrict access to traditional cultural properties.

Regulatory Background for Cultural Resource Sites

Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties. Designating certain roads, trails, areas, and fixed-distance corridors is considered an undertaking. To help the Forest Service determine which kinds of designations are undertakings, the Southwestern Region of the Forest Service negotiated a "Standard Consultation Protocol for Travel Management Route Designation"

with State Historic Preservation Officers from Arizona, New Mexico, Oklahoma, and Texas. The protocol exempts some undertakings from review and consultation under Section 106. Examples of the exemptions include designating existing open National Forest System routes, designating existing fixed-distance corridors, allowing parking next to a road, and continuing authorizations covered by other NEPA decisions. The reason is that any detrimental effects have already occurred (figure 67).

Figure 67. Rubble from a collapsed ancestral pueblo field house, damaged by past road construction and use, Jemez district. All archaeological deposits within the road have already been displaced or destroyed by past road construction and use.

Proposing to allow motorized use on roads currently closed to it, adding unauthorized routes to the system, and designating new fixed-distance corridors or areas does require consultation under Section 106.

A separate report documenting the inventory, evaluation, and resolution of effects to cultural resources to meet the requirements of Section 106 of the National Historic Preservation Act has been prepared and submitted to the New Mexico State Preservation Officer, who concurred with the forest's findings on May 16, 2012. This completes the first phase of survey and clearance; the protocol allows subsequent phasing. Only routes and areas meeting the requirements of Section 106, as articulated in the protocol, will be posted to the map.

Potential Damage to Cultural Resource Sites

The Santa Fe National Forest defines a cultural resource site as "a location of purposeful prehistoric or historic human activity [resulting in] a deposit of cultural materials beyond the level of one or a few accidentally lost artifacts." In practical terms, this means a cultural resource site can range from an old pueblo building, an old homestead, rusted tin cans, or broken pot shards and arrowheads scattered over the ground. Forest personnel have records for 9,944 cultural resource sites in and near the forest.

The wheels of vehicles can displace small artifacts located on the ground's surface. Repeated use of a route or area removes its vegetation, which can accelerate the erosion and displace and damage artifacts. Vehicles transporting people to and around the forest can indirectly cause damage to cultural resource sites. For example, people may inadvertently damage sites while camping (figure 68). In other cases, damage appears to be intentional (figure 69).

Figure 68. Fire ring in a dispersed camping area constructed from the foundation stones of an early 20th century cabin, Pecos/Las Vegas district. Foundation is visible in shadows behind the fire ring

Figure 69. Early 20th century Forest Service administrative building near a dispersed camping area, painted with graffiti, Española Ranger District

Under alternative 1, the places on the Santa Fe National Forest where damage to cultural resource sites could occur are unauthorized routes, closed roads being proposed open for motorized use, fixed-distance corridors for motorized access to dispersed camping, and areas open to motorized cross-country use. Table 61 depicts the number of sites existing at each of these locations.

Table 61. Number of cultural resource sites that could be damaged through vehicle use under the existing condition, alternative 1

Location of Cultural Resource Site	Number of Sites at Risk	Percent of All Known Sites	Acreage of Sites at Risk
Within an unauthorized or closed route	147	1	less than 4
In a fixed-distance corridor for motorized dispersed camping	439	4	541
In places currently being used for motorized cross-country travel	4,459	45	7,995

Potential Damage to Traditional Cultural Properties

A traditional cultural property *"… can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community."* Examples of traditional cultural properties are trails used by the penitentés for ceremonial purposes, or sacred sites used by tribes and pueblos.

Vehicles may physically damage traditional cultural properties with their wheels or by causing erosion. An indirect way that vehicles cause damage is by transporting people to traditional cultural properties. Sometimes people who do not know about the importance of a traditional cultural property damage them or intrude on them.

The traditional cultural properties identified in this analysis came from those provided to forest heritage staff during other projects. No traditional cultural properties were identified during scoping conducted for this project, although effects to traditional cultural properties were identified as an issue. Twenty-three traditional cultural properties are documented on or near the Santa Fe National Forest, and the physical manifestation of each one varies in location, physical appearance, and association with traditional use. For instance, at some the presence of "outsiders" can disrupt traditional use, while at others the presence of outsiders is irrelevant. Because of this variability, and based on their experience in prior consultation with traditional and indigenous communities, forest heritage specialists evaluated the documentation for each recorded traditional cultural property and judged whether it would be at risk (table 62). This total is not expected to be a complete inventory of all traditional cultural properties on the forest, but represents those documented up to the date of this analysis.

Table 62. Number of traditional cultural properties that could be damaged through vehicle use under the existing condition, alternative 1

Location of Traditional Cultural Property	Number at Risk	Percent at Risk
Within an unauthorized or closed route, in a fixed-distance corridor for motorized dispersed camping, or in a place where motorized cross-country travel is happening	11	48
Close to any of the above so that unwanted disturbance by outsiders is a possibility	13	57

Access to Traditional Cultural Properties

Under the current designated system, people have nearly unlimited motorized access to traditional cultural properties.

Cultural Resources – Environmental Consequences

Direct and Indirect Effects, Alternative 1

Potential Damage to Cultural Resource Sites and Traditional Cultural Properties

Motorized use of the Santa Fe National Forest under alternative 1 risks damaging or disturbing the sites (or participants at sites) listed in table 61 and table 62 by potentially causing rutting, erosion and surface disturbance, or indirectly leading to site deterioration from vandalism.

In table 61, a higher number of sites or acreage is not equivalent to a greater amount of damage. Damage depends on the location of the site relative to the motorized use. Unauthorized routes may skirt the corner of a site or go through the middle of one. Fixed-distance corridors for motorized dispersed camping have a wider footprint (150 or 300 feet from either side of the road) and are, thus, more likely to contain entire sites within their boundary. Sites within motorized dispersed camping corridors are also more likely to be disturbed since the entire site tends to be accessible to campers (figure 68). The potential for damage to sites in places being used for motorized cross-country travel is not uniform because motorized travel in them is not uniform.

Table 62 shows 11 traditional cultural properties falling completely or partially within places where motorized cross-country travel occurs. Unauthorized routes cross three of these, and two are located partially within motorized dispersed camping corridors. As with cultural resource sites, traditional cultural properties located where motorized cross-country travel occurs are not uniformly impacted by vehicles because use in the areas is not uniform. In some cases, overall impacts in cross-country areas may be less than that in unauthorized routes or motorized dispersed camping corridors.

Access to Traditional Cultural Properties

Two properties may not have sufficient motorized access under the current condition. Otherwise, with few restrictions on motorized use, people are able to get to the forest's known traditional cultural properties with vehicles.

Cumulative Effects, Alternative 1

The direct and indirect effect of alternative 1 is that cultural resource sites and traditional cultural properties risk being damaged by the use and existence of roads and areas. The past, present, and reasonably foreseeable future management actions are not anticipated to cause cumulatively more adverse effects on cultural resources because the activities proposed will result in determinations of "no historic properties affected" or "no adverse effect." Cultural resources are always avoided or mitigated in management activities proposed by the forest. Natural disturbances, however, such as the Las Conchas Fire and subsequent flooding, could cumulatively result in irretrievable losses of cultural resource sites.

Direct and Indirect Effects, Alternatives 2 Through 5

Potential Damage to Cultural Resource Sites and Traditional Cultural Properties

The potential for damage to cultural resource sites or traditional cultural properties is almost none under any of the action alternatives because effects to sites would be mitigated, or sites would be avoided (see "Mitigations" section in chapter 2). The change from the current condition would be a 100 percent reduction in risk of damage to cultural resource sites and traditional cultural properties because motorized travel would be restricted to routes and corridors that have heritage clearance. Designating unauthorized routes would not damage any cultural resources because sites wouldn't be placed on the motor vehicle use map unless they were reviewed and consulted on under Section 106.

Motorized big game retrieval is considered an undertaking that does not have the potential to affect cultural resources (amended PA, appendix A, sections IIA, O, P and Q). Santa Fe National Forest archaeologists have determined that motorized big game retrieval does not pose a threat to either type of site. This activity is similar in its spatial extent and impact to districtwide or areawide personal use firewood collection. It has been programmatically determined that there are no substantial impacts to cultural resource sites from personal use districtwide or areawide firewood collection (USDA Forest Service and State Historic Preservation Offices, 2007, appendix A, II, P). Because motorized big game retrieval is similar in impact and is much less in yearly occurrence than districtwide or areawide firewood permits, it is reasonable to assume that there would be no substantial impact to cultural resource sites from motorized big game retrieval. Therefore, there would be no differences in potential impacts between alternatives.

Access to Traditional Cultural Properties

No effect on access to traditional cultural properties exists because the Santa Fe National Forest would issue permits to those who require motorized access. This means there would be no change from the current condition because people who need to would continue to be able to drive to traditional cultural properties. If inadequate access exists now, alternatives 2 through 5 would not improve it because no new routes are proposed for construction.

Cumulative Effects, Alternatives 2 Through 5

Because alternatives 2 through 5 are anticipated to have no effect to cultural resources, there would be no cumulative effects.

Effects of Forest Plan Amendments to Cultural Resources

Management Areas I, P, Q and R in the forest plan contain management emphasis specific to cultural resources. None of the plan amendments will alter the management emphasis of these areas.

Proposed amendments that are administrative in nature (e.g. removal of lower thresholds for road density standards, eliminating the closures and restricted areas on the forest visitor map because of the motor vehicle use map, etc.) will have no effect on cultural resources.

Proposed amendments in table 65 restricting off-highway vehicle travel in management areas currently open to it will not adversely affect cultural resources when future projects are implemented (specifically Management Areas P, Q, and R for cultural resources). These

amendments will only permit cross-country travel where authorized by the motor vehicle use map or permit, after appropriate NEPA analysis and completion of the Section 106 process. The Section 106 process will account for disturbances of known cultural resources including archaeological sites and traditional cultural properties (TCPs). Restricting motorized travel may have beneficial effects in terms of reducing exposure of cultural resources to motorized travel.

Proposed amendments in table 65 authorizing designation of areas and corridors (specifically Management Area I for cultural resources) currently closed to cross-country motorized travel will not adversely affect cultural resources because the plan still specifies modifications must be consistent with the management direction of the area. The presence of areas and fixed-distance corridors are not, by definition, incompatible with the management direction and consultation associated with the Section 106 process and completion of appropriate NEPA analysis will result in no adverse effects to cultural resources. These amendments also are consistent with current management and land use.

Proposed amendments in table 66—specific to alternatives 4 and 5 authorizing the addition of motorized dispersed camping and big game retrieval corridors, specifically in the wild and scenic rivers and Jemez National Recreation Area—may lead to an increase in cross-country use or establishment of new trails which will result in ground disturbance that has the potential to adversely affect cultural resources. However, additions of areas or fixed-distance corridors would receive an appropriate level of NEPA analysis and completion of the Section 106 process. Completion of NEPA and Section 106 will result in cultural resources not being adversely affected or adverse effects will be mitigated prior to implementation.

Air Quality – Affected Environment

This section on air quality summarizes the report "Air Quality" located in the project record (USDA Forest Service 2012c).

The public expressed this concern about air quality:

> *"Motorized travel causes fugitive dust and vehicle emissions that are harmful to human health and contribute to climate change."*

The Forest Service also considered how dust and emissions caused by vehicles could affect visibility in Class I areas in and adjacent to the forest.

Vehicles driving on unpaved roads and trails stir up dust as well as produce tailpipe emissions. In addition, disturbed soil such as the existing unpaved road network on the forest also produces dust as a result of wind erosion. Dust, whether caused by vehicles or wind, contributes particulate matter (PM) to the atmosphere. Roads and trails also act as corridors for vehicles' emissions, which contain pollutants like carbon monoxide (CO), nitrogen oxide (NO and NO_2, referred to as NO_x), and volatile organic compounds (VOCs).

Ideally, direct measurements of air quality data in high traffic areas near the forest would be available to truly assess air quality conditions on the forest. Alternately, traffic counts, vehicle miles traveled, or average vehicle speed on the forest could all be used to characterize dust, particulate matter, and tailpipe emissions at a local level. These data, however, aren't sufficiently available to characterize dust or emissions from the forest. Monitoring air quality and directly

measuring dust and tailpipe emissions on all forest routes is neither practical nor economically feasible.

Lacking direct measurements, traffic counts, and other parameters in the forest, we analyzed air quality data from outside the forest. We also reviewed "nonattainment" and "maintenance" areas under the Clean Air Act's National Ambient Air Quality Standards. Regional haze conditions near the forest's Class I areas were evaluated using a model called IMPROVE (http://views.cira.colostate.edu/web/), and populated with data from San Pedro Parks Wilderness and Bandelier National Monument. Finally, to understand traffic patterns, we compared the New Mexico Department of Transportation's traffic count data from 2006 on roads near the forest to known traffic loads in the forest.

All vehicles pollute the air with NO_x, CO, and VOCs. The Environmental Protection Agency found that an unregulated recreational vehicle with a two-stroke engine can cause as much pollution as 20 automobiles. On dirt roads and trails, all vehicles raise dust if conditions are right. Silty soils cause the most dust.

The volume of traffic on the Santa Fe National Forest contributes a minor source of dust and vehicle emissions when compared to the surrounding urban centers and travel corridors outside the forest, which include Santa Fe, Albuquerque, Española, Los Alamos, and Pecos, along with State Highway 285 and Interstate 25. Traffic counts on routes in the Santa Fe National Forest show that highly used roads have less than 200 vehicles per day. Many forest roads have one vehicle or less per day. For comparison, about 2,600 vehicles drive through the village of Jemez Springs per day and the average daily traffic on Interstate 25 between Santa Fe and Albuquerque for the last 3 years is approximately 18,300 vehicles (New Mexico Department of Transportation 2009).

Air Quality

Air quality in New Mexico, as measured by criteria pollutants, regional haze, and visibility, is good compared to other states. The exceptions are Bernalillo County, Albuquerque, and El Paso. Most impacts to air quality in the forest originate elsewhere, from sources like oil and gas development and electric power generation in the San Juan basin. These sources contribute to ozone and regional haze. The urban transportation networks of Santa Fe, Albuquerque, Española, and Los Alamos and Highway 285 and I-25 can impact air quality in the forest. Typically, wildfires cause the worst air quality in the region for several months in the summer. Despite these sources, monitoring data show that air quality in and near the forest is good. For 2011, the EPA classified all counties in and adjacent to the forest as being in attainment of air quality standards (U.S. Environmental Protection Agency 2011).

No air quality monitoring stations exist in the forest itself. The city of Santa Fe, however, is often cited for its excellent air quality. For instance, the World Health Organization cited it—out of 1,100 cities in 91 countries—as having some of the lowest concentrations of particulate matter (WHO 2011). The amounts of PM_{10} and $PM_{2.5}$ are far below national standards and, thus, representative of very good air quality (table 63 and table 64).

Table 63. Maximum concentrations of PM_{10} monitored near the Santa Fe National Forest

PM_{10}	24 Hour Standard = 150 ug/m^3		
Year	Bernalillo	Jemez Pueblo	Santa Fe
2008	31	145	25
2009	45	82	33
2010	22	84	36
2011	62	ND	ND

Source: EPA 2011a

Table 64. Maximum concentrations of $PM_{2.5}$ monitored near the Santa Fe National Forest

$PM_{2.5}$	24 Hour Standard (98th percentile) = 35 ug/m^3			Annual Standard = 15 ug/m^3	
	Rio Rancho	Jemez Pueblo	Santa Fe	Rio Rancho	Santa Fe
2008	10.1	72.4	7	4.32	3.15
2009	10	32.4	6.7	3.75	2.68
2010	ND	19.2	6	ND	2.93

Source: EPA 2011a

Albuquerque represents an urban setting rather than that typical of the Santa Fe National Forest, so it wasn't included in the tables above.

Health

Emissions and dust compose the two main sources of air pollution from vehicles in the forest. Emissions commonly thought to impact human health include nitrogen oxides, carbon monoxide, volatile organic compounds, and particulate matter. Dust is composed of particulate matter. The finest particulate matter, called $PM_{2.5}$, if embedded in people's lungs, can cause premature death from heart or lung disease. To cause health problems, people must be exposed regularly to high concentrations of these pollutants and dust. Forest personnel have no data on whether these pollutants or dust has caused people to have health problems. Monitoring data, however, near the forest show low levels of these pollutants—at levels public health officials consider to be good.

We consider the amount of traffic on the Santa Fe National Forest to be low, so the amount of vehicle emissions and dust generated is also low. For example, the kinds of duststorms seen blowing across Albuquerque in May are extremely rare in our forested setting. Trees block wind that carries dust.

Greenhouse Gases

All vehicles emit greenhouse gases that contribute to global warming. Information to quantify the amount of emissions, such as actual miles driven, from the Santa Fe National Forest does not exist.

Visibility

The forest contains two Class I areas, the Pecos Wilderness and San Pedro Parks Wilderness. Bandelier National Monument, which is adjacent to the forest, is also a Class 1 Area. San Pedro Parks and Bandelier are expected to meet their Class I area visibility goals based on monitoring data so far. The two visibility monitors located in San Pedro Parks and Bandelier—because of their proximity—are also used to assess visibility in the Pecos Wilderness.

Under the 1999 Regional Haze Rule, the EPA set a goal of restoring visibility to "natural conditions" at 156 national parks and wilderness areas by 2064. "Natural conditions" refers to what visibility should be without anthropogenic influence. Based on monitoring data from San Pedro Parks and Bandelier, visibility is impaired when compared to natural conditions. Electric utilities and oil and gas development from the four corners area contribute the most pollutants that impair visibility. The fraction of pollution attributed to dust is relatively small and is not viewed as a significant issue at these two sites.

New Mexico is required to have a state implementation plan to meet the 2064 visibility goals. Due to the amount of planning and potential regulations that the State or EPA may have to impose on industry, the State is not expected to attain the 2064 goals in the next few years. It must, though, show progress toward the 2064 goal. Based on the last decade, visibility has improved at Bandelier and San Pedro Parks. If visibility continues to improve at the current rate, the State will meet the visibility goals by 2064.

Air Quality - Environmental Consequences

Direct and Indirect Effects, Alternative 1

Air Quality

Traffic in the forest contributes a minor source of fugitive dust and tailpipe emissions within airsheds that include the urban transportation network of Santa Fe, Albuquerque, Espanola, Los Alamos, and Pecos, as well as Highway 285 and I-25. Given this context, discernible changes to air quality as a result of current conditions is negligible.

Health

Alternative 1, which is where people drive now, has the most miles of unpaved roads and trails. As noted in the "Affected Environment" section, however, we consider the amount of vehicle emissions and dust raised now to be very low. We do not have data on whether anybody has health problems from vehicle emissions or dust caused by driving in the forest, though monitored data near the forest shows very low levels of these pollutants, at levels public health officials consider to be good.

Greenhouse Gases

We predict that the forest's contribution to greenhouse gases from vehicles is negligible now, and would continue to be negligible under alternative 1. The number of vehicles driving in the national forest is an extremely small part of the daily traffic in the surrounding area.

Visibility

Visibility in the forest's Class 1 areas is on track to meet future goals, and vehicular emissions and fugitive dust from the forest is not a significant contributor to visibility impairment on the forest.

Direct and Indirect Effects, Alternatives 2 Through 5

Air Quality

Alternatives 2 through 5 reduce the miles of unpaved routes that people could drive on. Alternative 3 reduces it the most; alternative 4 the least.

Where dust and emissions go varies greatly with weather, topography, and road condition. All the alternatives reduce the mileage of unpaved routes, but saying that dust and emissions would also decrease may not be accurate. A dry, windy summer coupled with a lot of visitors might cause a lot of dust and pollution under any of the alternatives. Conversely, the proposed closures for wet weather would have no effect because no dust rises from mud.

We can say that having fewer unpaved routes available for motorized use would reduce the locations where dust and emissions from vehicles occur. Not allowing motorized cross-country travel would decrease the amount of dust and locations in which it could be generated by eliminating the potential for new unauthorized routes. New routes increase the chance of dust by removing vegetation and lowering the threshold at which particles become airborne (Goosens and Buck, 2008).

All action alternatives reduce the miles of unpaved soil surfaces in the vicinity of Class 1 areas that could be driven on. This should reduce the places where fugitive dust from vehicles arises and, in turn, result in a benefit to air quality near San Pedro Park Wilderness, Pecos Wilderness, and Bandelier National Monument. Similar air quality benefits would be expected near Dome Wilderness and Chama River Canyon Wilderness.

Because we assume the amount of motorized use would be the same under the action alternatives (assumption 1), no change in total emissions of pollutants from vehicles, or the dust they cause would occur on the forest and the vehicular network will remain in place. As such there is no significant distinction between alternatives at the forest level.

Health

The effect of any of the action alternatives on people's health is difficult to predict, though it is expected that there are negligible differences between alternatives in terms of air quality impacts to human health. The amount of vehicle emissions and dust generated is not expected to change, and is very low now. Whether people are affected depends on how often they breathe dust, which we cannot predict in this analysis. The fate and transport of dust and tailpipe emissions on any day will be highly variable for all alternatives, contingent on weather and actual travel. It can be assumed that some level of nuisance exposure to fugitive dust or tailpipe emissions is possible under all alternatives. Any direct or indirect dose-response effect to people from forest travel is difficult to isolate and identify, but is expected to be negligible.

Greenhouse Gases

Because we assumed that the amount of motorized use of the Santa Fe National Forest would not change, the amount of greenhouse gases emitted by vehicles in the forest would also not change. We predict that the forest's contribution to greenhouse gas emissions from vehicles is negligible now, and would continue to be negligible under alternatives 2 through 5. The number of vehicles driving in the national forest is an extremely small part of the daily traffic in the area.

Greenhouse gas emissions from vehicles used in the forest may be more influenced by Federal regulatory restrictions on mobile sources of air pollution as well as market penetration and adoption of less polluting, four-stroke engines for recreational vehicles.

Visibility

Visibility in the forest's Class 1 areas is on track to meet future goals, and vehicular emissions and fugitive dust from the forest is not a significant contributor to visibility impairment on the forest. As a result any change would likely not be noticeable since the forest's overall contribution to air pollution is already small. There is no significant distinction between alternatives at the forest level with regards to visibility.

Cumulative Effects, All Alternatives

Air Quality

Because no change in air quality is expected as a result of the alternatives, there would be no cumulative effects to air quality.

Health

We don't know how many people have health problems caused by vehicle emissions or dust, so we can't make a prediction about how other actions would cumulatively affect people's health. Many other factors, like diet and lifestyle, play into a person's health. In addition, most of the air pollution in the forest comes from activities that occur off the forest, including dust. Monitoring data from sites near the forest shows that all pollution in and near the forest is at very low levels, at levels public health officials consider to be good.

Greenhouse Gases

The greenhouse gases emitted under any alternative would be negligible. Keeping or changing the Santa Fe National Forest's current designated route system would make no difference since it would not change the amount of motorized use.

Visibility

None of the alternatives would cause a cumulative effect on visibility. Alternative 1 would result in no change in visibility, so there would be no cumulative effect. Alternatives 2 through 5 could improve the visibility of Class I areas, but to such a small degree as to not be noticeable.

Effects of Forest Plan Amendments to Air Quality

Modifying the forest plan with the amendments in appendix 1 would have no significant effects to air quality at the forest level as a result of this project and future projects.

Proposed amendments in table 65 of appendix 1 are administrative in nature, restrict off-highway vehicle travel in management areas that are currently open to it, or authorize designation of additional areas and corridors for motorized travel in Management Areas C, D I, J, K, M, and N. These amendments simply update and provide consistent direction for the motor vehicle use map, or only allow the addition of areas, motorized dispersed camping, and big game retrieval areas to the motor vehicle use map if the action is consistent with management area direction in the current forest plan, so none of the amendments are expected to have effects to air quality at the forest level as a result of this project or future projects.

Proposed amendments in table 66 of appendix 1 are alternative specific and either (1) propose, principally in alternatives 4 and 5 to allow the inclusion of motorized dispersed camping corridors and motorized big game retrieval in the wild and scenic river areas (East Fork, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently prohibited or (2) allow for motorized use on specifically identified routes, principally in Management Areas H and L. For this project, these modifications may have small impacts to air quality locally, but will have no effect to air quality at the forest level as a result of increased ground disturbance and vehicular traffic.

Wildfires - Affected Environment

This section summarizes the wildfire report located in the project record (USDA Forest Service 2012f).

People raised these two concerns about wildfires:

1. Closing routes to motorized use increases the chance of having larger wildfires because it would take longer for firefighters to get to them.
2. Motorized use of the forest increases the risk of wildfires caused by peoples' activities.

Firefighters' Response Time: The time it takes firefighters to get to wildfires varies greatly depending on the fire's location. Firefighters can easily drive to abandoned campfires in Forest Service campgrounds, for example, since the roads to and in campgrounds are usually in good condition. On the other hand, they must hike or fly to fires located in a wilderness area. Driving and flying to fires tends to be quicker than hiking, but again that depends on how far away the fire is from a staging area. The Travel Management Rule exempts firefighters from motorized designations when responding to wildfires.

Number and Causes of Wildfires: Lightning and people caused all of the wildfires on the Santa Fe National Forest during the last 10 years (table 65). Lightning accounted for

From 2000 to 2010:

- Number of human-caused wildfires started within 300 feet of all existing roads: 525
- Percent that were campfires: 90
- Number of human-caused wildfires in alternative 1 camping corridors: 12
- Number of human-caused wildfires started in areas where motorized cross-country travel is allowed: 201
- Percent of human-caused wildfires from campfires: 61

83 percent of all the wildfires, and people the remaining 17 percent. A variety of human activities contributed to the wildfires, but campfires caused the most by a wide margin.

At least one study documents that off-highway vehicles can directly cause wildfires when grasses and forest litter come in contact with hot exhaust systems, exhaust, and hot manifolds for an extended period of time (Baxter 2002). This study, however, does not examine the probability of ignition over a wide range of conditions, and forest fuels only catch fire in very specific conditions.

Vehicles indirectly aid in starting wildfires by transporting people to and around the forest. Campfires compose the main source of all human-caused wildfires in the last 10 years. Arson, downed power lines, chain saws, and smoking also contributed. Santa Fe National Forest fire personnel have not documented any instances where a vehicle's exhaust system has directly caused a wildfire. We do not collect data on whether vehicles were indirectly associated with the cause of a wildfire. For example, we can't determine the number of wildfires that hunters retrieving their downed game caused, because it would have been attributed to smoking or a campfire.

Table 65. Summary of number and causes of wildfires in the Santa Fe National Forest, 2000–2010

Cause	Total Number of Recorded Wildfires, 2000–2010	Percent of Total Wildfires 2000–2010
Lightning	1,409	83
All human caused	284	17
Fires caused by campfires only	173	10

Wildfires - Environmental Consequences

Direct and Indirect Effects, Alternative 1

Firefighters' Response Time – With no change in the designated route system, firefighters are expected to get to fires in the same amount of time as they do now. As just described, this varies depending on the location of the fire.

Number and Causes of Wildfires – The wildfires caused by people would remain the same as shown in table 65 because motorized use of the forest would not change.

Cumulative Effects, Alternative 1

Because no change in response time or the numbers and causes of wildfires is expected under alternative 1, there would be no cumulative effect.

Direct and Indirect Effects, All Action Alternatives

Firefighter's Response Time – The time it takes for firefighters to arrive at a fire could slightly increase, slightly decrease, or remain the same. It could increase slightly if the routes closed to motorized use become impassable by engines over time due to vegetation or severe erosion from lack of maintenance. This, however, could be offset by the other means, like helicopters, that

firefighters have to get to fires. Should the condition of routes closed to motorized use remain the same, there would be no change in response time because vehicles responding to emergencies like wildfires are exempt from the designations under the Travel Management Rule. With improved maintenance on routes open to motorized use, firefighters could conceivably get to wildfires more quickly.

Number and Causes of Wildfires – No change in wildfires caused by lightning is expected as a result of having a designated system of roads, trails, and areas because lightning is a natural event. No change in the number of human-caused fires associated with exempted uses, like woodcutting with a permit, would occur unless fewer permits were issued, or the restrictions on driving written into permits increase.

For alternatives 2 through 5, it is likely that campfires would continue to be the main source of human-caused fires since the amount of camping on the national forest overall is not expected to change. This project reduces where people can drive to camp, but doesn't restrict their ability to camp.

For alternatives 2 through 5, with the prohibition on motorized cross-country travel, we expect to see a small decrease in the number of human-caused fires away from routes since some people will no longer drive off road, and some places that had been accessible with a vehicle will no longer be. If people park next to the road and go into the back country on foot, the number of human-caused wildfires could remain the same, but there is no way to predict how many people will forfeit a visit because they can't drive, or how many would choose to walk into the back country. Adding unauthorized routes to the system could slightly increase the risk of human-caused wildfires nearby. Since the unauthorized routes are already being driven on, we think the risk is smaller than if the area had been previously inaccessible.

No change from alternative 1 in the number of wildfires caused by campfires in the fixed-distance corridors is expected for any of the action alternatives. The proposed corridors in all the action alternatives capture most of the existing motorized dispersed camping, which is not expected to change even if people need to walk their gear to a campsite.

The number of wildfires caused by hunters retrieving game is not known, but is expected to be very small since no fires have been attributed directly to a vehicle, and less than 2 percent to smoking and equipment combined. Since the number of trips to retrieve game is not expected to vary enough among the alternatives (even alternative 3, where someone might walk in) to be material, there would be no change in the number of potential wildfires caused by motorized big game retrieval.

Cumulative Effects, All Action Alternatives

The time it takes for firefighters to get to a fire is not expected to change enough to be substantial, so there would be no cumulative effects.

We expect a slight reduction in the number of human-caused wildfires from the prohibition on motorized cross-country travel. Combined with the forest's other prevention efforts like thinning and prescribed burning and education campaigns such as Smokey Bear, there could be a cumulative reduction in human-caused wildfires for all the action alternatives. Because, however, lightning causes most of the wildfires, the overall reduction in the number of wildfires on an annual basis would probably not be noticeable.

Past, present, and reasonably foreseeable future actions that could cumulatively offset any reduction in wildfire starts caused by the action alternatives are: construction, reconstruction, and maintenance of roads and developed recreational sites; subdivision and development of private property including mining claims; and technological advances in off-highway vehicles.

Effects of Forest Plan Amendments to Wildfires

The proposed amendments in table 65 of appendix 1 are not expected to have an effect on wildfire starts. The administrative amendments simply update and provide consistent direction. Future designations of motorized areas or corridors for Management Areas I, J, K, M, and N are expected to be minimal because of management emphasis to protect specific high value resources. Further, any additional designations will be subject to the appropriate level of NEPA.

The proposed amendments to include motorized dispersed camping and motorized big game retrieval corridors in wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently not allowed, apply to alternatives 4 and 5. The amendments allowing motorized dispersed camping and motorized big game retrieval corridors may increase the risk of wildfire starts because they allow for the designation of additional motorized corridors in the future. Any increase in motorized dispersed camping and motorized big game retrieval would increase the amount of access in these places, which may lead to an increased risk of wildfire starts from things like campfires. The amendments allowing motorized use along the small number of roads and trails under special use authorization or where use is believed to be important to continue to allow are not expected to affect wildfire starts because motorized use along those routes is infrequent.

Visual Quality - Affected Environment

The full text of this section is located in the project record in the report called “Visual Quality” (USDA Forest Service 2012j).

The Santa Fe National Forest routinely considers a project’s effects on visual quality. The interdisciplinary team wrote this concern:

> “*Closing routes to motorized use could affect visual quality.”*

A forest’s visual quality combines its scenic attractiveness with the public’s visual expectations. Scenic attractiveness could be a view of the mountains, a stream draped over boulders, a waterfall, or a meadow full of wildflowers. The public expects to see natural things like these in a forest, rather than ATMs, traffic lights, strip malls, or anything else commonly found in cities.

The number of scenic places in the Santa Fe National Forest attests to the importance of its visual quality: two scenic byways, three research natural areas, a national recreation area, four wilderness areas, and three wild and scenic rivers. In 2008, the National Visitor Use Monitoring Survey showed that two of the top five recreational activities was looking at scenery.

The distance between a person and what they are looking at affects their perception of visual quality (figure 70). Someone looking at the Santa Fe National Forest’s mountains from Interstate 25 would not notice a campsite having bare ground and trash. This sort of unnatural feature is more noticeable when you are close to it.

Visual effects, such as erosion from roads and trails, usually happen when the route has not been designed for resource protection. Some system and unauthorized routes degrade visual quality by not being in the right place and receiving little maintenance, which causes erosion and rutting and strips vegetation from the sides. Motorized cross-country travel can create these kinds of routes.

Figure 70. A view of Cerro Pedernal. Even though camping happens in these mountains, you can't see it from far away

Visual Quality - Environmental Consequences

Effects Common to All Alternatives

Routes in poor condition will degrade visual quality until they grow vegetation, or until the Forest Service repairs or decommissions them. Some routes, because of their location and construction, would not naturally revegetate and could erode more, continuing to degrade visual quality.

All the alternatives provide for closures during wet weather, which helps prevent rutting when vehicles drive on muddy roads. The uniform seasonal closures proposed in alternatives 2, 3, and 5, help limit rutting and erosion on muddy roads during winter, but may miss other times of year such as monsoon season. Alternatives 2M and 4 would use closure orders to protect routes, so the opening of routes would be tailored to the season and the route, and still prevent erosion on muddy routes. Preventing such problems on routes helps keep visual quality intact.

Direct and Indirect Effects, Alternative 1

Alternative 1, where motorized cross-country travel occurs on about ¼ of the forest, is most likely to create new routes that aren't designed by the Forest Service. The effects from erosion and bare soil that would result from these routes would tend to degrade visual quality. Depending on their

location, some may not meet management objectives for visual quality. Depending on the number of routes, some portions of the forest might not meet objectives for visual quality over time.

Direct and Indirect Effects, Alternatives 2, 2M, 4, and 5

Limiting motorized cross-country travel to fixed-distance corridors for motorized dispersed camping would improve visual quality by preventing the creation of new routes on the rest of the forest. Visual quality in these camping corridors, however, could be degraded as a result of bare ground, trampled vegetation, and other alterations of the natural conditions. For people looking at the corridors from a distance, the loss of vegetation would be less noticeable. Camping corridors, because they allow people to drive to a campsite, could encourage the creation of new routes with accompanying erosion and bare ground. As described, this could detract from visual quality over time, but less than under alternative 1.

The fixed-distance corridors for motorized big game retrieval would not degrade visual quality. The number of motorized trips to retrieve downed big game is not likely to result in the creation of new routes.

Alternatives 2, 2M, 4, and 5 propose about 40 acres of areas each. About 35 acres of these are for motorcycle trials and are located mostly on rock, so rutting and erosion is not likely unless on a trail that connects the rocks. The remaining 5 acres are camping areas in the Pecos/Las Vegas Ranger District. Visual quality here could appear degraded when seen onsite from erosion and rutting. Because the total amount of areas is less than 0.01 percent of the forest, any visual degradation to the forest overall would be negligible.

Adding unauthorized roads and trails to the forest transportation system is not expected to affect visual quality of the Santa Fe National Forest at the forestwide scale because the routes proposed for addition are already in use and the additions proposed are small at the forestwide scale. The effects they've had to visual quality already exist and would improve once the routes become part of the system and receive maintenance. Compared to alternative 1—where all unauthorized routes would be open for motorized use—all the action alternatives limit the potential effects to visual quality.

Direct and Indirect Effects, Alternative 3

Alternative 3 is the most likely to improve visual quality because no new routes, which contribute the most to poor visual quality, would be created. This alternative allows no motorized travel off roads at all.

Cumulative Effects, All Alternatives

For alternative 1, because no changes are proposed in the motorized system, the cumulative effect on visual quality would remain about the same as now.

Alternatives 2 through 5 are expected to slightly improve visual quality. Cumulatively, other projects managed by the Forest Service, such as oil and gas pipelines, thinning and prescribed burning, Respect the Rio, livestock grazing, forest product collection, and those done through the American Recovery and Reinvestment Act, mitigate visual impacts and keep or improve visual quality. Each has specific mitigations for visual quality, or by its nature improves it (like Respect

the Rio). Creation of the Valles Caldera National Preserve also improved visual quality by reducing the places where people can drive on that large tract of land.

Effects of Forest Plan Amendments to Visual Quality

The proposed amendments that are administrative in nature are not expected to have effects on visual quality because they simply update and provide consistent direction.

Proposed amendments that authorize additional areas and corridors for off-highway vehicle travel in Management Areas I, J, K, M, and N are also not expected to have effects on visual quality. Future motorized designations in these areas are expected to be minimal because of the management emphasis to protect specific high value resources and any additional designation will be subject to the appropriate level of NEPA analysis.

The proposed amendments table 66 of appendix 1 are alternative specific, with the majority of amendments applying to alternatives 4 and 5. These amendments propose to allow motorized dispersed camping and motorized big game retrieval corridors in areas where the use is currently prohibited. Amendments for alternatives 2 and 2M allow use along a small amount of roads and trails where use is occurring under special use authorization or the use is believed to be important enough to continue to allow.

The amendments that propose to include motorized dispersed camping and motorized big game retrieval corridors in wild and scenic river areas (East Fork Jemez, Rio Chama, and Pecos) and the Jemez National Recreation Area, where this use is currently not allowed, apply to alternatives 4 and 5. The amendments allowing motorized dispersed camping and motorized big game retrieval corridors may reduce visual quality in the immediate area if new corridors are added due to increased ground disturbance from vehicle traffic. The amendments that allow motorized use along FR 503J and UR674 are not expected to affect visual quality because the footprints already exist on the ground.

Short-term Uses and Long-term Productivity

The change in driving on National Forest System roads and trails created by any of the action alternatives does not jeopardize the long-term productivity of the Santa Fe National Forest. As described throughout chapter 3, implementing any of the action alternatives would improve resources such as wildlife habitat, cultural resource sites, and others.

Unavoidable Adverse Impacts

Designating unauthorized routes could spread invasive plants to new locations and cause a loss of soil productivity. Alternative 4, which is expected to result in more bare ground from motorized dispersed camping, would also result in a loss of soil productivity.

Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of a resource is one that cannot be regained, such as the extinction of a species. An irretrievable commitment is one where the value of the resource is lost for a period of time, such as the loss of soil productivity from the existence of a road.

Cultural Resources

Alternative 1 could result in the irreversible loss of cultural resource sites. By definition, cultural resource sites and traditional cultural properties are not renewable and damage to them cannot be reversed. Alternatives 2 through 5, by employing the proposed mitigations, would have no irreversible commitments of resources.

Soil

All the alternatives would result in the irretrievable commitment of some of the forest's soil productivity. This commitment, however, would be negligible when considered at the scale of the forest. All alternatives designate unauthorized routes, which commits the soil to use as a route rather than for growing plants. All alternatives continue to allow camping, which also tends to commit soil to that use.

Wildlife

No irreversible commitments of wildlife resources will result from any of the action alternatives. All the action alternatives, however, propose to designate unauthorized roads and trails. This would be an irretrievable commitment of resources because once designated, these routes would not be available for wildlife use until analysis was undertaken to change the designation and decommission the route. Despite this irretrievable commitment, reducing the places where people can drive by nearly eliminating areas, keeping cross-country travel within fixed-distance corridors, and placing seasonal restrictions is expected to minimize disturbance and harassment of species and, thus, benefit wildlife resources.

Visual Quality

Alternative 4, which is expected to result in more bare ground from motorized dispersed camping, could irretrievably reduce visual quality in some places. This would also be negligible at the scale of the forest.

Nonnative Invasive Plants

As a result of the risk of spread of nonnative invasive plants, alternative 1 would result in continued threats to native plant communities, watershed health, and wildlife, and may be irreversible. Some weed species can invade relatively undisturbed native vegetation, affect runoff patterns or the amount of available soil moisture, degrade habitat for native wildlife, decrease economic land values, or change the way people use the land (Asher 1998). Some effects, such as loss of wildlife habitat, may be irreversible if the weed populations expand beyond the forest's capacity to manage them.

Because they reduce the risk of transport and spread of nonnative invasive plants, the action alternatives are less likely to have irreversible or irretrievable effects. They still, however, depend on the forest's ability to manage weed infestations. Implementation of any action alternative may slow the establishment of new infestations of invasive species, but without a coincident invasive management program, irreversible or irretrievable effects may result. Once established, weed populations can be difficult to control, contain, or eradicate, so the change could be long lasting.

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with other environmental review laws and executive orders.” We’ve prepared this statement in accordance with the National Historic Preservation Act, which governs ground disturbance in historical places, and the Endangered Species Act, which covers projects that have threatened or endangered species in its boundaries.

Chapter 4. Consultation and Coordination

List of Preparers

Name	Position	Contribution	Education	Years of Relevant Experience
Amy, William	Wildlife Program Manager	Wildlife	B.S. Natural Resource Sciences	16
Apodaca, Anne	Assistant Forest Recreation/Wilderness/ Trails/River Program Manager	Recreation and wilderness	B.S. Wildlife Science - minor Management	24
Bain, Julie	Travel Management Project Leader	Team leader	B.A. Environmental Science M.E.S. Planning	18
Basham, Matt	Archaeologist	Heritage and cultural resources	B.A. Anthropology M.A. Anthropology	8
Bremer, Mike	Forest Heritage Program Manager	Heritage and cultural resources	B.A. Anthropology M.A. Anthropology	34
Connelly, Erin	Deputy Forest Supervisor	Project oversight	B.S. Forest Management	31
Cook, Chantel	Forest Fish Biologist	Fisheries and aquatic	B.A. Biology M.S. Fisheries Science	23
Cramer, Jennifer	Forest Planner	Forest plan amendments, recreation	B.A. Biology Ph.D. Plant Biology	5
Dechter, Mike	Jemez and Cuba Districts NEPA Coordinator	Social and economic	B.S. Ecology Masters in Resource Economics and Policy	10
Frazier, Michael	Forest Recreation, Lands, Minerals, and Engineering Staff Officer	Project oversight	B.A. Philosophy B.S. Forestry	40
Garcia, Maria T.	Forest Supervisor	Responsible official		
Gonzales, Estevan	Student Trainee	Wildfire and visual quality research	Working on B.A. in environmental science	4
Grinde, Pete	Forest Range Program Manager	Invasive plants	B.S. Range Management	33
Hall, Joshua	State Air and Water Quality Liaison	Air quality		
Hermandorfer, Chad	Hydrologist	Soil and water research	B.S. Environmental Science M.S. candidate Watershed Management	15
Holliday, Kiernan	Civil Engineer	Roads	B.S. with high honors in Civil Engineering J.D.	32
Kulisheck, Jeremy	Assistant Forest Archaeologist	Heritage and cultural resources	B.A. Anthropology M.A. Anthropology PhD Anthropology	29

Name	Position	Contribution	Education	Years of Relevant Experience
Luetzelschwab, Julie	Forest Resource Information Coordinator	Geographic information systems, databases, and mapping	B.A. Resource and Environmental Geography, minor – Ecology M.A. Geosciences	18
Nevins, Erica	Soil and Watershed Program Manager	Soil and water	B.S. Soil Science	12
Norton, Roger	Forest Realty Specialist	Lands	Numerous professional courses during government and private sector service, including BLM Lands Academy and Appraisal Institute training.	22
Taliaferro, Diane	Forest Recreation/ Wilderness/Trails/ River Program Manager	Recreation and trails	B. S. Education - Soc. Science/P.E./Health/ Recreation/Coaching M.S. Forestry - Ecosystem Management	20

Other Contributors

Charlie Gobar, Forest Wildlife Biologist (retired)

Dolores Maese, Forest Public Affairs Officer (retired)

Daniel Jirón, Regional Forester, Region 2

List of Agencies, Organizations and Persons to Whom Copies of the FEIS Were Sent

In the letter accompanying the draft environmental impact statement, we let people know that they would receive a copy of this final statement if they commented or if they specifically requested it. Approximately 650 people of the 1,211 people on our mailing list commented on the draft or asked to receive a copy of the final environmental impact statement. Others sent in form letters during the comment period. We sent the final environmental impact statement and maps to everyone who commented during the notice and comment period, those who sent a form letter, and those who asked to receive a copy of it.

In addition, copies have been sent (or in some cases made electronically available) to Federal agencies, federally recognized tribes, State and local governments, and organizations that have requested to be involved in the development of this analysis. These entities include the U.S. Environmental Protection Agency; U.S. Army Corps of Engineers; U.S. Department of the Interior; Federal Highway Administration; Advisory Council on Historic Preservation; USDA National Agricultural Library; State wildlife and fisheries management agencies; county commissions; and local community governments. Due to the number of people, agencies, and organizations, a complete listing has been omitted from this EIS, but is available upon request or on the forest Web site at http://www.fs.fed.us/r3/sfe/travelmgt/index.html. This list includes those who requested the final environmental impact statement through May 7, 2012.

Glossary

All-terrain vehicle (ATV). A type of off-highway vehicle that travels on three or more low pressure tires; has handlebar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator (FSM 2353.05, FSH 2309.18.05, FSM 7705).

Closed road. A road placed in storage between intermittent uses. The period of storage must exceed 1 year. These roads are not shown on motor vehicle use maps. They are closed to all vehicular traffic but may be available and suitable for nonmotorized uses. A closed road is not the same as an obliterated or decommissioned road. A closed road may be opened again for use at some time in the future. (Region 3 Transportation Glossary)

Coincident route. Where a road and trail overlap; that is, they are located in the same path. (Santa Fe National Forest)

Fixed distance "corridor." A specified distance within certain designated routes solely for the purposes of dispersed camping or retrieval of a downed big game animal by an individual who has legally taken that animal. (Santa Fe National Forest)

Forest road or trail. A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (Travel Management Rule)

Interdisciplinary team. A team of people having different specialties, such as wildlife or recreation, that work together on the design and analysis of a project. (Santa Fe National Forest)

Motorized big game retrieval. Driving off a route to retrieve a legally killed elk or mule deer. (Santa Fe National Forest)

Motorized cross-country travel.. Driving off a designated road or trail for any purpose. (Santa Fe National Forest)

Motorized dispersed camping. Driving off a road and parking to camp. (Santa Fe National Forest)

Motor vehicle.. Any vehicle that is self-propelled, other than: (1) a vehicle operated on rails; and (2) any wheelchair or mobility device, including one that is battery powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area. (Travel Management Rule)

Off-highway vehicle (OHV). Includes any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. (Travel Management Rule) This, for example, includes pickup trucks, cars with four-wheel drive, and motorcycles.

Open road or trail. A forest system road or trail designed and managed for motorized use. (Santa Fe National Forest)

Open to vehicles legal on paved highways. A road open to vehicles with licenses to drive on highways. At the time of this writing in New Mexico, most ATVs and some kinds of motorbikes are not allowed to drive on paved highways, but they are allowed on dirt roads. Some highways in New Mexico are dirt. This designation would not allow most ATVs and motorbikes to drive on the road. (Santa Fe National Forest)

Road decommissioning.*:* (1) Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1). (2) Activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734).

Road obliteration. To deconstruct, decommission, deactivate, or dismantle a road; the denial of use, elimination of travelway functionality, and removal of the road from the forest development road system; return of the road corridor to resource production by natural or designated means ("A Guide for Road Closure and Obliteration in the FS," June 1996, T and D Publication 9677 1205).

Route. Term used to refer to roads and trails. (Santa Fe National Forest)

Unauthorized road or trail. A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas. (Travel Management Rule)

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Appendix 1. Proposed Amendments to the Forest Plan

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
Chapter 4 - Forestwide Standards and Guidelines	52	*ORV closure and restrictions are indicated by management area. Remaining areas are open to ORV use unless resource considerations necessitate additional restrictions or closures based upon monitoring activitie and appropriate environmental analysis. These actions may vary from a seasonal restriction for specific vehicles to yearlong closures for all vehicles. User enjoyment and safety will be considered as well as needs for resource protection.* Criteria for restricted use *or closure of an area may include*: 1. Loss of vegetative cover. 2. Degradation of important wildlife habitat or wildlife harassment. 3. Identifiable impacts on soils, riparian ecosystems, or water quality. 4. Disturbance of known Native American religious or cultural resource sites. 5. Need for separation of different recreation uses which may adversely affect one another. 6. Disruption of grazing management programs or harassment of permitted livestock.	**Motor vehicle use by the public, including vehicle class and time of year is defined by the MVUM (motor vehicle use map) and 36 CFR 212.5. Motor vehicle use by the public off this designated system of roads, trails, and areas, and outside of corridors (motorized dispersed camping or motorized big game retrieval) is prohibited, except as identified on the MVUM.** **Addition of motorized roads, trails, areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will take into consideration the following** criteria: 1. Loss of vegetative cover. 2. Degradation of important wildlife habitat or wildlife harassment. 3. Identifiable impacts on soils, riparian ecosystems, or water quality. 4. Disturbance of known Native American religious or cultural resource sites. 5. Need for separation of different recreation uses which may adversely affect one another. 6. Disruption of grazing management programs or harassment of permitted livestock. 7. **Specific direction, if any, as indicated for any management area.** 8. **Regulations specified in 36 CFR 212 Subpart B – Designation of Roads, Trails, and Areas for Motorized Use**

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
Chapter 4 - Forestwide Standards and Guidelines	52	*Categories of ORV area management are defined as follows:* *CLOSED - to all motorized travel. Use of motorized vehicles is not permitted on trails or for cross-country travel. Some administrative roads may occur in some areas, but they are not open for public use.* *RESTRICTED - area closed to all cross-country motorized travel. Road and trail use is permitted through an area, but no cross-country use is allowed. Vehicles are allowed to pull off of open roads up to 100 yards (or to other administratively designated areas) for parking or camping.* *RESTRICTED SEASONALLY - Same guidelines as RESTRICTED but only for specified areas or times of the year. Outside of these times, areas are open.* *OPEN - to cross-country travel. Some slopes over 40 percent may be designated as open. Organized ORV events may occur by permit only. Seasonal closures may be imposed for resource protection.*	[Delete: Redundant with new forestwide direction.]
Chapter 4 - Forestwide Standards and Guidelines	86	*Allow only one private road permit for private land or subdivision access unless public safety or natural features dictate otherwise.*	**For access to an inholding, allow only one private road authorization for private land or subdivision access. The authorization shall be the only access authorized by the United States for such inholdings, regardless of future landownership patterns. The forest will follow regional or forest level manual and handbook direction supplements (if existing or applicable) for further guidance. As a condition of the authorization process, the forest will require reciprocal public or administrative access across the authorized road where appropriate.** [The forest is unable to definitively limit the number of roads to private property to one because of the history of private land access on the forest. The forest is moving toward this goal with requests for new access.]

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Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
Chapter 4 – Forestwide Standards and Guidelines	86	*Respond to applications for new permits, amendments, documents, leases, and rights-of-way within 30 days of receipt. Administer all existing permits.*	**Respond to applications for new permits, amendments, documents, leases, and rights-of-way in the manner consistent with Forest Service policy and regulation.** **[**This language brings the forest in line with current direction and guidance.]
Management Area A	99	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	100	Road use will be managed with the objective of limiting open road density to *1.0 to* 2.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 2.5 miles per square mile **or less.** [The new verbiage clarifies that the lower threshold is not sensible in the context of the guidelines' intent of "limiting open road density." It was never envisioned that if there were areas where road density was less than the lower limit that the forest would be required to build more roads. This rationale applies to all other amendments that eliminate the lower threshold.]
Management Area B	103	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	104	Road use will be managed with the objective of limiting open road density *to 0.3 to* 1.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 1.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area C	107	*These lands are generally open to ORV travel* except within the boundaries of developed recreation sites, *and for the areas displayed on the ORV map.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM are allowed if consistent with the management emphasis for the area,** except within the boundaries of developed recreation sites.
	111	Road use will be managed with the objective of limiting open road density to *1.0 to* 2.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 2.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area D	113	*These lands are generally open to ORV travel* except within the boundaries of developed recreation sites, *and for the areas displayed on the ORV map.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM are allowed if consistent with the management emphasis for the area,** except within the boundaries of developed recreation sites.
	116	Road use will be managed with the objective of limiting open road density	Road use will be managed with the objective of limiting open road density to 2.5 miles per

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
		to *1.0 to* 2.5 miles per square mile.	square mile **or less.** [Eliminates lower threshold.]
Management Area E	118	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	119	Road use will be managed with the objective of limiting open road density to *1.0 to* 2.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 2.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area G	121	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	123	Road use will be managed with the objective of limiting open road density to *0.3 to* 1.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 1.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area I	136	*Motorized travel is allowed only on open roads. Cross-country travel is prohibited, except under the terms of a special use permit.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will be minimal and only allowed if consistent with the management emphasis for the area.** [Addition of routes and corridors will require archaeological survey and a report.]
	137	Roads will not be constructed except where necessary for permitted special uses, mineral activities, private land access, to access adjacent management areas where other reasonable access is not available, or to support cultural resource management.	Roads will **generally** not be constructed except where necessary for permitted special uses, mineral activities, private land access, to access adjacent management areas where other reasonable access is not available, or to support cultural resource management. Road management will be implemented with the objective of closing all unnecessary roads where they currently exist. [Allows for the designation of roads and trails that are currently unauthorized routes or decommissioned roads.]
Management Area J	141	*Motorized travel is allowed only on open roads. Cross-country travel is prohibited, except under the terms of a special use permit.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will be minimal and only allowed if consistent with the management emphasis for the area.**

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
Management Area K	143	Consistent with this theme, *ORV travel will be prohibited*, and recreation, grazing, and firewood activities will occur only when compatible with the primary emphasis.	Consistent with this theme, recreation, grazing, and firewood activities will occur only when compatible with the primary emphasis. [Removes redundant language and potential confusion with MVUM direction.]
	144	*Motorized travel is allowed on open roads only. No cross-country travel is allowed, except under the terms of a special use authorization.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will be minimal and only allowed if consistent with the management emphasis for the area.**
	144	Special off-*road* vehicle recreation events will not be permitted in these areas.	Special off-**highway** vehicle recreation events will not be permitted in these areas. [Corrects language, continues direction on not issuing special use permit for off-highway events.]
	145	Road use will be managed with the objective of limiting open road density to *0 to* 1.0 mile per square mile.	Road use will be managed with the objective of limiting open road density to 1 mile per square mile **or less.** [Eliminates lower threshold.]
Management Area M	151	*Cross-country vehicular travel is prohibited within study areas.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM is prohibited and only allowed if consistent with the management emphasis for the area.**
Management Area N	153	*Motorized use is allowed on open roads only. No cross-country travel is allowed, except under the terms of a special use authorization.*	**Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will be minimal and only allowed if consistent with the management emphasis for the area.**
	154	Roads will not be constructed except where necessary for special use permits, mineral activities, and adjacent management areas where other reasonable access is not available or to support wildlife habitat improvement projects.	Roads will **generally** not be constructed except where necessary for special use permits, mineral activities, and adjacent management areas where other reasonable access is not available, or to support wildlife habitat improvement projects. [Allows for the designation of roads and trails that are currently unauthorized routes or decommissioned roads.]
Management Area P	158	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	160	Road use will be managed with the objective of limiting open road density	Road use will be managed with the objective of limiting open road density to 2.5 miles per

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
		to *1.0 to* 2.5 miles per square mile.	square mile **or less.** [Eliminates lower threshold.]
Management Area Q	163	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	164	Road use will be managed with the objective of limiting open road density to *1.0 to* 2.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 2.5 miles per square mile **or less**. [Eliminates lower threshold.]
Management Area R	166	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	168	Road use will be managed with the objective of limiting open road density to *0.3 to* 1.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 1.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area S	171	*These lands are generally open to ORV travel except for the restrictions and closures displayed on the ORV map.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	173	Road use will be managed with the objective of limiting open road density to *0.3 to* 1.5 miles per square mile.	Road use will be managed with the objective of limiting open road density to 1.5 miles per square mile **or less.** [Eliminates lower threshold.]
Management Area X Jemez National Recreation Area Management Plan	9	*Close approximately 14 miles of currently open roads, and maintain existing road closures (9 miles), allowing administrative or permittee use only on these roads and decommission approximately 84 miles of roads, removing them from the designated forest road system (in additional to the 5 miles previously decommissioned in this area) within 5 years after approval of this management plan.*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]
	9	*The Transportation Plan should reflect a total of approximately 23 miles of closed roads (for administrative or permittee use only), at least 89 miles of decommissioned roads (off forest road system inventory), and approximately 128 miles of open roads (including highways).*	[Delete**:** Superseded by new forestwide direction limiting motorized travel to that displayed on the MVUM.]

Table 66. The following amendments to the forest plan will occur regardless of which alternative is selected

Chapter/ Management Area	Page	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additions and deletions].
Management Area X Jemez National Recreation Area Management Plan	9 and 12	*Prohibit or restrict motorized vehicle use* in accordance with the Travel Area Map where: Open (16,905 acres) - Allows motorized travel on or off of designated forest roads and trails. A (15,455 acres) - Restricts motorized travel to designated forest system roads and trails, as well as any highways, except to pull off the road within 300 feet of the roadway. A1 (10,145 acres) - Restricts motorized travel to designated forest system roads and trails, and vehicles may not drive beyond the roadway. D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.	**Plan changes to motor vehicle use as identified on the MVUM** in accordance with the travel area map where: Open (16,905 acres) - Allows motorized travel on designated forest roads and trails **and the addition of areas and corridors.** A (15,455 acres) - Restricts motorized travel to designated forest system roads and trails, as well as any highways, **except to pull off the road for motorized dispersed camping or motorized big game retrieval only** within 300 feet of the roadway. A1 (10,145 acres) - Restricts motorized travel to designated forest system roads and trails, and vehicles may not drive beyond the roadway. D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.
Monitoring Plan Facilities 2 and Facilities 3	184	*Compare actual and planned amounts (of road construction and reconstruction)*	[Delete: This measure is no longer meaningful because road construction and reconstruction is being implemented on an as-needed basis rather than in support of a timber program.]

Table 67. The following amendments to the forest plan will occur only if the alternative specified is selected or that are specific to certain routes or corridors

Chapter/ Management Area and Page No.	Alt.	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additons and deletions].
East Fork Wild and Scenic River Management Plan Page 9	Alt. 4	Prohibit new road construction and motorized use, with these exceptions: Highway 4, developed recreation sites, and roads needed for private land access, authorized special uses, mine claim access, or administrative actions related to protecting WSR values.	Prohibit new road construction and motorized use, with these exceptions: Highway 4, developed recreation sites, and roads needed for private land access, authorized special uses, mine claim access, or administrative actions related to protecting WSR values, **and for motorized dispersed camping or motorized big game retrieval as designated on the MVUM.**

Table 67. The following amendments to the forest plan will occur only if the alternative specified is selected or that are specific to certain routes or corridors

Chapter/ Management Area and Page No.	Alt.	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additons and deletions].
Rio Chama Management Plan Page 13 and 31	Alt. 4	The entire corridor, outside of designated dispersed camping areas, will be closed to off-road travel through vehicle barriers, fencing, and regulation.	The entire corridor, outside of designated **motorized** dispersed camping corridors **and motorized big game retrieval corridors as designated on the MVUM**, will be closed to off-road travel through vehicle barriers, fencing, and regulation. **Addition of areas and corridors (motorized dispersed camping and motorized big game retrieval) to the MVUM will be very minimal.**
	Alt. 4	In all other areas within the corridor, vehicular use will not be allowed off of designated roads and parking areas. Existing roads and vehicle tracks will be closed with physical barriers, and an off-road vehicle (ORV) closure order will be written for the entire corridor, prohibiting vehicular use outside of designated areas and roads.	In all other areas within the corridor, vehicular use will not be allowed off of designated roads and parking areas, **except for motorized big game retreival as designated on the MVUM**. Existing roads and vehicle tracks will be closed with physical barriers, and an off-road vehicle (ORV) closure order will be written for the entire corridor, prohibiting vehicular use outside of designated areas and roads.
Pecos Wild and Scenic River Management Plan Page 8	Alt. 4	In the Recreational segment, prohibit all off-road use of motorized vehicles, and recommend that NMG&F implement the same prohibition on their lands in the corridor.	In the "Recreational" segment, prohibit all off-road use of motorized vehicles **except for motorized big game retreival as designated on the MVUM**, and recommend that NMG&F implement the same prohibition on their lands in the corridor.
Management Area H Page 126	Alt .2, Alt. 2M	Use of mechanical conveyances. Including mountain bicycles, is prohibited.	Use of mechanical conveyances, including mountain bicycles is prohibited, **except for FR503J where motorized travel is allowed on the road only as per the MVUM.**
Management Area L Page 146 and 147	Alt. 2, Alt. 2M, Alt. 4	These areas are primarily unroaded and are closed to motorized *recreation*.	These areas are primarily unroaded and are closed to motorized use**.**
		These areas are closed to motorized travel. *Existing use on roads* under special use authorization will continue until expiration of the permit or a suitable substitute for access is obtained.	These areas are closed to motorized travel **except where necessary for private land access or use** under special use authorization **which** will continue until expiration of the permit or a suitable substitute for access is obtained.
	Alt. 2, 3, 4, and 5	These areas are closed to motorized travel. *Existing use on roads* under special use authorization will continue until expiration of the permit or a suitable substitute for access is obtained.	These areas are closed to motorized travel **except for on FR 24 NGB and UNAU 84 as designated on the MVUM** under special use authorization will continue until expiration of the permit or a suitable substitute for access is obtained.
	Alt. 2	These areas are closed to motorized travel. *Existing use on roads* under special use authorization will continue	These areas are closed to motorized travel **except for on Trail UR674 and** under special use authorization **which** will continue

Table 67. The following amendments to the forest plan will occur only if the alternative specified is selected or that are specific to certain routes or corridors

Chapter/ Management Area and Page No.	Alt.	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additons and deletions].
		until expiration of the permit or a suitable substitute for access is obtained.	until expiration of the permit or a suitable substitute for access is obtained.
	Alt. 4, Alt. 5	These areas are closed to motorized travel. *Existing use on roads* under special use authorization will continue until expiration of the permit or a suitable substitute for access is obtained.	These areas are closed to motorized travel **except for motorized big game retrieval as designated on the MVUM, on Trail UR674, and** under special use authorization, **which** will continue until expiration of the permit or a suitable substitute for access is obtained.
	Alt 2, Alt 4, Alt 5	These area are primarily unroaded and are closed to motorized *recreation*.	These areas are primarily unroaded and are closed to motorized **use except for use on Trails 105, 107 (alt. 4 and 5 only), and 108, and FR 427 (alt. 4 and 5 only), as depicted on the MVUM.**
Management Area X Jemez National Recreation Area Management Plan Pages 9 and 12	Alt. 5	Prohibit or restrict motorized vehicle use in accordance with the Travel Area Map where:… D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.	**Plan changes to motor vehicle use as identified on the MVUM** in accordance with the travel area map where:… [these changes above are proposed for all alternatives, see table 1] D (5,795 acres) - Prohibits all motorized travel **except for travel on and motorized dispersed camping off of FR652D as specified on the MVUM.** These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.
Management Area X Jemez National Recreation Area Management Plan Pages 9 and 12	Alt. 4, Alt. 5	*Prohibit or restrict motorized vehicle use* in accordance with the Travel Area Map where: Open (16,905 acres) - Allows motorized travel on or off of designated forest roads and trails. A (15,455 acres) - Restricts motorized travel to designated forest system roads and trails, as well as any	**Plan changes to motor vehicle use as identified on the MVUM** in accordance with the Travel Area Map where:… [changes above are proposed for all alternatives, see table 1] **Motorized big game retrieval off roads and trails is allowed along select roads as specified on the MVUM.** Open (16,905 acres) - Allows motorized travel on or off of designated forest roads and trails. A (15,455 acres) - Restricts motorized travel to designated forest system roads and trails, as well as any highways, except to pull off the road within 300 feet of the roadway**.**

Table 67. The following amendments to the forest plan will occur only if the alternative specified is selected or that are specific to certain routes or corridors

Chapter/ Management Area and Page No.	Alt.	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additons and deletions].
		highways, except to pull off the road within 300 feet of the roadway. A1 (10,145 acres) - Restricts motorized travel to designated forest system roads and trails, and vehicles may not drive beyond the roadway. D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.	 A1 (10,145 acres) - Restricts motorized travel to designated forest system roads and trails, and vehicles may not drive beyond the roadway**.** D (5,795 acres) - Prohibits all motorized travel**.** These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.
Management Area X Jemez National Recreation Area Management Plan Pages 9 and 12	Alt. 2, 2M, 3, 4, and 5	D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a non-motorized recreation opportunity is desired.	D (5,795 acres) - Prohibits all motorized travel **except for on FR 133, 133A, 133AA, 133AAA, 133C, FR 384, and FR 4B as designated on the MVUM**. These areas may contain a few roads or trails for administrative use but are not open to public use **aside from the exceptions noted above, if any**. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.
Management Area X Jemez National Recreation Area Management Plan Pages 9 and 12	Alt. 2, 2M, 3, and 5	D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a non-motorized recreation opportunity is desired.	D (5,795 acres) - Prohibits all motorized travel **except for on FR 134 as designated on the MVUM**. These areas may contain a few roads or trails for administrative use but are not open to public use **aside from the exceptions noted above**. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.
Management Area X Jemez National Recreation Area Management Plan	Alt. 4	D (5,795 acres) - Prohibits all motorized travel. These areas may contain a few roads or trails for administrative use but are not open to public use. These are typically areas where natural resources may be seriously damaged or threatened by continued motorized use, or where a	D (5,795 acres) - Prohibits all motorized travel **except for travel on and motorized dispersed camping off of FR 134 as designated on the MVUM**. These areas may contain a few roads or trails for administrative use but are not open to public use **aside from the exceptions noted above**. These are typically areas where natural

Table 67. The following amendments to the forest plan will occur only if the alternative specified is selected or that are specific to certain routes or corridors

Chapter/ Management Area and Page No.	Alt.	Current Plan Direction ***Italics shows proposed deletions.*** Regular text shows text that will not change.	Proposed Plan Amendment Direction **Bold text shows proposed new language.** Regular text shows text that will not change. [Text in brackets explains rationale for additons and deletions].
Pages 9 and 12		non-motorized recreation opportunity is desired.	resources may be seriously damaged or threatened by continued motorized use, or where a nonmotorized recreation opportunity is desired.

Table 68. Summary of roads and trails combined in the resultant system, by alternative

Where People are Driving (existing motorized travel policy)	Type of Route Proposed for Designation, Miles of Roads and Trails Combined	Where People Would be Allowed to Drive (proposed motorized travel policy)***				
		Action Alternative				
Alternative 1 (No Action)		2	2M	3	4	5
269	System roads not managed as open for motorized use	114	106	53	204	137
4,751	System roads managed as open for motorized use	2,272	2,207	1,776	2,552	2,224
539	Unauthorized routes that may or may not be open for motorized use*	141	138	37	206	143
41	Nonmotorized system trails outside of wilderness**	8	3	0	36	19
26	Motorized system trails	19	10	4	19	13
5,626	**Resultant Designated Motorized System**	**2,552**	**2,463**	**1,869**	**3,017**	**2,537**
	Percent of alternative 1 designated for motorized use	**45%**	**44%**	**33%**	**54%**	**45%**
7,832	**Percent of current motorized system designated for motorized use**	**33%**	**31%**	**24%**	**39%**	**32%**

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.

*If the route is in a place where driving off routes is allowed, then motorized travel on the route is allowed.

**Most system trails outside wilderness are designed for nonmotorized uses, but motorized use on the majority of them is allowed and not actively discouraged.

***We assume people would drive where it is proposed to be allowed.

Table 69. Summary of trails in the resultant system, by alternative

Where People are Driving (existing motorized travel policy)	Type of Route Proposed for Designation as Motorized Trail	Where People Would be Allowed to Drive (proposed motorized travel policy)***				
		Action Alternative				
Alternative 1 (no action)		2	2M	3	4	5
51	System roads not managed as open for motorized use	48	39	12	80	58
2	System roads managed as open for motorized use	102	68	37	200	130
298	Unauthorized routes that may or may not be open for motorized use*	88	89	1	135	87
16	Nonmotorized system trails outside of wilderness**	17	9	2	17	12
41	Motorized system trails	8	3	0	30	19
408	**Resultant Designated Motorized System, Trails Only**	**263**	**208**	**53**	**462**	**306**
	Percent of alternative 1 designated as motorized trail	**64%**	**51%**	**13%**	**113%**	**75%**
459	**Percent of current NFS trails designated as motorized trail**	**57%**	**45%**	**11%**	**101%**	**67%**
26	**Percent increase in designated National Forest System motorized trails**	**911%**	**699%**	**102%**	**1,678%**	**1,077%**

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.

*If the route is in a place where driving off routes is allowed, then motorized travel on the route is allowed.

**Most system trails outside wilderness are designed for nonmotorized uses, but motorized use on the majority of them is allowed and not actively discouraged.

***We assume people would drive where it is proposed to be allowed.

Table 70. Summary of roads in the resultant system

Where People are Driving (existing motorized travel policy)	Type of Route Proposed for Designation as Road	Where People Would be Allowed to Drive (proposed motorized travel policy)***				
		Action Alternative				
Alternative 1 (no action)		2	2M	3	4	5
218	System roads not managed as open for motorized use	65	67	41	124	80
4,749	System roads managed as open for motorized use	2,170	2,138	1,738	2,352	2,094
242	Unauthorized routes that may or may not be open for motorized use*	53	49	36	71	56
10	Nonmotorized system trails outside of wilderness**	2	1	2	2	2
0	Motorized system trails	0	0	0	7	0
5,218	**Resultant Designated Motorized System, Trails Only**	**2,290**	**2,255**	**1,817**	**2,554**	**2,231**
	Percent of alternative 1 designated as road	**44%**	**43%**	**35%**	**49%**	**43%**
6,433	**Percent of current NFS roads designated as road**	**36%**	**35%**	**28%**	**40%**	**35%**

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.

*If the route is in a place where motorized cross-country use is allowed, then motorized travel on the route is allowed.

**In alternative 4, 7 miles of system trail built for nonmotorized uses would be converted to road to provide motorized access to private land.

***These miles are coincident with roads (alternative 1) or proposed to be converted to roads (alternatives 2–5).

Table 71. Summary of areas in the resultant system

Motorized Cross-country Travel is Allowed on 821,644 Acres (53%) of the Forest	Where People are Driving (existing condition)	Total Acres in Resultant System				
	Alternative 1 (no action)	2	2M	3	4	5
Area (Open for any kind of motorized use)	443,848	40	41	0	49	35
Percent of alternative 1 designated		**0%**	**0%**	**0%**	**0%**	**0%**
Corridor - Solely for Motorized Access to Dispersed Camping	17,195	16,340	13,856	0	33,079	11,536
Percent of alternative 1 designated		**95%**	**81%**	**0%**	**192%**	**67%**
Corridor - Solely for Retrieving Downed Big Game With a Valid License	1,258,361	16,340	13,856	0	1,098,618	370,300
Percent of alternative 1 designated		**1%**	**1%**	**0%**	**87%**	**29%**

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.
The areas and corridors do not necessarily overlap. Each use is individually designated.

Table 72. Summary of changes to roads and trails from existing policy and conditions

Where People are Allowed to Drive (current motorized travel policy)	Where People are Driving (Existing Condition)			Where People Would Drive (proposed direction)***																						
	Alternative 1 (No Action)			Alternative 2					Alternative 2M (Preferred)					Alternative 3					Alternative 4					Alternative 5				
	Miles of Route Type being Driven on[1]		Total Miles (%)	Miles Proposed for Designation as:			Change from Existing Direction, Miles (%)[2]	Change from Alt. 1, Miles (%)[3]	Miles Proposed for Designation as:			Change from Existing Direction, Miles (%)	Change from Alt. 1, Miles (%)	Miles Proposed for Designation as:			Change from Existing Direction, Miles (%)	Change from Alt. 1, Miles (%)	Miles Proposed for Designation as:			Change from Existing Direction , Miles (%)	Change from Alt. 1, Miles (%)	Miles Proposed for Designation as:			Change from Existing Direction, miles (%)	Change from Alt. 1, Miles (%)
Total Miles	Road	Trail		Road	Trail	Total			Road	Trail	Total			Road	Trail	Total			Road	Trail	Total			Road	Trail	Total		
System Roads Not Open for Motorized Use 1,349	218	51	269 (20%)	65	48	114	+114 (+8%)	-155 (-58%)	67	39	106	+106 (+8%)	-163 (-61%)	41	12	53	+53 (+4%)	-216 (-80%)	124	80	204	+204 (+15%)	-65 (-24%)	80	58	137	+137 (+10%)	-132 (-49%)
System Roads Open for Motorized Use 5,084	4,749	2	4,751 (93%)	2,170	102	2,272	-2,812 (-55%)	-2,479 (-52%)	2,138	68	2,207	-2,877 (-57%)	-2,544 (-55%)	1,738	37	1,776	-3,308 65%)	-2,975 (-63%)	2,352	200	2,552	-2,532 (-50%)	-2,199 (-39%)	2,094	130	2,224	-2,860 (-56%)	-2,527 (-53%)
Unauthorized Routes that May or May Not Be Open for Motorized Use* 914	242	298	540 (59%)	53	88	141	+141 (+15%)	-399 (-74%)	49	89	138	+138 (+15%)	-402 (-74%)	36	1	37	+37 (+ 4%)	-503 (-93%)	71	135	206	+206 (+23%)	-334 (-62%)	56	87	143	+143 (+16%)	-397 (-74%)
Non-Motorized System Trails Outside Wilderness** 459	0	41	41 (9%)	0	8	8	+8 (+ 20%)	-33 (-80%)	0	3	3	+3 (+0.01%)	-38 (-93%)	0	0	0	0 (no change)	-41 (-100%)	7	30	36	+36 (+8%)	-5 (-12%)	0	19	19	+19 (+ 4%)	-22 (-54%)
Motorized System Trails 26	10	16	26 (100%)	2	17	19	-7 (-27%)	-7 (-27%)	1	9	10	-16 (-62%)	-16 (-62%)	2	2	4	-22 (-81%)	-22 (-81%)	2	17	19	-7 (-26%)	-7 (-26%)	2	12	13	-13 (-48%)	-13 (-48%)
Resultant System	**5,218**	**408**		**2,290**	**263**		**-5,280 (-67%)**	**-3,074 (-55%)**	**2,255**	**208**		**-5,369 (-69%)**	**-3,163 (-56%)**	**1,817**	**53**		**-5,963 (-76%)**	**-3,757 (-67%)**	**2,554**	**462**		**-4,815 (-61%)**	**-2,609 (-46%)**	**2,231**	**306**		**-5,295 (-68%)**	**-3,809 (-55%)**
7,832	**5,626**		**72%**	**2,552**					**2,463**					**1,869**					**3,017**					**2,537**				

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.

* If the route is in a place where driving off routes is allowed, then motorized travel on the route is allowed.

** Most system trails outside wilderness are designed for nonmotorized uses, but motorized use on the majority of them is allowed and not actively discouraged.

*** We assume people would drive where it is proposed to be allowed.

[1] These columns show how people use the route regardless of its status. For example, 10 miles of closed system roads are being used as motorized trails.

[2] The change from the existing travel policy shows how much of that type of route would be opened (+) or closed (-) to motorized use by the public. For example, alternative 2 proposes to open 11 percent of roads that are currently closed to motorized use.

[3] The change from existing condition shows how much more (+) or less (-) motorized use would be available to the public as compared to what is being driven on now. For example, alternative 2 proposes to designate 44 percent fewer closed system roads than people are driving on now.

Table 73. Summary of changes to areas from existing policy and conditions

	Where People are Allowed to Drive (current motorized travel policy)	Where People are Driving (existing condition)	Where People Would Drive (proposed direction)***														
		Alternative 1 (no action)	Alternative 2			Alternative 2M			Alternative 3			Alternative 4			Alternative 5		
			Acres (%)			Acres (%)			Acres (%)			Acres (%)			Acres (%)		
	Total Acres	Acres (%)	Proposed for Designation	Change from Existing Direction[1]	Change from Alt. 1[2]	Proposed for Designation	Change from Existing Direction[1]	Change from Alt. 1[2]	Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1
Area	821,644	443,848	40	-821,604 (-100%)	-443,808 (-100%)	41	-821,603 (-100%)	-443,807 (-100%)	0	-821,644 (-100%)	-443,848 (-100%)	49	-821,595 (100%)	-443,799 (100%)	35	-821,609 (100%)	-443,813 (100%)
Motorized dispersed camping[a]	821, 644	17,195[b]	16,237	-805,317 (-98%)	-958 (-6%)	13,856	-807,788 (-98%)	-3,339 (-19%)	0	-821,644 (-100%)	-17,195 (-100%)	32,890	-788,754 (-96%)	+15,695 (+91%)	11,422	-810,222 (-99%)	-5,773 (-34%)
Motorized big game retrieval[c]	821, 644	1,258,361**	16,237	-805,317 (-98%)	-1,242,124 (-99%)	13,856	-807,788 (-98%)	-3,339 (-19%)	0	-821,644 (-100%)	-1,258,361 (-100%)	1,098,329	+276,685 (+34%)	-160,032 (-13%)	370,841	-450,803 (-55%)	-887,520 (-71%)
	Total Miles (all system roads and trails open for motorized use)	Total Miles (%) Routes Currently being Driven on	Miles (%)			Miles (%)			Miles (%)			Miles (%)			Miles (%)		
			Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1	Proposed for Designation	Change from Existing Direction	Change from Alt. 1
Motorized dispersed camping	5,136	437[b]	423	-4,713 (-92%)	-14 (-3%)	381	-4,755 (-93%)	-56 (-13%)	0	-5,136 (-100%)	-437 (-100%)	461	-4,675 (-91%)	+24 (+5%)	294	-4,842 (94%)	-143 (-33%)
Motorized big game retrieval[c]	5,136	5,370**	423	-4,713 (-92%)	-4,947 (-92%)	381	-4,755 (-93%)	-4,989 (-93%)	0	-5,136 (-100%)	-5,370 (-100%)	2,848	-2,288 (-45%)	-2,522 (-47%)	373	-4,763 (-93%)	-4,997 (-93%)

All numbers are rounded to the nearest mile or percent. Totals may vary slightly due to rounding.

* We assume people would drive where it is proposed to be allowed.

** All acres or miles of routes outside wilderness areas. Because we have no data on where big game is retrieved with a vehicle, we assumed it takes place everywhere except wilderness.

[a] 821,644 acres are open to all forms of motorized cross-country travel. Of this, the ORV map in the forest plan identifies 22,103 acres as corridors for “parking and camping” up to 100 yards.

[b] This figure is the acres and miles of corridors used for motorized dispersed camping identified in the forest’s 2008–2009 field inventory. Motorized dispersed camping also takes place in the 443,848 acres being used for cross-country travel; however, this is believed to be minimal compared to that which occurs along roads (IDT Assumption 19).

[c] Proposed direction limits motorized big game retrieval to hunters with a valid license during hunting season.

[1] The change from the existing travel policy shows how much of that type of area would be opened (+) or closed (-) to motorized use by the public. For example, alternative 2 proposes to close 100 percent of areas that are currently open to motorized use.

[2] The change from existing condition shows how much more (+) or less (-) motorized use would be available to the public as compared to what is being driven on now. For example, alternative 2 reduces the areas people drive on now by 100 percent.

Appendix 3. Analysis of Consistency with the Forest Plan, Laws, and Regulations - Soil and Water

Table 74. Consistency of travel management with forest plan

Page	Forest Plan Direction	Mgt. Area	Travel Management Project Compliance
20	Provide direction and support to all resource management activities with emphasis on maintaining the soil resource, water quality, and water quantity.	All	Of the five alternatives, alternative 2 is the most likely to sustain current soil and water quality conditions. Alternative 3 is the most likely of the five alternatives to improve soil and water quality conditions. Alternative 4 is the most likely of the five alternatives to decrease soil and water quality conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain current soil and water quality condition, with the potential to improve over time.
20	Maintain water quality to meet or exceed state water quality standards.	All	Of the five alternatives, alternative 2 is the most likely to sustain current water quality conditions. Alternative 3 is the most likely of the five alternatives to improve water quality conditions. Alternative 4 is the most likely of the five alternatives to decrease water quality conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain current water quality condition, with the potential to improve over time.
20	Identify and protect wetlands and flood plains.	All	In all alternatives, travel routes that are currently within or near wetlands and flood plains would continue to impact these resources. Of the five alternatives, alternative 2 is the most likely to sustain current wetland and flood plain conditions. Alternative 3 is the most likely of the five alternatives to improve wetland and flood plain conditions. Alternative 4 is the most likely of the five alternatives to decrease wetland and flood plain conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain wetland and flood plain conditions, with the potential to improve over time.
20	Achieve satisfactory condition in riparian ecosystems. Maintain areas that are currently in good condition.	All	In all alternatives, travel routes that are currently within or near riparian ecosystems would continue to impact these resources. Of the five alternatives, alternative 2 is the most likely to sustain current riparian ecosystem conditions. Alternative 3 is the most likely of the five alternatives to improve riparian ecosystem conditions. Alternative 4 is the most likely of the five alternatives to decrease riparian ecosystem conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain riparian ecosystem conditions,

Table 74. Consistency of travel management with forest plan

Page	Forest Plan Direction	Mgt. Area	Travel Management Project Compliance
			with the potential to improve over time.
20	Minimize disturbances due to resource activities and other uses in the riparian zone.	All	In all alternatives, travel routes that are currently within or near riparian ecosystems would continue to impact these resources. Of the five alternatives, alternative 2 is the most likely to sustain current riparian ecosystem conditions. Alternative 3 is the most likely of the five alternatives to improve riparian ecosystem conditions. Alternative 4 is the most likely of the five alternatives to decrease riparian ecosystem conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain riparian ecosystem conditions, with the potential to improve over time.
79	Manage riparian areas in accordance with legal requirements regarding flood plains, wetlands, wild and scenic rivers, and cultural and other resources. Protect the productivity and diversity of riparian-dependent resources and emphasize the protection of soil, water, vegetation, wildlife, and fish resources prior to implementing projects. Give preferential consideration to resources dependent on riparian areas over other resources when conflicts among uses arise. Riparian areas should be managed toward meeting the following guidelines: Ground cover: Provide average ground cover of plants and litter at 80 percent of natural levels. Shade: Provide shading over perennial and intermittent water surfaces that is 80 percent of natural levels considering unit reaches of about 2 miles in length. Bank cover: Provide shrub and tree cover along bank lengths that is 80 percent of natural levels. Give emphasis to the protection of streambank stability provided by woody plant roots, particularly on outside bends of stream channel meanders. Streambed sedimentation: Composition of sand, silt, and clays within streambeds should not exceed 20 percent of natural	All	In all alternatives, travel routes that are currently within or near riparian ecosystems would continue to impact these resources. Of the five alternatives, alternative 2 is the most likely to sustain current riparian ecosystem conditions. Alternative 3 is the most likely of the five alternatives to improve riparian ecosystem conditions. Alternative 4 is the most likely of the five alternatives to decrease riparian ecosystem conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain riparian ecosystem conditions, with the potential to improve over time.

Table 74. Consistency of travel management with forest plan

Page	Forest Plan Direction	Mgt. Area	Travel Management Project Compliance
	levels. Plant composition: Provide at least 60 percent of the woody plant composition in three or more riparian species.		
Replace-ment page 141	Cooperate in the implementation of the comprehensive watershed management plan. Maintain or improve high water quality conditions.	J	Of the five alternatives, alternative 2 is the most likely to sustain current water quality conditions. Alternative 3 is the most likely of the five alternatives to improve water quality conditions. Alternative 4 is the most likely of the five alternatives to decrease water quality conditions. Of the five alternatives, alternatives 2M and 5 are the most likely to sustain current water quality condition, with the potential to improve over time.
Page 145	Close or obliterate unneeded travel ways. Consider areas of watershed resource damages and develop management strategies to improve such areas and reduce additional adverse impacts.	K	The purpose of this project is to close unneeded travel ways. No obliteration would occur with this decision. All action alternatives reduce unneeded travel ways.

Legal Consistency

- National Forest Management Act of 1976, which ensures that forest planning and management activities provide for the conservation and sustained yield of soil and water resources.
    - **Compliance:** Of the five alternatives, alternative 2 is the most likely to sustain current soil and water quality conditions.

      Alternative 3 is the most likely of the five alternatives to improve soil and water quality conditions.

      Alternative 4 is the most likely of the five alternatives to decrease soil and water quality conditions.

      Of the five alternatives, alternatives 2M and 5 are the most likely to sustain current soil and water quality condition, with the potential to improve over time.
- Clean Water Act of 1972, which was created to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (Section 101(a)). Section 303(d) directs states to list water quality impaired streams and develop total maximum daily loads to control the nonpoint source pollutants causing loss of beneficial uses. Section 404 regulates the discharge of dredged or fill material into navigable waters (waters of the U.S.).
    - **Compliance:** Of the five alternatives, alternative 2 is the most likely to sustain current water quality conditions.

      Alternative 3 is the most likely of the five alternatives to improve water quality conditions.

Alternative 4 is the most likely of the five alternatives to decrease water quality conditions.

Of the five alternatives, alternatives 2M and 5 are the most likely to sustain current water quality condition, with the potential to improve over time.

- Executive Order 11990, 1977; (Wetlands Management) requires Federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands. To comply with Executive Order 11990, the Federal agency would coordinate with the Army Corps of Engineers under Section 404 of the CWA and mitigate for impacts to wetland habitats.
  - **Compliance:** In all alternatives, travel routes that are currently within or near wetlands would continue to impact these resources.

    Of the five alternatives, alternative 2 is the most likely to sustain current wetland conditions.

    Alternative 3 is the most likely of the five alternatives to improve wetland conditions.

    Alternative 4 is the most likely of the five alternatives to decrease wetland conditions.

    Of the five alternatives, alternatives 2M and 5 are the most likely to sustain wetland conditions, with the potential to improve over time.
- Executive Order 11998, 1977; (Floodplain Management) requires all Federal agencies to take actions to reduce the risk of flood loss, restore and preserve the natural and beneficial values in flood plains, and minimize the impacts of floods on human safety, health, and welfare.
  - **Compliance:** In all alternatives, travel routes that are currently within or near flood plains would continue to impact these resources.

    Of the five alternatives, alternative 2 is the most likely to sustain current flood plain conditions.

    Alternative 3 is the most likely of the five alternatives to improve flood plain conditions.

    Alternative 4 is the most likely of the five alternatives to decrease flood plain conditions.

    Of the five alternatives, alternatives 2M and 5 are the most likely to sustain flood plain conditions, with the potential to improve over time.

Appendix 4. The Forest's Current Motorized Travel Policy

It is helpful to discuss the forest's current motorized travel policy because this project proposes to change it. The forest's current motorized travel policy is **not** an alternative considered in detail because it doesn't meet the purpose and need.

The Santa Fe National Forest's current motorized travel policy is unclear and inconsistent. Numerous sources, including the forest visitor map, forest plan, closure orders, and databases, contain divergent direction on where motorized use is allowed. For instance, the forest visitor map does not allow people to drive off roads in the northern half of Anton Chico, but this unit of land is part of Management Area G, where the forest plan allows off-road driving. Or, most of the forest's trails were built for nonmotorized uses according to the INFRA database; however, motorized use is not prohibited on most of them. The current travel policy does not have consistent, uniform closure dates. Ranger districts close some roads to protect wildlife during the breeding season and others when the roads are too wet and soft. Many roads close themselves when it snows. The policy now does not specify what kinds of vehicles are allowed in certain places.

A map of where motorized travel is allowed now is in the project record. Table 75 summarizes where motorized travel is allowed now. The explanation of how we arrived at this table, including the assumptions, is found in the project record in a document called "Process for Developing Summary Tables for Chapter 2 and the Appendices" dated December 23, 2011.

Table 75. Current policy for motorized travel on the Santa Fe National Forest (SFNF)

Type of Route	Miles (percent of total forest system)
All system roads and trails on SFNF (total does not include the unauthorized routes since these are not part of the forest's transportation system.)	6,918 (100%)
System roads **not** managed as open for motorized use	1,349 (20%)
System roads managed as open for motorized use	5,084 (74%)
Unauthorized routes that may be open for motorized use*	914 (NA)
System trail built for nonmotorized uses outside wilderness*	459 (6%)
Motorized system trails	26 (less than 1%)

***If the route is in a place where motorized cross-country travel is allowed, then driving on the route is allowed.

Type of Area	Acres (percent of total forest system)
Total acres of National Forest System lands on SFNF (does not include private or other inholdings)	1,553,369 (100%)
National Forest System lands open for any kind of motorized use	821,644 (53%)
Fixed-distance corridor – solely for motorized access to dispersed camping	None specified, or inconsistent**
Fixed-distance corridor – solely for motorized retrieval of downed big game	None specified

**In management areas where motorized travel off roads is not allowed, the forest plan's off-road vehicle map allows people to drive off roads for up to 100 yards for the purposes of parking and motorized camping. The forest visitor map says "off-road use is prohibited [in restricted areas] except to pull off roads and trails up to 300 feet for camping." Either way, this totals approximately 22,000 acres and is included in the 821,644 acres where motorized cross-country travel is allowed.

Roads and Trails

All the miles of roads and trails considered part of the current motorized travel system are shown in row 1. This mileage totals 7,515. Even though all of them are part of the system, we don't currently manage them all as open for motorized use.

The miles of road managed as closed to motorized use (2,380 miles) are shown in row 2. This figure is about one-third of all the forest's roads. In theory, no one should be driving on these roads since they are closed. Field surveys, however, show that people drive on some of these. People use some of these roads because most are not posted closed or the road has not been effectively barricaded at the entrance, no comprehensive list of closed roads is readily available to the public, and some of these roads are in places where driving cross country is allowed. Some of the miles in the closed category may not even be roads—they could be fence lines or rock slides—and forest personnel have not had time to field verify them. Others are listed in the database as being managed by another jurisdiction, like a county. Even though these are clearly open and regularly used, they are not "owned" by the Santa Fe National Forest so they are considered "closed." Some of the closed roads are mistakes in the data entry.

The forest manages 4,650 miles or 62 percent of the roads as open to motorized use (row 3). Even though these are supposed to be open to all vehicles, field visits show that some of these roads are used so infrequently that they are no longer passable (USDA Forest Service 2008b and 2012d). Many of these roads are not needed. Some duplicate each other by going to the same place, others are used only for administrative purposes, and some are simply not used.

The miles of unauthorized routes we know about are shown in row 4 (329 miles). Unauthorized routes are not part of the forest's transportation system (36 CFR 212.1). The Forest Service did not design them and does not maintain them. Most of these are located in places where driving off a road is allowed, so driving on them is not illegal. People who ride vehicles recreationally provided us with locations for most of these routes. More probably exist, but we don't know how many or where they are located. The Travel Management Rule doesn't require a complete inventory of unauthorized routes in order to complete the planning process (70 FR 68269).

There are 459 miles of system trail built for nonmotorized uses located outside of congressionally designated wilderness areas (row 5). These represent the nonmotorized National Forest System trails that could be considered for motorized use. No miles of trail within wilderness areas were counted because motorized travel is prohibited. Though the Santa Fe National Forest built these trails for nonmotorized uses, like hiking and horseback riding, it allows motorized use on most of them. Under current policy, if these trails are located in areas of the forest where driving off road is allowed, then motorized use of the trail is also allowed. Some of the trails cross places closed to motorized use; however, most of these nonmotorized areas are not signed on the ground. A person riding on a trail, therefore, would not know when they had entered a nonmotorized area. A trail might weave in and out of a nonmotorized area, making compliance and enforcement difficult.

There are only 27 miles of trail that the Santa Fe National Forest built for motorized uses (row 6). Approximately 8 miles are coincident with roads, meaning the trail and the road overlap. Though there are few miles of trail built specifically for motorized use, that use has been relatively unrestricted in the rest of the forest. People are allowed to drive off roads and trails on over half the forest and most system trails now allow motorized use.

Areas and Fixed-distance Corridors

The 1,553,369 acres of National Forest System lands within the Santa Fe National Forest's boundary are shown in row 7. This figure excludes land held privately. It is all the acres of public land managed by the Santa Fe National Forest.

The acres where motorized cross-country travel is allowed now—821,644 or 53 percent of the National Forest System lands—are shown in row 8. This calculation excluded slopes greater than 40 percent due to direction in the forest plan. Even though these acres permit motorized cross-country travel, it may not be possible to drive on all of them due to terrain or thick vegetation.

Row 9 shows that the Santa Fe National Forest does not currently have well defined limits on places where people can drive to go camping in the forest. The forest's current direction allows people to drive and camp where driving off road is allowed, on 821,644 acres. The forest's policy on driving to camp varies between the forest plan and the visitor map. As a result, the interdisciplinary team concluded that no special corridors just for motorized access to dispersed camping exist.

Under the current motorized travel system, people can drive to retrieve downed game where driving off road is allowed, on 821,644 acres (row 10). They can also scout for game by driving off roads except during the hunting season. More specifically, under New Mexico State Law, "It is illegal to drive a motor-driven vehicle off established roads or two-track roads in a hunting area if the vehicle bears a person licensed to hunt. . .for species on which season is open in that area" (New Mexico Department of Game and Fish 2009).

Appendix 5. Roads, Trails, and Fixed-distance Corridors Proposed for Designation that May Not Appear on the First Motor Vehicle Use Map

Some roads, trails, and fixed-distance corridors proposed for designation in the preferred alternative, 2M, may not be shown on the first motor vehicle use map for one or more of the reasons shown in table 76. Some may never appear on a motor vehicle use map should surveys show adverse impacts or requirements cannot be met. Others may require mitigations prior to appearing on the map. None will appear on the motor vehicle use map until all requirements are met. Figure 71 summarizes the miles and acres of roads, trails, and fixed-distance corridors that may appear on the first, or subsequent, motor vehicle use map until the issues associated with them are resolved.

Summing the miles in table 76 results in an incorrect total. Many routes and corridors fall into more than one category—for example needing GPS and heritage survey—so mileage appears in both columns, effectively double counting mileage in many cases.

Table 76. Miles of routes and corridors that may not appear on the first motor vehicle use map

	Heritage Survey and Clearance	Reason(s) for not appearing on the Motor Vehicle Use Map*					
		Jemez Mountain Salamander Survey	Safety/Stability Assessment, Las Conchas Fire	GPS	Road Management Objective	Connector	Other
Roads, miles	11.6	3.4	49.1	2.7	12.6	17.1	19.7
Roads with fixed-distance corridors, miles	0.9	0.3	7.4	0	0	1.4	0
Motorized trails, miles	23.5	53.8	47.9	9.9	0	19.7	19.9
Fixed-distance corridors only, miles	63	12.7	15.6	0	0	10.0	0.6

* Please refer to the source table, "GEN15_OnHoldReasons_20120413.xlsx" (the tab called "On Hold Detailed"), to find a list of the specific routes, reasons, and exact mileages.

Once the requirement(s) are met, the road, trail, or fixed-distance corridor will appear on the next version of the motor vehicle use map, or it will otherwise be signed as open on the ground in the interim. No additional analysis under the National Environmental Policy Act is required to publish the list of routes and corridors in this appendix on a motor vehicle use map once the requirements are met because all other environmental analysis is contained in this final environmental impact statement.

The effects of not having these roads, trails, and fixed-distance corridors on the first, or subsequent versions, of the motor vehicle use map is qualitatively within the significance of the effects described in alternative 3. Alternative 3 proposes no driving off road for any reason, so the effects of not having some fixed-distance corridors are described. Even in the unlikely event that

none of the routes below ever appear on the motor vehicle use map, alternative 3 proposes even fewer miles of roads and trails. Thus, the effects are qualitatively described at the forestwide scale. Conversely, the effects of having every road, trail, and fixed-distance corridor listed in this appendix on the motor vehicle use map are covered with the analysis of the alternatives in chapter 3 because alternative 4 proposes more roads, trails, areas, and fixed-distance corridors than are listed here.

Not meeting one or more of the following is the reason that a road, trail, or fixed-distance corridor won't appear on the motor vehicle use map:

1. **Cultural resource survey and clearance.** The roads and trails in this category contain some unauthorized and closed forest system routes proposed for designation. Not all the cultural resource survey and clearance for routes and fixed-distance corridors requiring review under Section 106 of the National Historic Preservation Act will be finished at the time this decision is made. Under the "Standard Consultation Protocol for Travel Management Route Designation" dated September 25, 2007 (appendix I to the "First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities" dated December 24, 2003), until a route or area has had survey, clearance, and concurrence from SHPO, it won't appear on the motor vehicle use map. Under the agreement, the forest has up to 3 years to complete the clearances.

   To appear on the motor vehicle use map:
   Forest staff need to conduct cultural resource survey and clearance under Section 106 of the National Historic Preservation Act. Should the cultural resource survey and clearance—as concurred with by the State Historic Preservation Officer—indicate no adverse effects to cultural resources would occur, the routes and fixed-distance corridors would appear on the next version of the motor vehicle use map.

   Should the cultural resource survey and clearance determine that a proposed road(s), trail(s), area(s), or fixed-distance corridor(s) causes adverse effects, the route(s) or area(s) would not be shown on the map at all, or until the adverse effects are mitigated as described in chapter 3.

2. **Jemez Mountain salamander survey.** The roads and trails in this category contain some unauthorized and closed forest system routes proposed for designation. Pursuant to the conservation management plan, surveys for Jemez Mountain salamander in occupied, potential, and survey habitat must be completed prior to routes and areas being published on the motor vehicle use map.

   To appear on the motor vehicle use map:
   Forest staff will conduct surveys for Jemez Mountain salamander pursuant to the conservation management plan. The Forest Service will discuss the survey results with the Endemic Salamander Team, and strategies for mitigating impacts to the salamander would be developed in order to list the route on the motor vehicle use map. If the team determines that adverse impacts to the salamander or its habitat can't be avoided, the route won't appear on the motor vehicle use map.

3. **Safety assessment of routes and fixed-distance corridors in the Las Conchas Fire perimeter.** The roads and trails in this category contain unauthorized and forest system routes proposed for designation. Most routes and fixed-distance corridors in the Las

Conchas Fire perimeter are potentially quite dangerous as a result of the fire and subsequent flooding—trees falling, roads being washed away, and other events.

To appear on the motor vehicle use map:
Forest staff anticipate it being several years before some of the routes are stable enough to be safe, maintained, or repaired (USDA Forest Service 2012a). Until forest staff assesses the routes and corridors and considers them safe for public use, they won't appear on the motor vehicle use map.

Some routes and corridors, if they continue to pose safety hazards, may never appear on the motor vehicle use map. Please refer to appendix 6 for a complete discussion of the changed condition caused by the Las Conchas Fire.

4. **Road management objectives.** The roads in this category contain some unauthorized roads. Pursuant to Forest Service Manual 7703.26, a road must have a signed road management objective prior to being included in the forest's transportation system.

   To appear on the motor vehicle use map:
   Forest staff must create a road management objective for each road, most commonly done with a field visit. If, on visiting the road, engineering problems—such as nonexistent or unsafe roads, or roads requiring heavy maintenance—are found, the road may not appear on the motor vehicle use map until the road is repaired, or analysis to construct it is completed under the National Environmental Policy Act.

5. **GPS.** The roads and trails in this category contain unauthorized routes.

   To appear on the motor vehicle use map:
   Routes must be GPS'd by the Forest Service prior to appearing on the motor vehicle use map to ensure they are in appropriate locations. Once GPS'd, forest staff might find that other surveys, such as cultural resource or Jemez Mountain salamander, are required. If other survey, clearance, or analysis is required, the route wouldn't be published on the motor vehicle use map until those requirements are met.

6. **Other reasons.** The routes in this category are unauthorized and open and closed forest system. Some system and unauthorized routes won't appear on the first motor vehicle use map for other reasons. For instance, on the Coyote Ranger District, a portion of a road is concurrent with the Continental Divide Trail. Until the Continental Divide Trail is rerouted off the road, the road won't appear on the motor vehicle use map.

   To appear on the motor vehicle use map:
   The routes in this category will be published on the motor vehicle use map after their unique situation has been met. This includes, but isn't limited to being routed outside of an inventoried roadless area, constructing a turnaround at the end of the road, being routed off the Continental Divide Trail, and other situations.

7. **Connectors.** In most cases, the routes leading to any of the ones in the above categories won't appear on the motor vehicle use map (figure 71).

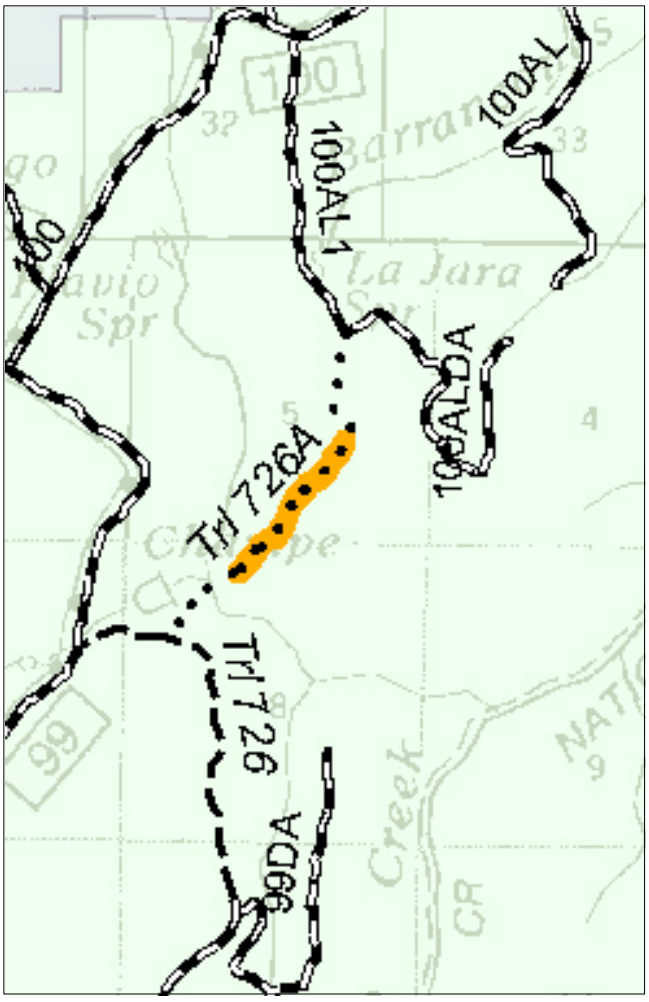

Figure 71. The section of Forest Trail 726A in orange falls into one of the categories above; however, none of 726A will appear on the motor vehicle use map until the issues with the section in orange are resolved.

Appendix 6. Changed Conditions Due to the 2011 Las Conchas Fire

Purpose

The purpose of this appendix is to describe the changed conditions in the perimeter of the 2011 Las Conchas Fire (fire) as they relate to the Santa Fe National Forest's (forest) travel management planning process.

This final environmental impact statement for travel management analyzes alternatives 1, 2, 2M, 3, 4, and 5. This supplemental information report describes the changed conditions and the resultant changes to alternative 2M, the preferred alternative, as a result of the 2011 Las Conchas Fire.

Finding

No supplementation to the analysis presented in the final environmental impact statement for travel management as a result of the 2011 Las Conchas Fire is needed. The reasons are: (1) the changed condition affects an insignificant amount—approximately 2 percent—of the forest's acreage; (2) the routes and areas that won't appear on the first motor vehicle use map and the designations and changes to the preferred alternative, 2M, constitute a minor variation of alternative 2M as analyzed in the body of this FEIS; (3) the effects of the changes are within the significance of the effects of the alternatives already analyzed; and (4) the analysis and conclusions presented in the FEIS remain valid.

Background

Changed existing condition. The Las Conchas Fire began on June 26, 2011, as the result of a windthrown tree striking and shorting out a power line. It burned approximately 156,000 acres. About 79,000 acres were on National Forest System lands, and 46 percent of these burned at high severity (a measure of the burn's effects on ground condition and soil function) (figure, next page).

The burned area, especially the portions considered moderate or high severity, are likely to remain unstable for several years to come.

Field information and research indicate that the greatest impact to soil and watersheds after a fire is the lack of organic ground cover and vegetation. This is true in the fire's burned area. The areas considered burned to high severity on steep slopes resulted in, and will continue to result in, increased runoff and sedimentation, which causes flooding downstream. Flooding and debris flows, in turn, wash out roads and trails (USDA Forest Service 2012a).

Increased surface runoff also accelerates soil erosion. In the moderate and high soil burn severity locations, approximately 25 percent of the land area is on slopes greater than 40 percent. Intense summer thunderstorms common to this geographic area have the potential to cause widespread surface erosion, resulting in ash and sediment delivery to stream channels and drainages. High flows, sedimentation, and debris torrents occurred the first monsoon after the fire and will likely continue for many years to come (USDA Forest Service 2012a).

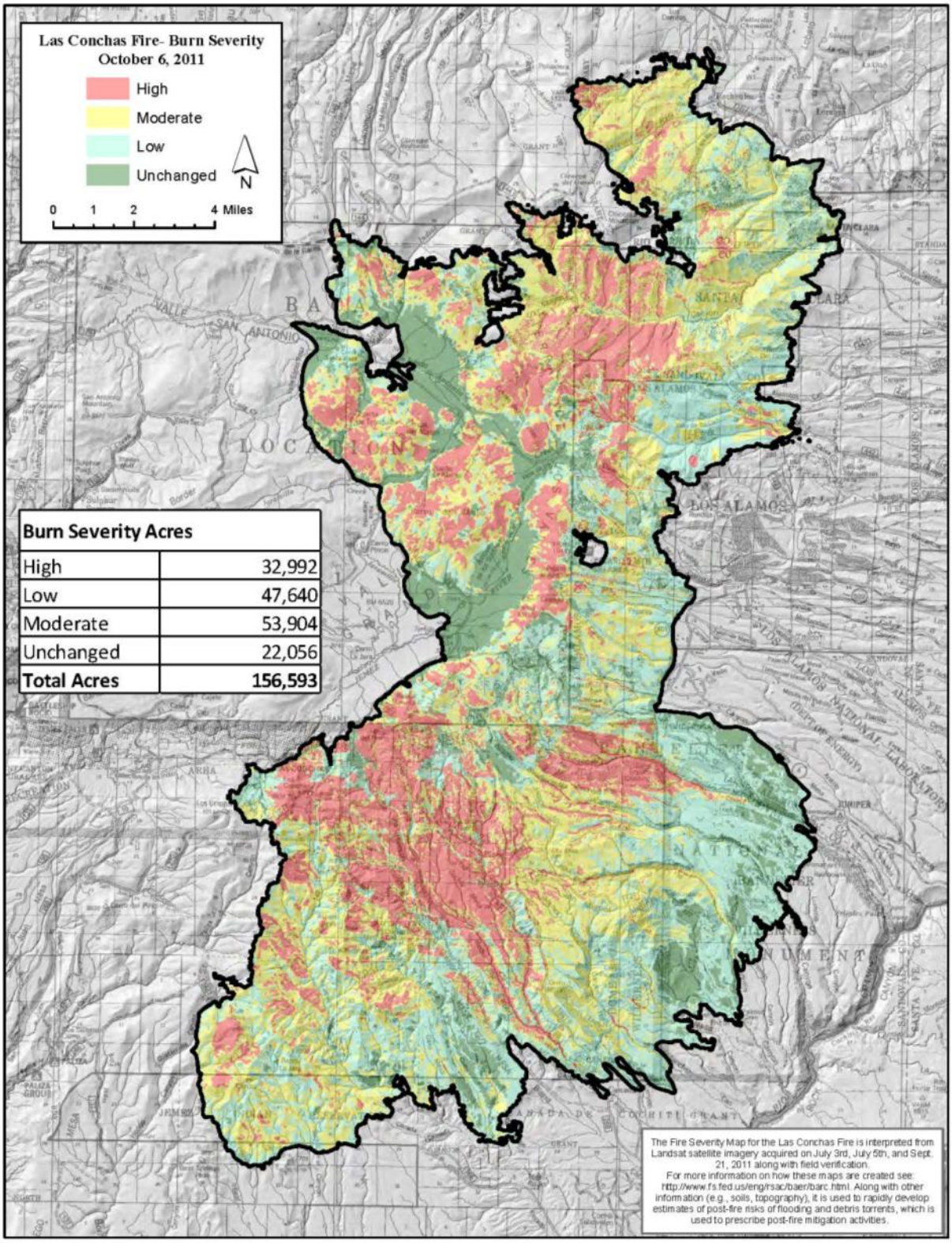

Figure 72. Fire severity map of the Las Conchas Fire which occurred in 2011

Changes to Alternative 2M Proposed as a Result of the Las Conchas Fire

Routes not proposed for designation in alternative 2M. The following roads and motorized trails wouldn't be designated at all and wouldn't appear on the motor vehicle use map for the foreseeable future:

- Forest Road 139 from Forest Road 266 (Hondo Canyon) both north to the springs and south. Forest Road 139C was also removed since it is accessed by Forest Road 139.
- Forest Road 89 and 268 in Cochiti and Bland Canyons.
- Forest trail 113.

The roads and trail listed were obliterated by the floods that followed the fire.

Roads, trails, and fixed-distance corridors in alternative 2M that may not appear on the first motor vehicle use map. Some roads, motorized trails, and fixed-distance corridors won't appear on the motor vehicle use map until forest staff has assessed them for safety and until they have stabilized. This is explained in appendix 5. Table 77 shows the miles and acres of alternative 2M that would not appear on the motor vehicle use map until they have been assessed and considered stable and safe.

All the environmental analysis required by NEPA and the Travel Management Rule has been completed for these routes and corridors. To be placed on the motor vehicle use map, these routes need to be assessed by forest staff and deemed safe for public use. Some routes may not be safe or stable for 3 to 10 years, if ever. Others may be published on the first version of the motor vehicle use map.

Table 77. Miles and acres of alternative 2M that may not appear on the first motor vehicle use map as a result of the Las Conchas Fire

Type of Route	Miles
Road	49
Motorized trail	48
Fixed-distance corridor	23

Change in vehicle use allowed. As a result of the fire, approximately 2 miles of roads would be opened to all vehicles in alternative 2M. During the fire, bulldozers creating fire line smoothed out and widened these system roads.

Significance

To evaluate whether supplementing the final environmental impact statement is necessary, the question to be answered is whether the changed condition and changes in the preferred alternative "show that the remaining action will 'affect the quality of the human environment' in a significant manner or to a significant extent not already considered..." (*Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989)).

The changed conditions, and resultant changes to preferred alternative 2M, are not significant in light of the analysis contained in the final environmental impact statement for two reasons.

1. The analysis contained in the FEIS is at the forestwide scale. The high burn severity portions of the fire, which are primarily the ones triggering the changes to the preferred alternative, amount to only 2.3 percent of the forest's total acreage.
2. Second, the changes in alternative 2M are: (1) minor variations to alternative 2M; and (2) within the scope of the effects analyzed in alternatives 2 through 5 presented in the draft environmental impact statement for travel management:

   > *Russell Country Sportsmen v. United States Forest Service*, 2011 WL 4820942 (9th Cir. 2011) ("NEPA does not require the Service to prepare a supplemental draft environmental impact statement [] where... the final decision makes only minor changes and is qualitatively within the spectrum of the alternatives discussed in the draft EIS."). In *Russell Country*, the Court adopted the Framework in CEQ's 40 questions on supplementation of DEISs (quoted below) to set out the following two-part test: "supplementation is not required when two requirements are satisfied: (1) the new alternative is a 'minor variation of one of the alternatives discussed in the draft EIS," and (2) the new alternative is 'qualitatively within the spectrum of alternatives that were discussed in the draft EIS.'"

   The changes proposed in alternative 2M constitute a minor variation of those analyzed in the FEIS. The roads and motorized trails that would not be designated as a result of the fire compose less than 1 percent of the forest's proposed motorized transportation system. The roads and motorized trails that may not appear on the first motor vehicle use map are likely to remain part of the designated system—meaning there would be no change from what is analyzed in the FEIS. If, however, they weren't designated because they remain unsafe or unstable, the significance of the change is qualitatively within that analyzed in alternative 3.

   Alternative 3 proposes fewer miles of roads and trails than alternative 2M, even considering the routes that may not appear on the first motor vehicle use map. Alternative 3 proposes 53 miles of motorized trail. Even if none of the motorized trails in the fire's perimeter are ever put on the motor vehicle use map, alternative 2M still would provide 160 miles of motorized trail across the forest[1]. Alternative 3 proposes no driving off roads or motorized trails for any reason; thus, not showing the fixed distance corridors in the fire's perimeter—meaning no driving off road in the fire perimeter until the corridors are assessed as being safe—is a concept already analyzed in the DEIS (pp. 83, 88, 131-133, 166 as examples).

/s/ Maria T. Garcia

MARIA T. GARCIA
Forest Supervisor

[1] Total mileage of trails proposed in alternative 2M is 207.8. Subtracting 47.9, the miles of motorized trail in the fire's perimeter, still leaves 159.9 miles of motorized trail in alternative 2M, or more than three times that proposed in alternative 3.

Appendix 7. Response to Comments on the DEIS

Adaptive Management

The Forest Service needs to use adaptive management when managing the motorized travel system because the annual revision of the motor vehicle use map will not be responsive enough if problems arise.

We did consider using the tool of adaptive management (steering committee meeting notes dated February 19, 2009). In theory, adaptive management allows the forest to implement changes without further analysis or decisionmaking if the action, trigger, and planned response are analyzed in the environmental impact statement. After doing more research, we decided that adaptive management is not an appropriate tool for travel management (steering committee meeting notes June 25, 2009). The interdisciplinary team researched the implementation of adaptive management on other forests and found that it did not work as planned or stated, was overly complicated and not attainable, or not supported by funding. To meet the intent of the directives, adaptive management must describe and analyze site-specific conditions, triggers, and the effects of management changes. Because the scale of the travel management project is the forest level, it would not be practical to list proposed management actions and analyze those effects on a route-by-route basis.

Administrative Use

The Forest Service should not close roads because doing so will limit emergency vehicles' ability to get to fires and rescues, keep ranchers from managing their cattle, and prevent the Forest Service from effectively managing watersheds.

After we have designated motor vehicle use on roads, trails, and areas, and we have shown these designations on the map, it would be illegal to operate a motor vehicle outside the designations. There are exceptions listed in the Travel Management Rule (36 CFR 212.51(a) (1 through 8)). Emergency vehicles responding to an emergency do not have to comply with the designations. Forest Service vehicles have a limited administrative use exemption—this applies across the forest outside wilderness areas. Any person who has a permit from the Forest Service can operate a motor vehicle wherever the permit allows. The "Travel Analysis Process Report" describes that about 1,400 miles of routes could be kept on the forest's transportation system for administrative use only, not for general public use.

Air Quality

The Forest Service should analyze the impacts to air quality as a result of decommissioning roads and trails.

The physical decommissioning of roads and trails is not proposed as part of this project, which only designates a system of roads, trails, and areas for motorized use. We have described the effects to air quality from this project in this final environmental impact statement.

Alternatives

The Forest Service should consider an alternative that has fewer roads than alternative 3 because the road density in alternative 3 is in excess of the best management conditions for large and small animals and fish.

Without knowing the specific references to scientific literature about the "best management conditions" for mammals and fish, we cannot verify this claim. As described in the wildlife report, fisheries report, and biological evaluation, the existence of roads and trails and their use affect mammals and fish depending on the species. The action alternatives propose to reduce the miles of routes open to motorized use between 46 and 67 percent and do not allow motorized cross-country travel outside of designated areas and corridors. We did consider an alternative with fewer routes than alternative 3, the "Minimum Motorized Access and Recreation Alternative" (p. 46) but did not analyze it in detail.

We are unable to determine the extent to which route-specific proposals have been carried forward into the "action alternatives" nor have we been able to ascertain the reasoning and analysis, if any, behind these conclusions with reference to Blackfeather's "South Jemez" area trails (about 40 trails).

Three documents in the project record describe how forest staff analyzed the comments from the public at each step of the process: (1) "NFMA Comments Content Analysis Methodology" dated December 11, 2007; (2) "Content Analysis Methodology for NEPA Scoping Comments" dated April 9, 2009; and (3) "Methodology for Receiving and Analyzing the Public's Comments on the Draft Environmental Impact Statement for Travel Management on the Santa Fe National Forest" dated April 27, 2012.

The list of the public's requests for specific routes during the scoping period, and our reason for including it or not, is in the "Site Specific Suggestions" report dated 6/2/10. This report contains some inconsistencies. Some of these inconsistencies are errors, and others reflect outdated information. The latter is a result of field visits conducted during the content analysis period, resulting in changes to district recommendations and corrections to maps. Documentation of the field visits are in the project record. The document titled "Site Specific Suggestion Methodology" dated April 6, 2011, found in the project record describes the inconsistencies between the travel management alternative maps and the site specific suggestion document.

Santa Fe National Forest staff were available at all public meetings and have been available to answer any questions that the public had in regards to the process. A number of motorized and nonmotorized users contacted Santa Fe National Forest staff in regards to some of the inconsistencies, and the staff assisted them in understanding the inclusion or exclusion of a specific request in the alternatives.

For alternative 5, the DEIS needs to analyze the impact of designating geographically restricted motorized use to the quality of recreation being lost either in terms of routes, being concentrated in smaller areas, or the stigma of being the "reviled and unwanted" group.

All effects were analyzed identically for all alternatives, including alternative 5.

The Forest Service did not analyze the quality of motorized experiences in its effects analysis.

The Santa Fe National Forest does not rate the quality of experiences or skill level of available or proposed trails since a challenging trail to one person may be considered easy by another.

The Forest Service should not choose alternative 1 because it would damage natural and cultural resources.

Alternative 1 serves as the baseline against which to compare the other alternatives. The forest supervisor will decide which alternative to select based on the environmental analysis and the public's comments. Alternative 1 doesn't meet the purpose and need of the project.

The Forest Service shouldn't choose alternative 2 because it: (1) would damage natural and cultural resources, (2) would not protect wildlife habitats since the road density is still high, and (3) eliminates too many loop opportunities.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service shouldn't choose alternative 3 because it: (1) doesn't provide enough motorized opportunities, (2) only allows the young and healthy to access the forest, (3) doesn't meet the agency's mandate to provide for multiple uses, (4) reduces access for people who depend on forest products, (5) doesn't provide loop opportunities, (6) wouldn't allow people to get to springs they use now, and (7) too greatly restricts motorized dispersed camping and game retrieval.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service shouldn't choose alternative 4 because it: (1) would damage natural and cultural resources, (2) would harass wildlife, (3) has the potential to create illegal ATV loops, (4) would create an ATV park in Canada de los Alamos, (5) increases the number of routes relative to the existing condition, and (6) would degrade the visual quality of the forest.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should not choose alternative 5 because (1) it would damage natural and cultural resources and (2) would fragment wildlife habitat with high route densities in some place.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should choose alternative 1 because (1) it is the only one that preserves existing motorized access, (2) the public should have the right to access public land, (3) it offers the greatest opportunity for unrestricted access to important religious and cultural sites, (4) the lands on the Santa Fe National Forest are stolen land grants and roads existing before the enactment of the Federal Land Management Policy Act cannot be closed, and (5) the agency doesn't have legitimate justification to restrict motorized use.

Alternative 1 serves as the baseline against which to compare the other alternatives. It doesn't meet the purpose and need of the project. The forest supervisor will decide which alternative to select based on the environmental analysis and the public's comments.

The Forest Service should change alternative 1 to ban cross-country travel and select it because that is all the Travel Management Rule requires.

We included this alternative in this final environmental impact statement on page 45.

The Forest Service should choose alternative 2 because (1) it provides the best balance between access and protection, (2) it would prevent user-conflicts, and (3) it provides hunting access.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should choose alternative 3 because (1) it best protects natural and cultural resources, (2) it best protects inventoried roadless areas, (3) it would have the least amount of engine noise, (4) it would improve the current state of chaos on the forest, (5) it's the best way to preserve our historic lands and the off-highway vehicle riders have enough land already,(6) it would best address the conservation needs of the Jemez Mountain salamander, (7) it protects headwaters and the Santa Fe Watershed, (8) it would increase the health of the forest, (9) it would be the easiest to enforce, (10) it doesn't condone or encourage user-created routes, (11) it promotes safety and use of the forest for future generations, (12) it enhances enjoyment of nonmotorized users, who compose the biggest use of the forest, (13) it is the most economic with the best potential to use future funds for enhanced partnerships and protection, and (14) it provides adequate motorized access.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should select alternative 4 because (1) it best allows off-highway vehicle access to the forest in a responsible way, (2) it allows disabled people the most access, (3) it has the fewest restrictions but still eliminates motorized cross-country travel, and (4) it provides the most motorized recreational opportunities.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should select alternative 5 because it (1) separates motorized and nonmotorized uses and (2) provides the best access.

Many people had strong opinions about which alternative the forest supervisor should select. The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments.

The Forest Service should add more motorcycle trails to alternative 4 because they are challenging when riding enduro's.

One of the alternatives considered but not analyzed in detail is the "Maximum Motorized Access and Recreation Alternative" (p. 46).

The Forest Service should adopt an alternative that reflects the reality of lack of law enforcement available.

The interdisciplinary team considered an alternative, the "Enforcement Alternative," but did not analyze it in detail (p. 49).

The Forest Service should modify alternative 3 to include dispersed camping corridors as identified in alternative 2.

Alternative 3 would not allow anyone to drive off roads or trails for any reason. We designed it this way to respond to the significant issue of protecting natural and cultural resources from the damage caused by traveling off roads and trails to camp. If we added corridors for motorized dispersed camping to alternative 3, it would blur the lines between it and alternative 2; this would not meet the intent of 40 CFR 1502.14, which asks agencies to "sharply defin[e] the issues and provid[e] a clear basis for choice among options."

The Forest Service should make alternative 4 more of an option by modifying the motorized big game retrieval corridors. The 2-mile wide corridors make it appear that 90% of the forest is open to off-highway vehicles.

Alternative 4 is a valid option. The Travel Management Rule states, "the responsible official may include in the designation the limited use of motor vehicles within a specified distance of certain designated routes, and if appropriate within specified time periods, solely for the purposes of ...of retrieval of a downed big game animal by an individual who has legally taken that animal" (36 CFR 212.51(b)). Compared to the existing condition—where people drive off roads and trails on about 29 percent of the forest whenever they want—alternative 4 limits driving off roads and trails by restricting it to game retrieval for people who have legally taken an animal during hunting season.

Alternative 5 favors nonmotorized users and discriminates against motorized users. Alternative 5 seeks to create a forced displacement of motorized users. Alternative 5 creates better experiences ONLY for nonmotorized users, not for motorized users. Alternative 5 does not separate users or uses; rather it gives the nonmotorized group an enhanced experience, providing no separation and protection for the motorized users who still have to share all recreation routes.

Our intent was not to marginalize motorized uses by proposing alternative 5; it was to reduce conflicts between motorized and nonmotorized uses.

Alternative 5 is not needed because motorized and nonmotorized uses and users are already separated with designated wilderness areas.

This is an interesting concept, but we don't agree. Many people participate in nonmotorized uses outside of the forest's wilderness areas, and alternative 5 was designed to minimize conflicts outside of wilderness.

The DEIS fails to analyze an alternative that would not allow any motorized routes in inventoried roadless areas.

No prohibition on the use of existing roads or trails in inventoried roadless areas exists.

Assumptions

The assumption (#5, DEIS p. 64) that the effects of motorized trails are the same as roads is flawed, so the entire effects analysis in the draft environmental impact statement is flawed. Motorized trails and roads do not have the same effect because they are different widths and often have different surface types.

At a local scale, motorized trails and roads have the same types of environmental effects, such as erosion and lack of plant cover. The rates of each effect are also similar (Dissmeyer 2000, Ouren et al. 2007, Stokowski and LaPointe 2000). For example, 1 square foot of motorized trail and 1 square foot of road, with all other variables being equal, will have similar erosion rates. Motorized trails and roads do differ in the magnitude of their effects at local scales. Because roads tend to occupy more area than motorized trails, the magnitudes of their effects tend to be larger (Dissmeyer 2000). Due to the unmanaged nature of the forest's motorized trail system, many motorized trail widths are the same as road widths. Since the widths of many motorized trails on the forest are the same as road widths, we considered the effects of motorized trails and roads as being the same for the purposes of this analysis.

The assumption (#6, DEIS p. 64) that all motorized vehicles cause similar impacts is flawed; thus, the entire effects analysis is flawed. Different sized vehicles—motorcycles, pickup trucks, ATVs, tracked vehicles, and others—do have different impacts. The Travel Management Rule itself recognizes that different vehicles have different impacts.

Studies show that all motorized vehicle use causes similar types of impacts to forest resources, such as trampled vegetation, emitting byproducts of combustion, and others (Dissmeyer 2000, Meadows and Geehan 2008, Ouren et al. 2007, Stokowski and LaPointe 2000, Switaslski and Jones 2009). The Travel Management Rule does not distinguish among types of off-highway vehicles for the purposes of effects analysis (70 FR 68273).

The assumption (#1, DEIS p. 63) that traffic will not increase on the designated routes is incorrect and renders the entire analysis incorrect. It does not make logical sense that closing over half the roads and trails to motorized use will not concentrate motorized use on the remaining system.

The roads report discusses the issue of concentration in depth. We have not found any evidence that closing routes that are infrequently used results in overcrowding on the remaining system.

Concentration of Use

Publishing a motor vehicle use map will increase the amount of off-highway vehicle use because now the routes will be shown on a map. More off-highway vehicle use will result in more damage to natural and cultural resources.

We have found no evidence that publishing a motor vehicle use map will increase motorized use on the forest. The Santa Fe National Forest publishes a number of maps that show roads on the forest. Other agencies and private companies publish maps that show roads on the forest. The motor vehicle use map will merely show people where they can drive, and many of the roads and trails are already shown on maps, like our visitor maps. Furthermore, most of the use on the forest is from the local area and we have no evidence that the motor vehicle use map would attract people from outside the area.

It is important to remember that the Santa Fe National Forest is currently open to cross-country travel and travel is allowed on any road or trail on the forest. Even in this current mode, people do not use every road and trail even though they can. It may be true that more off-highway vehicle use will result in more damage to natural and cultural resources, but it is not fair to connect the motor vehicle use map with resource damage. With the designation process and the motor vehicle use map we are trying to take control of resource damage and do what we can to protect resources. We will never protect forest resources absolutely, but we believe we are making a significant contribution to resource protection and at the same time allowing use that people have come to expect on the forest.

The Forest Service should not reduce the roads and trails where people can drive. If motorized use is concentrated onto the few remaining routes, it will increase damage to natural and cultural resources and be a less satisfying experience for riders.

The specialist report on roads has an extensive discussion on use concentration and why we believe that it will not happen on the forest.

Cultural Resources

The forest needs to consider an alternative that would protect cultural resources and simultaneously allow for unrestricted motorized access to Jemez tribal members for religious and cultural purposes.

This FEIS describes how unrestricted motorized access has the potential to damage cultural resources. Allowing that kind of damage would not meet the requirements of the National Historic Preservation Act. Should tribal members—or anyone else—require motorized access to a special place, they would need to have a written authorization from the Forest Service to travel off the designated system.

The Forest Service should correlate incidents of damage to cultural sites with proximity to roads or motorized trails and incorporate this into the effects analysis.

The “Standard Consultation Protocol for Travel Management Route Designation” (July 25, 2007) exempts existing system roads and trails from effects analysis. This FEIS and the heritage specialist report completed for travel management route designation does analyze effects to cultural resource sites.

The Forest Service should collaborate more with the local Indian reservations because that will help meet the cultural needs of the people.

The forest initiated consultation with 26 tribes via several letters from the forest supervisor, and also conducted focused meetings between district rangers and tribal governments.

Cumulative Effects

The Forest Service needs to display the incremental effects of motorized use on natural and cultural resources against cumulative effects from things like grazing, wildfires, hikers, elk, mountain bikers, and equestrians. If it does, the Forest Service will see that motorized use causes very little impact compared to the other uses.

This comment refers to how we analyze the cumulative effects of past and present actions. The Council on Environmental Quality provides agencies guidance on analyzing cumulative effects. In a June 2005 memorandum, the chairman states that agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions combined. In this case, we believe that describing the current aggregated effects of the past actions—resulting in the current condition of the forest's roads, trails, and areas—is sufficient to make a decision, which is to restrict where people can drive.

Furthermore, the purpose and need of this project is to designate a system for motorized use. It will not regulate nonmotorized uses.

By not identifying and considering the environmental impacts of the entire transportation system, activities outside National Forest System lands, and other Forest Service activities and large natural disturbances, the Forest Service fails to properly analyze the cumulative impacts for this project.

The Council on Environmental Quality recognizes that it is not practical "to analyze how the cumulative effects of an action interact with the universe; the analysis of environmental effects must focus on the aggregate effects of past, present, and reasonably foreseeable future actions that are truly meaningful" (CEQ 2005). Chapter 3 of the FEIS does analyze the relevant cumulative effects for each resource.

Decision

Please explain the roles and authority of both the decision maker and the public for deciding on alternatives within the EIS.

The forest supervisor is the person with the authority to make the decision. The forest supervisor also approves the significant issues and alternatives evaluated. The public's role is to send comments from which forest staff identifies significant issues and alternatives.

The Forest Service needs to survey [for heritage] all the routes in the selected alternative before the decision or it is potentially removing opportunities outside of the NEPA process.

The decision will reflect the forest supervisor's desired transportation system, based on the information we have at the time of the decision. All routes identified in the decision will have been analyzed in the FEIS. Appendix 5 describes the reasons why some routes and areas may

not appear on the first motor vehicle use map and the reasons why. These routes have also gone through the NEPA process and their effects displayed, so no routes are being "removed outside of the NEPA process."

The forest supervisor should make her decision based on the best available science and data from studies on the Santa Fe National Forest showing what is best for the environment, not just anecdotal evidence.

The regulations for implementing the National Environmental Policy Act direct agencies to "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements" (40 CFR 1502.24). Each specialist has cited the relevant studies and best available science in their specialist reports. At the request of the public, we have revised the final environmental impact statement to include more of these scientific citations. It is not necessary to conduct scientific studies specifically on the Santa Fe National Forest to make this decision. The science cited by the specialists applies to the Santa Fe National Forest.

The forest supervisor's decision should provide for a sustainable motorized road and trail system that meets current and future needs.

We agree. Since the motor vehicle use map will be published every year, we will have the ability to adjust the transportation system—by either adding or removing routes—to meet current and future needs.

Deciding on the travel management plan should be a vote and not just decided by the forest supervisor.

That the forest supervisor makes the decision, called a "record of decision," is decided by law and policy. The Forest Service Manual (FSM 1909.15, Ch. 26.2) assigns decisionmaking authority to the responsible official, which the Code of Federal Regulations defines as "The Agency employee who has the authority to make and implement a decision on a proposed action (36 CFR 220.3)."

The forest supervisor, when making her decision, should listen to all interested parties rather than just one particular group.

The forest supervisor will select an alternative based on the analysis presented in the final environmental impact statement and the public's comments. No group is favored in the decisionmaking process, which is objective.

Education

For the plan to be effective, the Forest Service needs to provide an educational component, including for children.

We agree. An implementation plan will be completed after the travel management decision, and education of the public will be a component of that plan. Education will include various programs including those that are appropriate for children such as Tread Lightly.

Emergency Closures

The Forest Service should close some areas to motorized use immediately because not taking action will result in damage that will not be repaired.

Part of the purpose of this project is to reduce the detrimental impacts caused by motorized cross-country travel, which this final environmental impact statement analyzes in detail. The temporary emergency closure section of the Travel Management Rule states that the responsible official shall immediately close roads, trails, and areas to motor vehicle use if they determine that motor vehicle use is directly causing or will directly cause considerable adverse effects on public safety or soil, vegetation, wildlife, wildlife habitat, or cultural resources associated with that road, trail, or area (36 CFR 212.52(b) (2)). When we received requests for emergency closure, we fully evaluated them and found that the proposed closure was not justified. Nothing in the rule prohibits the responsible official from changing designations (70 FR 68268) or from using a temporary emergency closure any time it is needed.

Enforcement

For the travel management plan to be effective, the Forest Service needs to enforce it.

Forest Service law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting national forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users support enforcement efforts by promoting voluntary compliance. The Travel Management Rule will not increase the agency's budget or the number of law enforcement officers. However, the rule will enhance enforcement by substituting a regulatory prohibition for closure orders and providing for a motor vehicle use map supplemented by signage.

The Forest Service should reduce the number of roads and trails, especially loops, because it is difficult to enforce their proper use. Loops enhance illegal hunting and interfere with law enforcement.

All the alternatives reduce the miles of roads and trails open for motorized use compared to the existing condition. Loop routes provide important opportunities for access and recreation, and it is not feasible to only include out-and-back roads and trails in the forest. We are not aware of any studies linking loops to illegal hunting or decreased ability to enforce route designations.

A motor vehicle use map alone is not robust enough to provide clear management direction. The forest should include route decommissioning, an educational program, monitoring, and increased enforcement as part of its proposed action.

Whether the alternative that we choose is effective depends to a large part on the public. We believe that the Travel Management Rule is one of the most important steps the Forest Service has taken to protect forest resources while still allowing adequate access. We intend to use monitoring, education, and enforcement to ensure that the alternative that we select works. Monitoring, education, and enforcement, however, are part of an implementation plan

and we will do that work after the designation process is complete. We cannot obliterate roads as part of this project because that would be outside the scope of the proposed action.

The lack of resources to properly enforce existing motorized use is resulting in increased degradation to the national forest.

Fifty-three percent of the Santa Fe National Forest is currently open to motorized use. There is very little to enforce based on current management. After a decision has been made and the motor vehicle use map is published, motorized use off the designated system will be prohibited. This change in management is an improvement over existing conditions because it provides the Santa Fe National Forest a system that can be enforced. Santa Fe National Forest staff believe a designated motorized system will be easier to enforce than the current management direction.

Forest Plan

The forest plan should be amended to reflect cross-country travel restrictions on the forest consistent with the Travel Management Rule.

Appendix 1 contains the proposed forest plan amendments.

The Forest Service should have included motorized trails in its calculation of motorized route densities because motorized trails have the same effects on natural and cultural resources as roads.

The forest plan specifies how road density is to be calculated, and it requires that we calculate the density of open roads. Trails, therefore, aren't included. The specialist report on the forest plan contains a detailed discussion.

The Forest Service shouldn't let the road density goals in the forest plan guide the closures in the travel management process. Road density calculations should be done separately.

Any decisions need to be consistent with the forest plan, or the forest plan needs to be amended (36 CFR 219.10). Road density standards and guidelines are specified for most of the management areas in the Santa Fe National Forest Plan, which "…defines the direction for managing the Santa Fe National Forest…" (p. 1). The proposed alternatives would bring the open road density in line with the forest plan's standards and guidelines. Appendix 1 contains the proposed amendments to the forest plan.

The Forest Service should continue the special use permit allowing the Department of Game and Fish to restock San Gregorio Reservoir.

Should the forest consider it appropriate for the Department of Game and Fish to continue to travel on that road to restock the San Griego Reservoir, an authorization can be issued to allow travel for this purpose. The forest plan allows this use now. The road that accesses San Griego Reservoir is in the San Pedro Parks Wilderness, where no mechanical conveyances, including any motorized travel, are allowed. However, 36 CFR 212.51 provides exemptions from the designations including "Motor vehicle use that is specifically authorized under a

written authorization issued under Federal law or regulations." The decision of whether any special use permits will be issued is outside the scope of this analysis.

The Forest Service should not build roads, and should close existing roads, in management areas J, K, M, and N in order to be consistent with the forest plan.

None of the alternatives propose road construction (p. 43). All the alternatives reduce the places where people are allowed to drive in management areas J, K, M, and N. Those management areas allow roads now, so the alternatives are consistent with the forest plan.

The Forest Service should reduce road densities so that they are consistent with its forest plan.

All the action alternatives meet the open road densities to the standards set in the forest plan (USDA Forest Service 2012r).

The Forest Service must explain and analyze forest plan amendments that change road densities.

The forest plan specialist report and appendix 1 explain why we proposed amendments that change road densities. Each resource specialist analyzed the effects of the proposed changes and included it in their report, or wrote it directly into this FEIS. Each resource section in chapter 3 summarizes the effects of the proposed changes.

General

The Forest Service must show how it addressed the March 30, 2009, petition to close roads and trails in the Jemez district in the FEIS.

This request is outside the scope of the project. This petition requested the Forest Service close roads and trails to motorized use on an emergency basis as allowed in the Travel Management Rule. The petition requested action on specific roads and trails and was not a comment on the travel management proposal. The forest supervisor responded to the petition with a point-by-point response on June 3, 2009.

The Forest Service should allow continued use on existing routes while they are being surveyed.

After the forest supervisor has signed the order designating motor vehicle use on roads, trails, and areas, and the motor vehicle use map has been published, operation off the designated system will not be allowed. Until we have completed the required survey(s) described in appendix 5, we cannot designate motor vehicle use on the routes or areas.

People who drive off-highway vehicles should follow the state's guidelines for noise restrictions, such as having mufflers.

State law requires that any off-highway vehicle, with the exception of snowmobiles, must be equipped with noise reducing mufflers.

The Forest Service should have prepared one nationwide environmental document for travel management because the current system encourages inconsistencies among forests.

The Forest Service designed the Travel Management Rule as a nationwide decisionmaking framework to assist forests with designating a motorized system. The Forest Service recognized that an effective travel management decision was best created at a local level by officials with firsthand knowledge of the area's particular circumstances with the involvement of Federal, tribal, and local governments, local motorized and nonmotorized groups, and other local interested parties. The Forest Service recognizes that it is entirely appropriate for different national forests to provide different opportunities for recreation and that no forests are exactly alike. The Santa Fe National Forest did work with the Carson National Forest to minimize inconsistencies because the two forests share boundaries.

The Forest Service should not use herbicides, which are toxic chemicals, because they further degrade the forest.

This comment is outside the scope of the project because it does not propose the use of herbicides.

Volunteers from Cañada de Los Alamos would like to help with forest reclamation projects and maintaining healthy forests.

We appreciate the hard work all our volunteers do to help us maintain the forest, and we look forward to working with this community in the future.

The Forest Service should not close any trails to mountain bikers because they are quiet, do not pollute, and pose no fire risk.

This comment is outside the scope of the project because it does not propose to close any trails to mountain bikers. This project regulates where motor vehicles may use the forest; there would be no change in the rules that apply to mountain bikers as a result of this project.

The Forest Service needs to define what a substantive comment is, especially in the context that these comments are given "greater weight."

The section of the draft environmental impact statement called "What Happens Next" (p. 10) stated that the forest's interdisciplinary team would use "substantive comments" to make changes to their analysis or modify alternatives. The section also states that some kinds of comments "carry less weight" than substantive comments. We regret any confusion that these statements caused.

We read and consider all the comments we receive, not just the "substantive" ones. Anyone who sent in a comment to the correct address during the comment period can be assured that we read their comment. "Substantive" simply means that the comment is about the project. For example, saying "The moon is made of green cheese" is not a substantive comment about the Travel Management Rule. On the other hand, saying "I don't like alternative 3" is. What we meant to express is that comments that pertain to the project help us understand the public's concerns about it more than those that do not.

As it did for travel management, the Forest Service should have a parallel initiative to restore and regenerate damage done by logging, trapping, overgrazing, and mining.

This is outside the scope of this project, which is to designate a system of roads, trails, and areas outside of motorized use.

The Forest Service should add campgrounds if demand warrants.

Currently the campgrounds on the Santa Fe National Forest are rarely at capacity, so there is presently no evidence that constructing additional campgrounds is warranted. In any case, this issue is outside the scope of this project, which is to designate roads, trails, and areas where motorized use will be allowed.

Hunting

The Forest Service should consider increasing quality big game hunting opportunities outside of the Valles Caldera National Preserve and wilderness areas to meet local landowner, stakeholder, and sportsmen desires.

The Forest Service's task is to manage habitat; managing big game populations is the New Mexico Department of Game and Fish's responsibility. The effects analysis for wildlife in chapter 3 shows that having fewer places where people can drive is likely to improve habitat for most species. The effects on hunting is described on pages 95 through 97.

The Forest Service should restrict the use of off-highway vehicles to preserve quality hunting experiences.

The Travel Management Rule focuses on designating motorized use where it is appropriate. Our goal was to design a balanced system of roads and trails that would meet the needs of all users, including hunters, while protecting resources, including wildlife. The Forest Service acknowledges that both motorized use and hunting are valid recreational activities. Pages 95 through 97 describe the predicted effects on hunting.

All roads should stay open because otherwise hunting will be limited to only the wealthy who can hire outfitters and guides or who own horses.

Executive Order 13443 requires Federal land management agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. We believe we have balanced these two goals by providing sufficient access for hunting, while reducing the proliferation of motorized use that can interfere with wildlife's use of the habitat. All alternatives in the FEIS include routes where motorized vehicles will be allowed. However, all alternatives prohibit cross-country motorized travel except in designated areas. In our alternatives, we ensured that motorized access to places most used by recreationists, including hunters, were left open. These places were identified through public scoping. While access to areas for hunting will still be available, all alternatives do reduce motorized access and, therefore, provide larger areas where hunting and game retrieval will be done on foot or horseback. Pages 95 through 97 describe the predicted effects on hunting.

Invasive Plants

The impacts of motorized dispersed camping and motorized big game retrieval on the spread of invasive plants, especially in areas affected by past fires, is inadequate as presented in the DEIS.

> Because it is not possible to predict how many new weed populations would be established as a result of motorized cross-country travel, the analysis focuses on the relative risk of weeds being transported, introduced, or established based on the number of open acres by alternative. The "Nonnative Invasive Plant" section in chapter 3 of this FEIS displays the amount of area where driving off road is allowed by alternative. It is recognized that disturbed areas are more susceptible to encroachment by weeds than areas without disturbance. The analysis lists some typical sites in the Santa Fe National Forest where weed species are known to occur. These include: roadsides, trails, gravel pits, parking areas, *campsites*, helispots, high intensity wildfire areas, riparian areas, and administrative sites (emphasis added).

The Forest Service should limit motor vehicles in the forest to only a few primary roads because motor vehicles spread seeds of invasive weeds.

> Most of the forest's main routes will remain open under any of the alternatives (p. 88). The majority of the roads not proposed for designation are high-clearance roads that currently receive little to no use. Routes that remain open to motorized use are a risk for the potential establishment and spread of invasive weeds. The forest supervisor will need to take the risk of spread of nonnative invasive plants into account when making her decision.

The draft environmental impact statement fails to properly analyze and describe the impacts of the alternatives on the spread of noxious weeds and resulting impacts to aquatic and watershed resources.

> One of the public's concerns raised during scoping was that continued public motorized use of routes and areas will promote the spread of noxious weeds. Thus, the analysis in the nonnative invasive species report focuses on the number of motorized routes and acres of areas and the resultant potential risk for weed introduction, establishment, and spread by action alternative. The analysis recognized the effects noxious weeds can have to the environment, including severely threatening biodiversity, habitat quality, and ecosystem functions. The FEIS identifies that motorized vehicles tend to carry and distribute nonnative invasive weeds and their seeds, and that some areas are more prone to having populations establish and spread than others.

IRAs, Wilderness

The Forest Service should prohibit off-highway vehicle use near sensitive areas, such as designated wilderness, the Valles Caldera National Preserve, and Bandelier National Monument.

> The forest analyzed five action alternatives, each containing different configurations of routes proposed for designation. We also looked at the effects of designating routes within a half mile of wilderness boundaries. Forest Service policy does not allow the establishment of buffer zones as informal extensions of wilderness. Many trailheads adjacent to wilderness provide parking for nonmotorized access to wilderness. Alternative 5 also features a zoning concept that looks at wilderness and inventoried roadless areas to lessen the amount of

motorized routes near these places that possess the qualities of wilderness character. Bandelier National Monument and the Valles Caldera are both neighbors to the Santa Fe National Forest and staff from both organizations participated.

The effects analysis for inventoried roadless areas fails to meet current Federal case law.

As of the date of this writing, Federal case law on inventoried roadless areas hadn't been settled. The forest analyzed the effects of motorized routes that went through or were close to inventoried roadless areas (IRAs). In the DEIS, we used the five potential wilderness characteristics to analyze the effects of motorized use near IRAs. At that time, we did not use the roadless characteristics stated in the Roadless Rule due to the conflicting rulings and court cases that existed across the country. For the FEIS, however, we decided that using the 9 characteristics of IRAs is more appropriate because the IRAs on the Santa Fe National Forest are not listed as potential wilderness.

The Forest Service should only allow street-legal vehicles near wilderness boundaries to reduce noise and off-highway vehicle trespass into wilderness areas.

We have no evidence there is a correlation between the number of forest routes and trespass into wilderness areas. We found that most routes near wilderness provide access to trailheads and have parking barriers or terrain and topography that make it difficult to drive into the wilderness itself. We also haven't found evidence that having highway-legal vehicles only near wilderness reduces trespass. Nonetheless, all the alternatives reduce the miles of roads, trails, and areas near wilderness where people could drive.

For this analysis, we assumed that the effects of all vehicles were the same (assumption 6), so there would be no difference in the amount of noise caused by different kinds of vehicles near wilderness. The discussion on noise in chapter 3 shows that it is transitory and highly dependent on terrain. All the action alternatives reduce the places where people can drive, thus reducing the number of places where noise might be heard. There is a legal requirement that noise from ATVs and off-road motorcycles be limited to a decibel level that makes them comparable to the noise from street-legal vehicles.

The Forest Service must disclose the effect of designating motorized routes in roadless areas on potential wilderness designation.

Forest plan revision is the appropriate time and venue to consider designating potential wilderness. The issue of potential wilderness designation is beyond the scope of this project, which only sets where people are allowed to drive. Nonetheless, all the action alternatives reduce the places where people would be allowed to drive in inventoried roadless areas from the current condition.

The fact that motorized uses can be seen or heard from designated wilderness should not serve as a designation criteria or even a significant decisionmaking factor. The analysis of use within 1/2 mile of wilderness should be disregarded.

Wilderness areas do not have buffers, and we can allow any otherwise legal activity right up to the boundary of a wilderness area. There may be other reasons, however, to restrict motor vehicle use near wilderness areas, and these reasons may not relate to the wilderness area. We

have analyzed the consequences of motor vehicle use. The forest supervisor will make decisions that are appropriate for the location.

The Forest Service should prohibit motorized vehicles in inventoried roadless areas (unless it is needed to get to private land) to protect the variety of resources found in those areas.

We have analyzed the effects to inventoried roadless areas in chapter 3 of the FEIS. Though the status of the 2001 Roadless Rule is still being determined in court, that rule contained no prohibition on motorized use in inventoried roadless areas, just on new road construction, which we are not proposing.

The Santa Fe National Forest is imposing wilderness standards outside the actual wilderness. The half mile elimination of all roads and trails near wilderness areas and IRAs due to sound is not in accordance with the Travel Management Rule.

We did not eliminate all the roads and trails within a half mile of wilderness or inventoried roadless areas in any of the alternatives; we merely analyzed the effects of engine noise within that distance.

I support a campaign that will increase the Pecos Wilderness by approximately 50% from 258,000 acres to approximately 380,000 acres.

This comment is outside the scope of this analysis, which designates roads, trails, and areas for motorized use.

The Forest Service must use the nine roadless area characteristics when describing effects to inventoried roadless areas. It didn't take a hard look at the effects of motorized use in IRAs.

For this final environmental impact statement, we did use the nine characteristics of IRAs to analyze the effects to IRAs.

The Santa Fe National Forest needs to adjust analysis of IRA designations according to court decisions made since the writing of the DEIS (i.e., 10th Circuit Court of Appeals ruling on State of Wyoming's challenge of 2001 Roadless Rule).

The Forest Service analyzed the effects of the project using the nine characteristics of IRAs. This analysis is appropriate given recent court cases and decisions regarding IRAs.

Jemez Mountain Salamander

The Forest Service should analyze the Jemez Mountain salamander listing on the USFWS candidate species list in the FEIS.

The potential effects of the alternatives on the Jemez Mountain salamander are analyzed in the biological evaluation. The Forest Service is not required to analyze the potential listing of a species. If the Forest Service believes its proposal may adversely affect a candidate species and that its listing is imminent, it is the Agency's discretion to consult with the USFWS.

The Forest Service must analyze the impacts of motorized use and roads and trails to the Jemez Mountain salamander on a site-specific basis.

Appendix 5 of this final environmental impact statement describes how roads, trails, and fixed-distance corridors that go through Jemez Mountain salamander habitat will be handled.

The Forest Service needs to improve the cumulative effects analysis for the Jemez Mountain salamander and its habitat by taking into account all the other uses of trails (cattle, hikers, bicycles) in order to display the real impact from motorized use.

In response to this comment, the wildlife biologist has reviewed and improved the cumulative effects analysis for all species.

The Forest Service should not authorize motorized big game retrieval in Jemez Mountain salamander essential and occupied habitat because it would cause potential mortality and habitat degradation for the Jemez Mountain salamander.

The biological evaluation analyzes the effects to the Jemez Mountain salamander from motorized big game retrieval. Appendix 5 of this final environmental impact statement describes how roads, trails, and fixed-distance corridors that go through Jemez Mountain salamander habitat will be handled. The forest supervisor will base her decision on the analysis in the FEIS and the public's comments.

The Forest Service made pre-decisional determinations to exclude certain roads and trails in Jemez Mountain salamander habitat from any alternative in violation of statute and regulation.

We did not make any predecisional determinations in this project. The National Environmental Policy Act requires us to propose a range of alternatives that meets the purpose and need. In this case, nothing requires us to designate motor vehicle use on every road and trail because doing so would not meet the purpose and need, which is in part to counter the detrimental effects of the use and existence of roads and trails and of driving off them. The forest's wildlife biologists used their professional opinion to recommend what roads and trails should be closed to minimize impacts to wildlife such as the Jemez Mountain salamander while considering the public's need to access and recreate in the Santa Fe National Forest.

The Forest Service should reduce route densities to protect the Jemez Mountain salamander's habitat.

All the action alternatives reduce open road densities to the standards set in the forest plan. The biological evaluation displays the route densities proposed specifically in Jemez Mountain salamander habitat; all the action alternatives reduce it from current levels. As described in the biological evaluation, closing a road to motorized use does not directly reduce the effects of the road. This is because the travel management decision does not remove the road's footprint, which represents the largest impact to the salamander. The travel management decision may provide future opportunities for reclamation of closed roads that may improve habitat for the salamander, but that is not certain.

Motorized big game retrieval should not be authorized within essential or occupied habitat because it would encourage the use of chainsaws to remove large downed woody debris (a primary habitat component of JMS) to access mule deer and elk carcasses.

The claim that people use chain saws to cut their way to downed game appears to be anecdotal. We have not found any scientific evidence to support this claim.

It is our understanding that regardless of the alternative selected, if surveys determine that Jemez Mountain salamander occur within or near motorized trails proposed for authorization with Essential, Occupied, or Priority Survey habitat, those trails will not be authorized.

Whether a route in or near Jemez Mountain salamander habitat is designated depends on site-specific conditions and findings. The routes that need to be surveyed are the unauthorized routes proposed for addition, or the closed system routes proposed for designation. Please refer to appendix 5 for a description of how routes in salamander habitat will be handled.

The analysis of effects to the Jemez Mountain salamander in the draft environmental impact statement conflicts with the forest's other environment assessments for livestock grazing.

The effects of travel management do not conflict with the environmental assessments for livestock grazing. This environmental impact statement and the environmental assessments for the Alamo, Bear Springs, Bland, Del Norte, and Peralta grazing allotments completed in 2006 and 2007 all include mitigations that resulted in a determination that none of the action alternatives would result in a trend toward Federal listing or a loss of species viability.

The Forest Service should consider impacts to the Jemez Mountain salamander (JMS) and only consider critical motorized routes in JMS habitats.

Most of the trails in Jemez Mountain salamander habitat are user created and are displayed in the biological evaluation as unauthorized routes. Throughout the travel management process, the ranger districts reviewed the motorized system on the district and determined the motorized roads and trails needed that best balanced resource impacts with public access.

The Forest Service needs to justify its proposed trail closures in Jemez Mountain salamander habitat when the species' status is stable or improving.

A recent 12-month finding by the U.S. Fish and Wildlife Service places the listing priority number for the salamander at "2" (Federal Register 2010–22455, 50 FR Part 17 pp. 54822–54845). This ranking suggests a high need to list this species based on recent declines that were not known during previous NEPA analyses done on the forest.

The life cycle of the Jemez Mountain Salamander (JMS) places this species underground during most of the year. How then can motorcycle traffic affect the JMS?

Vehicle use compacts soils and fills interstitial spaces used by the salamander, degrading its habitat. Clearing trails by removing logs takes away the salamander's aboveground habitat and increases the dryness of its aboveground habitat. Salamanders prefer moist environments. Additionally, many of the trails in Jemez Mountain salamander habitat are unauthorized and have not been evaluated for impacts to wildlife resources until this travel management process.

The Forest Service needs to clarify the difference in compaction caused by cattle and motorcycles. The [motorcycle] trails are usually less than about two feet wide so soil compaction would not limit surface access for the salamander over a wide area.

Compaction caused by cattle is a cumulative effect and is analyzed as such in chapter 3.

The Forest Service must acknowledge that the chance of motorcycles encountering and harming the Jemez Mountain salamander is minute, given the time and frequency with which trail riding occurs.

Effects to the Jemez Mountain salamander are not likely to be from direct mortality from collision, but from loss or degradation of habitat as described in one of the questions above.

The forest should not designate unauthorized routes in Jemez Mountain Salamander habitat.

The action alternatives reduce the miles of unauthorized routes within Jemez Mountain salamander habitat. Some unauthorized routes have remained in the alternatives to provide for recreational riding. Forest staff believes the elimination of cross-country use and the overall reduction of motorized routes within the salamander's habitat will better protect it and provide opportunities to improve habitat quality in the future. Appendix 5 describes how unauthorized or closed system routes in Jemez Mountain salamander habitat would be evaluated for addition in the future.

Keep Motorized Opportunities

The Santa Fe National Forest needs to have follow-up meetings with motorized recreation groups to discuss how to incorporate more trails through mitigation, rerouting, loops, etc., after the decision.

Since the motor vehicle use map will be published annually, everyone will have the chance to suggest changes to it. Changes can be made as long as the appropriate NEPA analysis is done. The district rangers have an open door policy and are willing to discuss changes to the map.

The Forest Service should relax the seasonal closures proposed in the alternatives because many key connector and recreational trails would not be open very often and not meet the recreational demand. The seasonal closures in alternative 4 should be from May 1 (not September 1) through January 6.

All the action alternatives propose to have 90 percent or better of the routes open for 7 months or more, and alternatives 2M and 4 do not include seasonal closures in regards to weather and instead allow us to close and open routes when conditions change. The seasonal closures protect wildlife and meet the standards in the "Santa Fe National Forest Plan." The seasonal closures have been established through other procedures that are beyond the scope of this decision. Some alternatives group dates to make the map easier to read, but the tradeoff is that the more protective standard is used, resulting in fewer days open.

The Forest Service should designate a motorized system that motorized users approve of to enhance the chances that they will comply. Such a system would include trails having technical variety and long loops with plenty of single track.

Alternatives 2–5 incorporated routes motorized users gave us to varying degrees. Some of the routes were not included in any alternative because our analysis indicated that they would not be protective of natural and cultural resources.

The Forest Service should continue to allow the public to drive on all the existing roads and trails because the agency's stated mission is multiple use—which includes recreation—and the public has the right to use the land it pays for.

Though we manage forest for multiple uses, the law does not require that we allow people to drive anywhere they want to on the forest. Our responsibility is to allow use of the forest, but at the same time protect resources. The Travel Management Rule repeatedly emphasizes this concept.

The Forest Service should designate more areas for motorized cross-country travel because the rule does not require its complete elimination. In particular, more areas should be designated for the sport of motorcycle trials, which is a low-impact, family-oriented sport.

The Travel Management Rule states, "Areas designated for motor vehicle use are not intended to be large or numerous" (70 FR 68274). The regulation defines an area as "a discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District" (§212.1). Our proposed designations reflect this intent. Trials events could still be considered under a permit.

The Forest Service needs to preserve the existing motorized opportunities available (hunting, big game retrieval, camping, gathering wood, driving to trailheads, and others) so people can use their national forest. Wilderness areas exist for those who seek a nonmotorized experience.

The Forest Service is preserving many existing motorized opportunities, but at the same time, we have a responsibility to protect forest resources. We have considered many different things to arrive at our alternatives during this process. Regardless of the alternative we choose, people will still be allowed to engage in their favorite activities on the forest. Hunting will still be allowed and so will big game retrieval. All the activities will still be allowed, they will, however, be regulated in compliance with the Travel Management Rule.

The Forest Service should designate a large motorized system to start with because it will be easier to remove a route that is a problem than it will be to add a new one.

Keeping a large motorized system would not meet the purpose and need of the project, which is to counter the detrimental effects of unregulated motorized use. Keeping a route on now because it might be more difficult to add back to the system later is not a valid reason to designate motor vehicle use now.

The Forest Service should not close open roads because it is illegal and a misuse of regulations.

It is not illegal or a misuse of regulations for the Forest Service to close roads. Congress requires that we close some roads. The Travel Management Rule requires that we designate

motor vehicle use on forest roads. The flip side of the rule is that we will not designate motor vehicle use on some forest roads. Through the public involvement process and during the environmental analysis process, we have considered what roads we need and what roads we do not need. We have made these considerations along with all the other considerations that the Travel Management Rule requires.

Mitigation measures should be included in the analysis because it could allow for keeping some routes on by mitigating negative impacts to streams or soils with structures like bridges or with reroutes. Other NEPA documents incorporate similar mitigation measures (e.g. Polvadera EA) that are factored into the decision.

Including mitigation measures for specific routes is not appropriate and would unnecessarily complicate the analysis because of the forestwide scale of this analysis. The mitigations suggested by the commenter would include ground disturbance, which is best analyzed at the site-specific level. The motor vehicle use map is to be published annually, so motorized users will have ample opportunity to work with individual ranger districts on specific mitigations and routes they would like to see included.

Motorized loop roads help create public safety in case of mechanical failures.

Mechanical failures are always a problem and a risk, but this environmental impact statement does not consider mechanical failures. People who use the forest should be aware of the condition of their equipment and be prepared for all sorts of problems.

The motorized closures proposed in the draft environmental impact statement aren't supported by the evidence presented. The draft environmental impact states there is very little motorized use now. Moreover, it doesn't present site specific, scientific evidence that motorized use is the source of any damage to natural and cultural resources.

At issue is the fact that both the existence and use of motorized routes are detrimental to natural and cultural resources. This is described repeatedly in chapter 3. Site specific, scientific evidence for each road and trail isn't necessary for the forest supervisor to make her decision. Chapter 3 and each specialist report contains citations for numerous studies that describe the detrimental effects of roads and trails.

Lands

The Forest Service should not show roads that pre-date the Santa Fe National Forest and are only used to provide motorized access to private property on the motor vehicle use map. The agency should do this without forcing private owners to obtain an easement, which is costly. In these situations, the agency should not use cost recovery to charge the owners for surveys, easements, and NEPA because the roads have been on the ground for a long time and the owners have maintained them for years. The Forest Service needs to ensure that people who own private property or who have special use permits have access to their property without putting an unreasonable strain on the owners.

Unfortunately, no provisions in the travel management, special use authorization, or cost recovery regulations exist giving the Forest Service the flexibility and accommodation being sought by this commenter. In fact, the opposite is true. The various authorities given to us all

state in one form or another, "such ingress and egress or use shall conform to rules and regulations governing the protection and administration of the lands and the roads or trails to be used." In other words, we are required to regulate access over National Forest System lands to private lands in the same way for everyone, whether the road in question is newly proposed, or established 130 years ago. Implementation of travel management regulations provides only a very narrow range of options for these situations, so we can expect difficult problems and decisions ahead as we handle requests on a case-by-case basis.

The Forest Service needs to provide a better explanation of how it provides access to private inholdings.

While this final statement necessarily abbreviates discussion of how access is provided to inholdings, the Lands Specialist's Report contains a good explanation of authorities, requirements, problems, and solutions. Between the draft and the final statement, in order to be responsive to the commenter's concerns, the lands specialist's report has been further revised to provide additional detail.

The DEIS states that the Forest Service does not have the capacity to determine how changing where people can drive will change property values, but it is basic to understand that when people live in an area to have a quiet experience with nature, the noise and destruction caused by off-highway vehicles would be detrimental to property values.

The commenter misunderstands how market value is derived. The question regarding the effect on property values caused by noise is addressed in the social and economic specialist's report.

The Forest Service should not designate roads across private lands because it has no right to do so.

We have carefully attempted to not designate roads across private lands for which we have not acquired an easement. However, there are a few specific instances where we either have in the past, or anticipate in the future, taken legal action to protect and have adjudicated the public's rights of access in order to prevent the closure of certain public roads by private landowners. We may also have inadvertently made mistakes, and encourage landowners to contact us should that be the case.

The Forest Service should not show roads having a private easement on the motor vehicle use maps because it will encourage trespass.

With a few exceptions, we tried to follow this theme. If the Forest Service has granted an easement to the owner of a private inholding, we typically have removed this road from the motor vehicle use map. However, in certain circumstances, there are locations where an easement has been issued, but an overriding need for public access across the road has been identified. In these few instances, the road has remained open. This is a right we retained in the granting of the easements on behalf of the public.

The Forest Service should describe the effects to natural and cultural resources of routes kept open only to access private land. It should also describe the maintenance burden placed on the taxpayer.

The scale of this project is at the forestwide level, and we have analyzed the effects to natural and cultural resources from the proposed changes. There is no need to differentiate roads that go to private land from other roads. As described in chapter 3, roads historically accessing private inholdings were typically created along the path of least physical resistance due to terrain and natural features. This often resulted in establishment of roads that caused resource damage. When these roads were identified as forest system roads, it became more difficult to "put the cork back in the bottle." A direct benefit of the Travel Management Rule will be the regulatory strength, over time, to begin the actual movement of roads that access private lands out of riparian areas to locations that are much less damaging. Through the special use authorization process, each road will receive site-specific analysis to determine the best manner in which to protect natural resources. The maintenance burden associated with these roads is minimal because those roads that are to be left open only to access private land are rarely, if ever, maintained by the Forest Service.

By proposing roads that lead to private as "open to highway legal vehicles only," the Forest Service is preventing private landowners from driving to their property on ATVs or dirt bikes. This is illegal.

The commenter has correctly interpreted the "open to highway legal vehicles only" restriction as one that would affect private landowners from driving to their property on ATVs or dirt bikes. However, calling this decision illegal is an inaccurate statement. There exists regulation and significant case law which establishes that the Forest Service is allowed (and in fact required) to regulate use of National Forest System lands. The question at the heart of this comment is whether the proposed restriction is reasonable. Some landowners requested that the roads to their private land not allow ATVs or dirt bikes; others did not. We did our best to match the proposed designation to the request. Because of this comment, the interdisciplinary team specifically re-evaluated and debated the proposed restriction, and after lengthy discussion, the acting forest supervisor decided the restriction was appropriate and reasonable and has determined that it should remain as proposed.

The DEIS page 120, figure 39 caption states that in theory there should be only one "route" to the private property. The DEIS does not disclose what theory this is, or the methodology used to develop this theory, nor what authority the agency would be acting under to close one "route" and not the other. On DEIS page 121 the agency states that some private properties are located in Inventoried Roadless Areas (IRAs) and for that reason the roads to the property are not designated. This non-designation is a blatant attempt to destroy the value of the property.

This comment has multiple facets, addressed below:

a. The "Santa Fe National Forest Plan" specifically directs "Allow only one private road permit for private land or subdivision access unless public safety or natural features dictate otherwise."

b. The forest plan is backed up with authorities found in the Code of Federal Regulations, at 36 CFR 251.114, 36 CFR 251.55, and 36 CFR 251.56.

c. On reflection, the lands specialist agrees with the commenter that he did not explain the authorities and decisionmaking process with regard to access as clearly as he should have and has, therefore, revised and updated the lands specialists report to more clearly explain the basis for how access decisions are made.

d. The word "theory" in the diagram caption referenced by the commenter was probably not the best choice of words. We've edited this diagram's caption in this final statement.

e. The DEIS (page 121) does not accurately reflect how private land access within IRAs has been addressed. For those properties which are/were served by an actual Forest System Road, that access has been retained, due in part to the very issue identified by the commenter. Only properties that are/were NOT served by a Forest System Road are depicted without access. In this instance, property rights/values should not be at issue, because to the best of our knowledge, the right of access had never been perfected, so nothing has been destroyed or taken away by the Travel Management Rule planning process. If access to the property is desired in the future, the normal process for authorizing that would be followed.

Law, Regulation, Policy

The Forest Service is not following the MUSYA because by not allowing motorized use it is essentially not allowing any use at all.

The Multiple Use-Sustained Yield Act does not require that the Forest Service allow unrestricted motor vehicle use on the forest. The act requires that we consider many things in the day-to-day operation of the forest, and one of the things that we must consider is recreation. We have considered all the things that we need to consider for this project.

The Forest Service is not following the 1964 National Forest Roads and Trails Act because it is not proposing a motorized system that will handle the certain future growth of motorized sports.

The 1964 act cited does not require the current designation of a system that anticipates some indeterminate level of future growth. If such growth occurs, the Travel Management Rule provides for annual revisions of the motor vehicle use map to accommodate that growth.

The Travel Management Rule is another push to manage and intimidate communities rather than land, where there are already laws that manage land effectively.

The Travel Management Rule simply requires the national forests to designate a system of roads, trails, and areas open to motorized use. Managing motorized use is one aspect of managing land. The effects of motorized use on natural and cultural resources are well documented in this final statement and the specialist's reports. The Santa Fe National Forest does not intend to manage or intimidate communities; by designating a motorized transportation system, it is providing public access to the national forest while minimizing the detrimental effects to natural and cultural resources.

Closing roads and designating the kind of vehicles allowed on them violates FLPMA (Federal Land Policy and Management Act).

The Travel Management Rule went through the Federal rule-making process and it does not conflict with FLPMA.

Limited Mobility

By closing most of the roads and trails on the national forest, the Forest Service is discriminating against the disabled, elderly, and others with limited mobility. It would prevent people from getting outdoors and staying healthy.

The action alternatives treat everyone the same—everyone is allowed to drive in the places published on the motor vehicle use map. The Forest Service isn't legally required to allow those with limited mobility to drive places closed to motorized use because such an exemption could fundamentally alter the nature of its travel management program (7 CFR §15e.103). Reasonable restrictions on motor vehicle use applied consistently to everyone aren't discriminatory.

Maintenance

The Forest Service needs to properly maintain its roads and trails.

Having fewer motorized routes in the forest means that each route can be maintained on a more frequent basis than occurs now. The roads and recreation reports contain a detailed discussion of maintenance and its costs.

The Forest Service should only designate a motorized system it can properly maintain. Please use the cost-estimating model developed by Dr. Michael Wing to do this. The analysis of the impacts of a decaying route system that is larger than the Forest Service can afford is lacking in the DEIS.

The Travel Management Rule states that the Forest Service must consider "the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration." A discussion of maintenance costs appears in the "Recreation" section of chapter 3.

We did evaluate the cost estimating model that Dr. Wing developed, and we disagree with its assumptions and find it less useful than the system we used. For example, the final section estimates the cost of producing motor vehicle use maps for the forest. The spreadsheet assumes 2 maps per visit by an off-highway vehicle. The spreadsheet assigns the entire cost of producing the maps to off-highway vehicles. This is unreasonable. All motor vehicle operators will need to know where they can and cannot drive, regardless of the type of vehicle. It is unfair to assign the cost of producing the maps to only one type of vehicle.

The Forest Service has a cost estimating system in iWeb. While it is not perfect, it is standardized.

The Forest Service should not use the excuse of not having enough funds for maintenance to close roads and trails because the motorized groups provide a lot of maintenance. Without the motorized users keeping trails open, horseback riders and bikers would no longer be able to use them, either.

The Santa Fe National Forest truly appreciates the hard work of all its volunteers. Even with all the work provided by volunteer groups, including motorized users, the existing network of authorized and unauthorized trails is still greater than what can be maintained to a standard that acceptably prevents resource damage. Much of the maintenance work on trails done by volunteers to date involves cutting out trees that fall over trails. While this work keeps the trails open to use, it does not accomplish the maintenance needed to resolve tread wear and erosion associated with the trail. There is a limit to the scale of a road and trail system that can be maintained acceptably. Please see concern 2 of the recreation specialist report for analysis regarding this comment.

The Forest Service should make more effort to publicly identify roads and trails in need of maintenance—rather than close them—so that the off-highway vehicle community can volunteer to maintain and repair them so they do not cause resource issues.

The Santa Fe National Forest enjoys a close relationship with its volunteers and volunteer organizations, and volunteer efforts account for a large amount of trail maintenance conducted on the forest. Our strategic management of the volunteer maintenance program has improved significantly in the last few years, we have begun to accomplish the kind of targeted efforts suggested here, and we intend to continue our efforts to improve our management of the program in this direction.

The Forest Service fails to analyze data from volunteer hours and maintenance to Forest routes. This is important to include in the analysis since the Forest repeatedly cites funding limitations as a possible limiting factor in determining the scope of the designated motorized system.

The Travel Management Rule focuses on designating motorized use where it is appropriate. The rule states that the Forest Service must consider maintenance and administration, and the availability of resources to conduct that maintenance and administration. There is a limit to the scale of a road and trail system that can be maintained acceptably with any combination of Forest Service and volunteer maintenance. Available data documenting volunteer work in the past are not sufficient to identify quantity or quality of volunteer maintenance to a level that would allow a precise prediction of how much future maintenance could be accomplished by volunteers. However, it is our judgment that we cannot maintain the system currently being used to an acceptable standard with the predicted combination of Forest Service and volunteer maintenance.

The Forest Service should keep the existing roads and trails open for motorized use. Having a large system means that use is spread out and is therefore easy to maintain because each route is not used very often.

Frequency of use is just one of several variables that affect the amount of maintenance required for a route. Because of other variables like steepness and soil erodibility, route maintenance may still be required regardless of level of use. Even with little or no use, some

routes still require periodic maintenance to prevent resource damage. Leaving routes open to infrequent use will not necessarily decrease maintenance requirements and cost.

Minimum Road System

None of the alternatives represent the minimum road system.

We considered the minimum road system but did not study it in detail for the reasons explained on page 46 of the FEIS.

Monitoring

The Forest Service should have a monitoring plan that incorporates public input. The monitoring plan would evaluate change over time. The annual plan should focus on: (1) illegal intrusions into closed areas; (2) conflicts between users; (3) adverse impacts of motorized use; and (4) use the protocols in the forest plan. The monitoring plan needs to be in place at the time the motor vehicle use map is published.

We appreciate these suggestions and will consider incorporating them in our monitoring plan. The Travel Management Rule requires that we monitor the effects of motor vehicle use on the designated system in accordance with the applicable land management plan, as appropriate and feasible (36 CFR 212.57). It does not state that we need to have a monitoring plan at the time the motor vehicle use map is published.

Motorized Big Game Retrieval

The Forest Service should not allow motorized big game retrieval because there is no evidence presented in the draft environmental impact statement that hunters follow the rules when retrieving game with motor vehicles. Experience on other forests shows that hunters do not follow the rules when retrieving game with a vehicle.

We have no evidence that hunters don't follow the rules. If a decision is made to allow motorized big game retrieval, and hunters do not follow the rules, this becomes an education and enforcement issue and will be dealt with accordingly.

The Forest Service should allow motorized big game retrieval because otherwise it renders hunting a sport for the wealthy and fit. Some people have physical limitations and need to drive to retrieve game. It is impractical to pack out game in difficult terrain.

Four of the five alternatives analyzed in this final statement permit some level of motorized big game retrieval. The State of New Mexico has jurisdiction over the activity of hunting. Currently, if a hunter is disabled, (s)he is allowed to hunt from a motor vehicle. In all alternatives, there will be routes open for motorized vehicles, allowing the opportunity for disabled hunters.

The forest should allow motorized big game retrieval where there are camping corridors because big game retrieval would be logical in those areas.

Each alternative where motorized dispersed camping corridors were designated, big game retrieval is also permitted. The only alternative that does not contain designated corridors is

alternative 3. The preferred alternative, 2M, proposes motorized big game retrieval in the same corridors designated for motorized dispersed camping.

The Forest Service shouldn't allow motorized big game retrieval in certain places like inventoried roadless areas, within 1 mile of wilderness areas, and on soils with a rating of severe in the forest's terrestrial ecosystem data.

Alternative 3, which proposes no driving off roads for any reason, most closely honors this request. All the action alternatives, however, reduce the places where motorized use would be allowed in the entire forest, including the places listed in this comment. Chapter 3 describes the impacts of motorized use in and near inventoried roadless areas, wilderness areas, and on erodible soils. Minor under the existing condition, the impacts from motorized big game retrieval would be reduced under any of the action alternatives.

The New Mexico Department of Game and Fish recognizes that any OHV use off motorized routes establishes tracks that stimulate additional unintended use and subsequent habitat degradation, thereby compromising effective control and protection. Alternatives 4 and 5, which have 1 mile corridors for hunters to retrieve big game with a vehicle, are not consistent with their recommendations to treat hunters the same as other motorized users, and would likely adversely affect Rio Grande cutthroat trout, Jemez Mountain salamanders, and their habitats, as well as creating additional motorized use in inventoried roadless areas.

We identified motorized big game retrieval as a significant issue based on comments received during the scoping period for travel management on the Santa Fe National Forest (significant issue 3). To analyze the effects of motorized big game retrieval, a range of corridor sizes and locations was considered in the alternatives and their effects are displayed in chapter 3. The forest supervisor will determine the size and location of motorized big game retrieval corridors based on the effects analysis and input received during the Santa Fe National Forest's travel management planning, including the comments received from the New Mexico Department of Game and Fish.

The Forest Service should not designate corridors for people to retrieve big game with a motor vehicle for a number of reasons. Driving to get game is not part of the hunting experience; people have been walking game out for hundreds of years and can continue to do so. There are already special provisions for people with disabilities. Allowing people to drive off roads to get game will cause more damage to natural and cultural resources, and it will be too difficult to enforce.

The Travel Management Rule allows the responsible official to designate motor vehicle use for big game retrieval in fixed-distance corridors. We have analyzed the consequences of allowing motorized big game retrieval to natural and cultural resources on the forest; the current use is both irregular and limited. Regardless of what some people believe to be an "authentic" hunting experience, we have considered different big game retrieval alternatives.

Motorized Dispersed Camping

The Forest Service should designate corridors that separate motorized dispersed camping and ATV use because there are people who enjoy car camping but not ATVs.

The motorized use allowed in camping corridors is strictly for the purpose of camping, and this designation does not afford the opportunity for the kind of unlimited motorized use that would be present in an ATV play area, for example. Motorized dispersed camping corridors are open to cross-country travel by all motorized vehicles within the designated distance of the corridor.

The draft environmental impact statement fails to disclose the direct, indirect, and cumulative effects of closing much of the forest to motorized dispersed camping.

Please see chapter 3 for disclosure and analysis associated with motorized dispersed camping.

The Forest Service should leave large areas open to motorized dispersed camping. Crowding people into smaller areas will create conflict, traffic problems, and deteriorate natural and cultural resources. People also need a variety of camping opportunities and the limits proposed are not likely to provide that.

In 2008 and 2009, the Santa Fe National Forest conducted motorized dispersed camping surveys. The surveys captured the locations of the vast majority of motorized dispersed camping occurring on the forest. All alternatives, except alternative 3, retain most of the areas identified in the 2008–2009 camping surveys. Please see the section on "Motorized Dispersed Camping - Environmental Consequences" in chapter 3 for additional information. The Santa Fe National Forest provides a wide variety of dispersed camping opportunities, including developed, drive-down route, park-and-walk, and back-country camping opportunities.

The Forest Service should not allow motorized dispersed camping because that allows people to drive off roads in the corridor. Driving off roads is shown to damage natural and cultural resources. People can camp in developed campgrounds.

Motorized dispersed camping is a form of recreation that many Santa Fe National Forest users enjoy. Prior to the Travel Management Rule, this type of camping was relatively unmanaged. Active management of motorized dispersed camping on the forest will ensure that any resource damage is kept to a minimum.

No motorized dispersed camping should be allowed in Mexican spotted owl habitat.

Right now, people drive to camp in Mexican spotted owl habitat and have been doing so for many years. In some cases, Mexican spotted owls have coexisted with this activity for many years. All the action alternatives propose to reduce the places where people can drive in Mexican spotted owl habitat, which would improve the condition of its habitat.

For motorized dispersed camping, the Forest Service should designate corridors at least 300 feet wide—but up to 900 would be more appropriate—because people don't like to camp right next to the road where traffic causes dust.

The data we collected in 2008 and 2009 reflects where people are currently driving to camp. It shows that 71 percent of campsites are within 75 feet of an existing road and another 24 percent are between 76 and 200 feet from a road. We did not propose an alternative with a larger corridor because the data did not support it. People will still be able to camp wherever they want to; this project only limits where people will be able to drive.

The Forest Service should leave large areas open for dispersed camping because some people have to sleep in campers or vehicles due to age or disabilities. The Forest Service should leave all (or large) areas open to dispersed camping because families and groups enjoy having privacy from others and not being an impact on other groups. With privacy, families can also let their children wander around without worrying about traffic or other people.

See the answers above.

Motorized Trails

The statement "only alternative 4 proposes to designate more miles of motorized system trail than are being used now" is misleading and inaccurate.

Table 60 of the FEIS shows that indeed, alternative 4 does propose to designate more miles of new motorized trail than people said they are currently using. About three-quarters of the routes given to us by motorized users are already on forest system roads (FEIS, p. 73).

Blackfeather has inventoried more than 570 miles of trail but only 339 miles are shown in alternative 1. How did 231 miles just vanish?

Our records show that, at the publishing of the proposed action, motorized users provided about 1,074 miles of routes they like to ride on. Of these, 772 miles are already on forest system roads, 11 miles are already on forest system trails, and 291 miles are unauthorized. All these routes are displayed in alternative 1, which shows where people drive now.

The mileage of current existing motorcycle trails (27) is an error. The Forest needs to include the 8 trails shown open to ORVs in a 1977 document. If it does not show them, the Forest needs to explain why.

The Travel Management Rule at §212.50(b) allows the responsible official to incorporate previous administrative decisions regarding travel management made under other authorities, including designations and prohibitions. As a result, we used our current database of record, "Infrastructure Trails and Access Travel Management," as the starting point for what forest system trails are motorized. If a trail appeared in the database's "MVUM_TRAIL_ALLOW" table, we considered it motorized. The trails listed in the MVUM_TRAIL_ALLOW table are those trails designed for motorized use and where motorized use was encouraged. As of October 2, 2009, six trails (113, 146, 273, 279, 285, 286), totaling 27 miles, were in this category.

The commenter references a 1977 document that lists these trails as being motorized: 3, 69, 285, 276, 282, 113, 118, and 426. The trails in the 1977 document total about 22.5 miles. Trail 426 does not exist in Infra. Trail 276 has been decommissioned. Trails 3 and 69 were not submitted by motorized users as ones they drive on. Part of 282 was submitted as a user provided route, and we designated that part as a motorcycle trail in the proposed action. Trail 118 is nearly all in the Dome Wilderness and was not submitted as a user provided route. Generally, motorized use on trails outside of wilderness is accepted but not necessarily encouraged. Motorized use on Trails 3, 69, 282, and 118 may be accepted, but not encouraged and, thus, were not in the MVUM_TRAIL_ALLOW table.

The Forest Service needs to show the nonmotorized system trails that are being proposed for motorized use.

As described on page 86, most of the forest's system trails were designed for nonmotorized use, but not specifically limited to that use. Motorized use hasn't been discouraged on most of the forest's system trails.

NEPA Document

The Forest Service should include a section in the FEIS describing how the public's comments were analyzed and coded.

This final environmental impact statement contains a section on public involvement and how comments were analyzed during the comment period for the proposed action. The project record contains the reports describing how the team read, coded, and analyzed the comments during each phase of the process.

User conflict is not a legitimate significant issue. The Forest Service identified user conflict as an issue during development of the Travel Management Rule.

During the Santa Fe National Forest's scoping period, the public brought up user conflict. We identified it as an issue because the public felt that it was still unresolved by the proposed action. The forest supervisor determined that user conflict was a significant issue and requested the development of alternative 5 to address it (see the list of final issues and concerns.)

The Forest Service needs to display the environmental effects of the alternatives, not simply list tables comparing miles of roads and trails. As examples, it needs to calculate the tons of dust and sediment and portray the changed recreation settings between groups. The Forest Service needs to improve its basic methodology because it does not connect a route's existence or use to specific habitat or site conditions.

Using the miles of roads and trails as a proxy for the magnitude of effects is a well accepted method of environmental analysis.

The FEIS needs to better show the effects of allowing motorized cross-country travel in corridors designated for motorized dispersed camping or motorized big game retrieval. Allowing vehicles to travel cross-country in a corridor to find a place to camp will result in a network of user-created routes and damage to natural and cultural resources.

Assumption 16 explains why we believe motorized big game retrieval corridors won't result in new routes. Assumption 21 in chapter 3 acknowledges that designating motorized dispersed camping corridors is likely to result in the creation of new routes and hardened sites by assuming the same amount of use in different-sized corridors. Each specialist incorporated this assumption into his or her effects analysis for the final environmental impact statement.

The Forest Service should describe or display the different number of campsites that will be closed.

No campsites would be closed. The Travel Management Rule only limits where people could drive to get to them. Based on the data collected in 2008 and 2009, we believe that we have proposed to keep most motorized dispersed camping, either in a corridor or with a spur route to a campsite, in all the action alternatives except alternative 3.

To meet CEQ requirements, the FEIS must cite scientific references and describe its methodology.

We have included more scientific citations in this final statement as requested. We also summarize the specialist's methods.

The FEIS needs to specifically disclose how the forest complied with the Travel Management Rule. This should include a description on how the criteria in the rule were applied to each road and trail.

The record of decision will describe how the criteria in the Travel Management Rule were used in the forest supervisor's decisionmaking process.

The Forest Service should remove "a need to counter the detrimental effects to natural and cultural resources from the existence and use of roads" from the purpose and need statement because the bulk of the draft environmental impact statement proves that there are not any detrimental effects.

We disagree with this opinion and ask the commenter to refer to table 10 in the FEIS. It summarizes the effects to natural and cultural resources from the existence and use of roads and trails. Further, the detrimental effects of motorized use on natural and cultural resources are well documented in the scientific literature and cited in each specialist report.

The FEIS needs to state that it was written in accordance with NEPA and the CEQ regulations.

Thank you for this suggestion. Please refer to page 1.

The Forest Service should rewrite one or more of its significant issue statements because they are not accurate. For example, the issue statement about user conflicts is not logical and is being used to advance a "minimal OHV alternative." Just publishing a motor vehicle use map will

reduce user conflicts drastically by directing forest visitors to areas having the recreation experiences they expect.

As stated in the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act, the purpose of scoping is "for determining the scope of the issues to be addressed and for identifying the significant issues related to the proposed action" and to "identify and eliminate from detailed study the issues which are not significant 40 CFR 1501.7.)" The courts have given the agency considerable deference in how it identifies significant issues. We regret that the commenter disagrees with our interpretation of the public's comments.

The Forest Service should reflect in the effects analysis that motorized users are a very small minority of recreationists, but have a large negative impact.

Almost everyone who visits the Santa Fe National Forest drives there, whether for sightseeing, camping, hiking, hunting, fishing, or for recreation driving, so it is not correct to say that motorized users are a small minority. It is true that the people who go to the forest specifically to ride OHVs is less than 1 percent, according to National Visitor Use Monitoring survey data. We have described the effects of all motorized use in chapter 3 of the FEIS.

Mitigation measures should be included in the analysis and decision, similar to other NEPA documents.

Chapter 2 lists the mitigations the specialists incorporated into their analysis.

The Forest Service needs to disclose the objective and analyze the effects of changing the designation of roads "open to all vehicles" to "open to highway legal only."

Assumptions 5 and 6 in chapter 3 respond to this comment.

All the data needs to be in the FEIS rather than adjunct reports.

The regulations allow us to incorporate data by reference to cut down on the bulk of documents (40 CFR 1502.21). Incorporated material has been briefly described and cited in this statement.

The FEIS would benefit from a detailed "methods" section.

The NEPA regulations require that EISs be "analytic rather than encyclopedic" (40 CFR 1500.4(b)). Thus, we briefly summarize the methods the specialists used to do their analysis and refer the reader to the specialist report for a detailed description.

The Forest Service needs to treat the motorized use in the corridors for dispersed camping and big game retrieval the same as areas because people will drive wherever they want to in the corridors.

We have acknowledged the anticipated effects of allowing motorized use in corridors in assumptions 9 and 21.

The DEIS fails to properly analyze and disclose irreversible and irretrievable impacts under the alternatives.

We have refined this analysis in this final environmental impact statement.

The Forest Service failed to provide the public with a way to distinguish between which open and closed National Forest System roads, motorized and nonmotorized trails, and user-created routes the Forest Service is proposing to add to the transportation system. For example, the Forest Service fails to identify the location of trails that were designed for nonmotorized use but were classified as motorized in the baseline condition.

We did provide the public with a spreadsheet listing every route by number, its proposed designation by alternative, and its existing condition (such as open system, closed system, decommissioned, etc.) (http://www.fs.fed.us/r3/sfe/travelmgt/deis/index.html—see spreadsheet at very bottom of Web page). Using this spreadsheet, anyone can look up what routes are closed now and would be open, or vice-versa.

The Forest Service needs to disclose the travel management administrative decisions that are incorporated in the decision but made under other authorities, including designations and prohibitions of motor vehicle use, in designating roads, trails, and areas for motor vehicle use (as per DEIS page 5 and subpart section 212.50(b)).

The "Travel Analysis Process Report" and this statement both describe the current travel policy, which is where the forest intends for people to drive now. (This is not where people are driving in all cases, as explained many times in the FEIS.) The current travel policy is composed of all the "decisions made under other authorities."

The Forest Service needs to change the name of routes that are not part of the system. Calling them "unauthorized" immediately confers an illegal status to them so that people ignore whether there are environmental effects or not.

We are merely following the regulations. As defined in 36 C.F.R. §212.1, an unauthorized route or trail is a "road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas." User-created routes are within the definition. Keeping language consistent promotes clarity.

The DEIS and other analyses show that the Forest Service is biased towards nonmotorized users. The Forest Service has no authority to take sides in disputes between forest users. Moreover, many statements in the DEIS indicate that preferential consideration of desired recreation experiences is being given to nonmotorized users.

We regret the perception of bias. Because this project regulates where people can drive—motorized use—it may appear biased, but that is the direction contained in the Travel Management Rule. This project does not regulate nonmotorized uses.

We are concerned that the first motor vehicle use map will not show all of the roads, trails, and areas shown in the record of decision because section 106 National Historic Preservation Act surveys cannot be completed by the time the record of decision is published.

According to the programmatic agreement with the State Historic Preservation Office for travel management, we cannot designate motor vehicle use on certain routes until we have completed the archaeology survey and clearance. The agreement stipulates that we have 3 years to complete the surveys. We may, though, complete the environmental process without having the clearances completed.

The Forest Service needs to explain why natural and cultural resources are elevated above societal values that result in closing 45% or more of the routes currently being used. The Forest Service has no legal authority to elevate natural and cultural resources above social concerns.

On the contrary, this issue was one of the primary motivations that led to the establishment of the "forest reserves," now known as "national forests." Unregulated extraction and consumption of forest products for the general purpose of settling the West led to significant natural resource damage. With preservation of sustainable timberlands, watershed protection, and wildlife conservation as primary motivating factors, the Federal government passed laws first in 1891 and then again in 1897, with the overriding purpose being to withdraw these lands from the general Public Domain, and to protect them for natural resource conservation purposes.

No Action Alternative

The Forest Service must not include alternative 1 because it is currently in violation of the Travel Management Rule.

Regulations require a no action alternative be analyzed in an environmental impact statement (40 CFR 1502.14 (c)). It provides a baseline against which to compare the action alternatives.

The No Action alternative is flawed because it arbitrarily eliminates roads and trails from consideration and under-reports actual motorized use of the forest. The Forest must give the real No Action alternative serious consideration and full treatment. It should either GPS all the roads and trails to verify their location, or use all the system roads and trails in the No Action. Otherwise, the No Action is an inaccurate baseline as presented. The Forest Service is trying to make it look like they are closing fewer routes than they truly are.

A number of commenters believe that, because the no action alternative didn't display every route on the forest, that these were improperly removed from consideration. The purpose of the no action alternative is to provide a baseline. The no action alternative may be thought of in terms of continuing with the present course of action until that action is changed (CEQ's 40 Most Asked Questions, 3). Therefore, for this project, the no action alternative is the forest's best estimate of where people drive now, which reflects the current management and present course of action. (This is different than every road on the forest, or even different than the forest's current motorized system, which is described in appendix 4.) Any road, trail, or area could have been proposed—and many were—for motorized use at any time throughout the planning process.

We used the best available information—including data provided by motorized users, field trips, traffic counts, and local knowledge—to document where people are driving right now and we believe it is accurate, though not perfect. Having perfect information about where people drive isn't necessary to make this decision because the effects of the use and existence of routes on natural and cultural resources is well documented.

The no action alternative is given "full treatment" in this final statement.

The No Action alternative, because it included closed, decommissioned, short-term intermittent, nonmotorized, and unauthorized routes as part of the baseline system without the requisite site-specific NEPA analysis, is inaccurate and not legally defensible. By inaccurately defining the No Action alternative, the Forest Service is falsely inflating the actual environmental benefits of the action alternatives.

As described in the question above, the no action alternative shows where people are driving now in the Santa Fe National Forest. This includes closed, decommissioned, and unauthorized routes. This final environmental impact statement describes the effects of adding unauthorized routes by alternative, thus performing the NEPA analysis requested by this commenter.

Alternative 1 does not demonstrate there is damage to natural and cultural resources, so there is no justification for closing roads and trails.

We disagree. Chapter 3 clearly displaces the detrimental effects caused by unmanaged motorized use and the use and existence of roads and motorized trails.

The Forest Service included closed roads (ML 1) in alternative 1 despite clear policy that the public may not use these roads.

The Council on Environmental Quality describes the ways the no action alternative may be defined, and we have followed that guidance. The no action alternative may be thought of in terms of continuing with the present course of action until that action is changed (CEQ's 40 Most Asked Questions, 3). Therefore, for this project, the no action alternative is the forest's best estimate of where people drive now, which reflects the current management and present course of action.

People are driving on some of the maintenance level 1 roads. In the absence of closure orders or physical barriers, some people do not know what routes are open or closed to motorized use.

Adding an unauthorized route to the motorized system requires site-specific analysis of the route.

We agree and have performed this analysis.

The motorized dispersed camping displayed in alternative 1 vastly under-represents the actual amount of it occurring in the Santa Fe National Forest. Alternative 1 shows that the public drives to camp on only 17,076 acres, yet more than 821,000 acres are actually open to motorized use now.

Forest staff collected data in 2008 and 2009 on where people drive to camp. The data show that most people (71 percent) camp within 75 feet of a road; 95 percent camp within 200 feet of a road. We recognize that the forest's travel policy allows people to drive on about 821,000 acres, but staff on the ranger districts believe that the amount of motorized dispersed camping that occurs on these acres is relatively small (assumption 18).

Alternative 1 in the DEIS is flawed because it does not include the 9 areas submitted by the NM Trials Association. These are areas where we have had trials events in the past.

To our knowledge, we did include all the known trials areas in alternative 1. Motorized groups gave staff at the Jemez Ranger District three separate trials areas: Bear Canyon (13 polygons), Lake Fork (9 polygons), and Cochiti (5 polygons). The Bear Canyon polygons were "absorbed" into a larger area identified by district staff as being used for motorized cross-country travel. Thus, the distinctive edges of the Bear Canyon trials areas are not shown, but incorporated into the larger cross-country area.

It is inappropriate for the Forest Service to list routes as open system routes for off-highway vehicle use when: (1) prior decisions have closed the roads (ML-1), (2) the Forest Service has never analyzed the individual routes' appropriateness for public motorized use or the environmental effects of motorized recreational use of the route, and (3) the Forest Service has set up its analysis such that the current condition carries through the action alternatives and the agency never completes a site-specific analysis before deciding to designate any of these "current condition" routes.

The responsible official may—but isn't required to—incorporate previous administrative decisions into travel management (36 CFR 212.50(b)). Deciding to designate a road currently managed as closed is a change that is within the scope of this analysis.

We have done the analysis required by the Travel Management Rule and NEPA in order to make changes to the current motorized policy.

The no action (alternative 1) describes where motor vehicle use is happening now. The action alternatives proposed different configurations of motorized routes and areas that aren't necessarily "carried through" from alternative 1.

Historic travel on unauthorized routes represents more than the 7,515-miles used as a standard of reference for the existing condition [in the draft environmental impact statement].

This could be true. The Travel Management Rule, however, doesn't require the Forest Service to have a complete inventory of unauthorized routes before making a decision.

Noise

The effects analysis related to noise is incorrect because (1) it doesn't compare the noise of engines to that of other forest users (hikers, fisherman, others), (2) it doesn't address the impacts

of noise on other forest users, such as that they are relegated to the backcountry or wilderness if they wish to escape engine noise, and (3) it incorrectly characterizes the decibel levels of OHVs and how the sound travels.

To answer each of the 3 claims:

(1) Since the action alternatives propose to change where people can drive, the analysis focuses on how noise from engines would change from its current level. There is no requirement or need to compare the noise of engines to other forest users since this project would not change those.

(2) The social and economic report does analyze how engine noise would affect forest users. It does this by estimating the frequency, duration, and magnitude of engine noise and then showing how each alternative would change the level of noise. It describes the levels of noise predicted in areas meant to be isolated from the sights and sounds of people. The analysis shows that all action alternatives would decrease noise from motor vehicles in areas designated for primitive and semiprimitive nonmotorized experiences.

(3) The social and economic specialist report assessed how noise propagates based on the best available science, the SPreAD-GIS model, which considers factors including topography, climate, prevailing wind, vegetation, and other factors.

The effects of noise on wildlife are not adequately addressed.

Scientists have studied the effects of noise on wildlife, but the results vary tremendously. The effects vary depending on species, type of noise, and time of year. It is difficult to draw conclusions from the existing research. In those places where driving is no longer allowed, noise would be reduced, resulting in less disturbance to wildlife.

The Forest Service should prohibit ATV use in proximity to residential structures because the noise is disrupting the residents' quality of life.

The forest received some comments asking that ATV use near private land be restricted. Other comments specifically requested motorized routes to private lands, such as the requests for single-track trails to Thompson Ridge or motorized trails along Cochiti Mesa. Based on information in the recreation specialist report and the socio-economic specialist report, designation of a system of roads, trails and areas for motorized use is expected to reduce conflict among various uses of National Forest System lands—including the conflict of noise to nearby private lands.

Over-snow Vehicles

The DEIS fails to consider winter travel planning of Over Snow Vehicles (OSV). It has been documented in a number of national forests and public lands that OSVs damage alpine tundra, trees and vegetation, trails, and water quality. Unregulated OSV use also harasses wildlife, trespasses into designated wilderness areas, and results in user conflict with nonmotorized recreationists.

The regulations at 36 CFR 212.81 state that use by over-snow vehicles may be allowed, restricted, or prohibited. The rule does not require that we address over-snow vehicles as part

of the designation process; they are exempted under §212.51(a) (3). The Santa Fe National Forest did not include over-snow vehicles in its designations because we do not reliably receive enough snow outside of wilderness areas to consider over-snow vehicles a problem at this time.

The discretionary "exemption" for OSVs in the 2005 Rule is not consistent with the 1972 Executive Orders and does not remove the requirement that the Forest Service comply with the Executive Orders.

The 2005 Travel Management Rule implements Executive Orders 11644 and 11989 (70 FR 68264). The Executive Orders merely require agencies to promulgate regulations providing for restrictions and prohibitions on motor vehicle use. The answer above explains why the forest didn't consider over-snow vehicles in this analysis.

Permits and Fees

The Forest Service should have a permitting and licensing program for off-highway vehicles. The fees would cover education in forest conservation and to enhance law enforcement.

Federal law does not allow the Forest Service to establish a permitting and licensing program for off-highway vehicles. These matters are generally left to the states. This kind of permitting and licensing program is already handled by the State of New Mexico.

Physical Barriers

For the plan to be effective, the Forest Service needs to physically block the closed roads and trails and install physical barriers on the single-track and less than 50-inch trails to keep the right vehicles in the right place.

Though motorized users will be responsible for following the designations in the motor vehicle use map, we agree that in some situations physical barriers could help keep vehicles in the right place. This project proposes no such barriers or ground disturbance; rather, that will be addressed during implementation on a site-specific basis.

Any gates installed should be ADA accessible.

The only portion of the Americans with Disabilities Act that applies to the Forest Service is the section specifying that wheelchairs may be used in wilderness areas. ADA mandates nondiscrimination in employment and the provision of services by States, local governments and private entities. The Architectural Barriers Act (1968) and Section 504 of the Rehabilitation Act (1973) specify similar requirements for Forest Service provided activities and services. Those requirements have been codified in "Forest Service Outdoor Recreation Accessibility Guidelines" (5/06) and "Forest Service Trail Accessibility Guidelines" (5/06). (Please see: http://www.fs.fed.us/recreation/programs/accessibility). Any construction that we undertake will comply with those requirements. The Forest Service has plans and specifications to construct accessible gates, and if we need to, we will install accessible gates.

Process

The Forest Service cannot include the seasonal closures in the decision because the public did not have the information on the seasonal closures for the full 45-day comment period.

The information on seasonal closures was indeed available for the full 45 days. Everything related to the draft statement in the project record was available to the public from July 22 – September 30, 2010, which is 71 days. Additionally, at the request of the public, we posted a spreadsheet listing every route number, designation by alternative, and its seasonal date on our Web site at the same time the maps of the alternatives were posted (http://www.fs.fed.us/r3/sfe/travelmgt/deis/index.html; see spreadsheet at very bottom of Web page).

The Forest Service should have done a better job of outreach to residents of rural communities and the Tribes, particularly in the Rio Grande Sun, as opposed to the Albuquerque Journal. The result will be a decision that does not respond to the needs of people who depend upon forest resources for their way of life.

Since 2006, the Santa Fe National Forest has provided public notice about the different stages of the travel management planning process so the public could participate. We placed newspaper ads during key public involvement periods such as during development of the proposed action, the scoping period, and the notice and comment period. In all, we advertised and held 59 public meetings. The Santa Fe National Forest used fliers, newspaper advertisements, the Santa Fe National Forest Web site, social media, and public mailing lists to inform the public of developments. The project record contains information on newspaper articles, flier locations, and other forms of public outreach the Santa Fe National Forest used.

The agency needs to withdraw the DEIS because it did not follow the law when it identified significant issues. The Forest Service should be developing alternatives to address significant issues, not the other way around.

The agency did follow the law when it identified the significant issues and alternatives. The project record document called “20120426_Summary_Alt_Development_Process.docx” explains the process we used.

The Forest Service did an inadequate job of tracking and explaining why some roads and trails appeared (or not) in the alternatives. What was presented was very confusing and hard to follow. This made it hard for the public to provide comments in a timely manner and did not follow the NEPA process.

In response to this comment, we wrote a separate document explaining the process we used to sort through and answer comments on the draft environmental impact statement. It is called “20120427_method_for_DEIS_comments.docx” and is located in the project record. We regret that people had trouble understanding what happened to individual routes. In some cases, the names people used for routes did not match our road or trail numbers.

The Forest Service failed to provide data in a timely manner. Because there are no dates showing when the documents associated with the DEIS are posted, the public may not have had the full 45 days to comment on them which is contrary to the regulations.

Seventy-one days elapsed between the time the draft statement and the specialist's reports were posted on the forest's Web site and the end of the comment period on September 30, 2010. The entire project record was available to anyone who requested it during that time, either by coming into the office or asking for documents through the Freedom of Information Act. In addition, we posted all the references and a list of the project record index online for people's convenience.

The Forest Service needs to consider contents from petitions to close roads (specifically March 30, 2009, for roads in the Jemez Ranger District and July 1, 2010, by Center for Biological Diversity) and document how the contents of these petitions were handled in the Travel Management process.

We received these petitions outside of any comment period related to the NEPA process for travel management. Thus, we considered them separately. As documented in the project record, the forest supervisor evaluated the petitions and decided to deny them due to a lack of sufficient evidence.

The Coyote Ranger District did not hold public meetings in one of the communities it represents, which further indicates neglect of the needs of the Hispanic community.

Since we started working on this project in 2006, we have held 59 public meetings in communities around the forest. The forest supervisor, deputy forest supervisor, and district rangers also met with people and organizations individually when requested to do so. We have received over three thousand letters and petitions over this same time period. We selected central locations for public meetings, and chose places that had a facility that could hold at least 30 people.

The Forest Service's poor communication of local meeting times and dates was deliberate because the local community opinion of Travel Management is not favorable.

People's opinions about the Travel Management Rule and the forest's proposed alternatives vary greatly, from very supportive to totally against. We welcome all opinions and do not avoid them. We scheduled public meetings so they were as central as possible. We also advertised meetings through newspaper ads, on our Web site, through our mailing list, and by posting fliers in local communities.

Purpose and Need

The Forest Service must not build its significant issues around front-loaded assumptions because it artificially limits its range of alternatives.

The "front-loaded assumptions" referred to in this comment are the examples of the detrimental effects from unmanaged motorized use and the existence and use of roads and trails included with the purpose and need. Studies document well the detrimental effects of both, and we have included these references in this statement. The courts give agencies considerable deference in the formation of a purpose and need. Finally, the NEPA regulations

require that we analyze a reasonable range of alternatives, not every possible alternative (40 CFR 1508.25).

The purpose of the Travel Management Rule is to determine the minimum road system necessary to provide safe and efficient travel, and for administration, utilization, and protection of National Forest System lands.

The regulations at 36 CFR 212.5 ("subpart A") requires that the Forest Service identify its minimum road system and unneeded roads. Section 212.51 ("subpart B") requires that we designate roads, trails, and areas for motorized use. No requirement that the minimum road system be the designated system exists. The minimum road system does not include motorized trails, which is a legitimate use of National Forest System lands in the appropriate locations with appropriate management.

The Forest Service's purpose and need is pre-decisional and does not follow the CEQ regulations. The purpose and need should attempt to prove or disprove an assumption (a hypothesis) and not be a way to frontload a decision.

The National Environmental Policy Act is about disclosure: the reason for doing a project, the project, and the project's effects. No part of the act requires an agency to prove or disprove anything, only to describe the predicted effects. The purpose and need of a project describes the reason an agency wants to implement a project. It is not a hypothesis.

The purpose and need should also reference the social benefits of motorized recreation. The purpose and need statement is too narrowly written and does not go far enough to address the legitimate needs of the motorized recreational user.

Though the needs of the motorized user are not included in the purpose and need, the alternatives do incorporate them. For example, the Santa Fe National Forest only has 27 miles of motorized system trail, and every action alternative proposes to increase that substantially.

The DEIS is flawed because none of the alternatives meet the stated purpose and need, which is to reduce the detrimental impacts caused by the existence and use of roads and trails.

We disagree with this comment. Though not every natural and cultural resource is expected to see a significant improvement from limiting motorized use, many will. Table 10 of this final statement displays the expected improvements to natural and cultural resources and social aspects from the action alternatives.

Range of Alternatives

The Santa Fe needs to write an SEIS because the DEIS fails to present an adequate range of alternatives. All the alternatives are clustered around closing half of the roads and are too restrictive. The DEIS needs to propose as many alternatives that increase the mileage (and acres for motorcycle trials) open to motorized use as those that decrease it.

We did not include action alternatives that would increase the amount of motorized use from the current condition because it would not meet the need of reducing the detrimental impacts caused by motorized use and the use and existence of roads and trails.

The Forest Service did not adequately address conflicts between users in the development of the alternatives.

We designed alternative 5 specifically around the issue of conflicts between users.

The science-based alternative was improperly excluded from detailed analysis.

We have explained our rationale for not analyzing this alternative in detail on page 53. We have incorporated the best available science into all analysis.

The landscape-based alternative was improperly excluded from detailed analysis.

We have explained our rationale for not analyzing this alternative in detail on page 53.

The route density calculation was improperly considered as a separate alternative. The Santa Fe National Forest should adopt the method used by the Apache-Sitgreaves because it includes closed roads and does not include wilderness.

It may be true that calculating route densities isn't really an alternative. Because we received a number of comments on it, we wanted to explain how we handled the route density calcuations. We based our method of calculating open road density on the "Santa Fe National Forest Plan." The Apache-Sitgreaves is governed by its own forest plan, which may stipulate a different method.

The DEIS fails to present a reasonable range of alternatives because no alternative (1) completely eliminates routes inside of IRAs, (2) significantly improves wildlife habitat in particular for species awaiting listing as threatened or endangered (Rio Grande cutthroat trout and Jemez Mountain salamander), (3) proposes the minimum road system, (4) is fiscally responsible, and (5) doesn't include any user-created routes.

The alternatives must meet the stated purpose and need. None of the things listed in the comment is included as a need. The effects of the alternatives on IRAs, wildlife, for adding unauthorized routes, and to maintenance costs are analyzed in this statement. The minimum road system is analyzed briefly in chapter 2.

Recreation

The Forest Service must show how the selected alternative meets the needs identified in the Forest Service's various visitor use studies.

According to the National Visitor Use Monitoring data for the Santa Fe National Forest, the existing condition provides much more motorized recreational opportunity than is necessary to meet the current demand (recreation specialist report). The visitor use studies do not support keeping a system as large as is currently available on the forest. Selection of any action alternative would better meet the needs for motorized recreation as identified in the National Visitor Use Monitoring study.

The Forest Service must differentiate between the quantity of recreation (miles) and quality (benefits) in its effects analysis in order to evaluate the full social tradeoff between analysis. For

example, replacing miles of single-track in roadless areas with miles of old roads alters the quality.

The Forest Service did not analyze the quality of motorized experiences because the Santa Fe National Forest does not rate the quality of experiences or skill level of available or proposed trails since a challenging trail to one person may be considered easy by another.

The Forest Service fails to acknowledge that the presence of unauthorized trails is a reflection of demand.

The forest currently has 27 miles of motorized system trail. We recognize that a larger managed motorized trail system is needed. Each alternative proposes to incorporate some unauthorized motorized trails.

The Forest Service fails to analyze the impacts to nonmotorized users within areas designated for off-highway vehicle use.

The conflict between motorized and nonmotorized users was one of five significant issues analyzed in this final environmental impact statement.

The DEIS has not included an analysis of effective mesh size, or a Roadless Space metric, RV, which are two important ways of determining the effects of roads and loops in isolated areas to evaluate the consequences of loops and connectors.

The forest didn't identify specific routes as loops or connectors. Rather, we analyzed the effects of the entire proposed system by alternative.

Restrict Motorized Use

No motorized cross-country travel should be allowed on the Santa Fe National Forest because it damages natural and cultural resources.

All the action alternatives essentially eliminate motorized cross-country travel by designating 50 acres or less of areas out of the forest's 1.5 million acres.

The Forest Service should close all roads and trails to motorized use to protect natural and cultural resources. Loops, especially, cause user conflict and enhance fire danger.

Closing all the roads and trails in the Santa Fe National Forest would not allow people to access their public lands, so is not practical or reasonable. We know of no studies that show loops cause more user conflict and increase fire danger.

The Forest Service should not open any routes that are currently closed to motorized use, such as hiking trails.

The 459 miles of forest system trails located outside of wilderness are not closed to motorized use, but may not have been built for motorized use. Table 15 in this statement displays the mileage of these trails that would allow motorized use by alternative. Most of the trails desired by motorized users are unauthorized routes, not existing system trails.

The Forest Service should not designate any unauthorized routes because they are illegal, poorly situated, too expensive to bring up to standard, and haven't gone through the NEPA process.

Because the forest's travel policy now allows people to drive on 53 percent of the forest, most of the unauthorized trails are not "illegal." We analyze the effects of adding unauthorized routes according to Forest Service policy. It is important to remember that the forest proposes to close more routes and area than it is designating, and some unauthorized routes are appropriately located.

The Forest Service should severely restrict the number of miles of roads and trails open to off-highway vehicles for these reasons: (1) The agency cannot maintain the system it proposes in any of the alternatives; (2) The use of off-highway vehicles will damage natural and cultural resources; (3) crime will increase; (4) wildfires will increase; (5) people need a place free from the noise of engines;(6) OHVs are a physical danger to others; and (7) most of the public wants to see fewer off-highway vehicles in their national forests.

Alternative 3 restricts where people can drive the most while still allowing for reasonable access to their national forest. Its effects are described in chapter 3. We were not provided with evidence that crime increases with motorized use, or that most of the public wants to see less motorized use in the national forest.

The Forest Service should not designate any trails for motorized use unless they have been thoroughly ground checked for geological and engineering concerns, the potential for erosion, and maintenance costs.

To include a road or trail in the forest's transportation system, two things must happen. First, the Forest Service must decide to add the road or trail. By conducting this NEPA process and following the considerations in the Travel Management Rule (36 CFR 212.55), we meet the criteria for decision. The second step is to add the road or trail to the system by putting it into the forest's database and publishing it on the motor vehicle use map, which then makes it part of the official system. The Forest Service Manual 7700 contains guidance for adding roads and trails to the forest's transportation system, and describes the things we must consider.

The Forest Service should only allow off-highway vehicle use in very remote areas where the environmental impact would be insignificant. The other option would be to allow it near cities because people there are used to noise and emissions.

Any environmental impacts that motor vehicles might cause are not lessened because of the remoteness of the part of the forest where they are operating. During the public involvement process and the environmental analysis process, we considered the impacts that motor vehicles may have on the forest and made our alternatives accordingly.

Off-highway vehicles should only be allowed on the main forest roads and not on any trails.

Alternative 3 comes closest to this proposal. We did not feel it was appropriate to completely eliminate motorized use of trails because it is a valid recreational use in the right places and when managed appropriately.

The Forest Service should not add any motorized trails because the trails it has now are not being properly maintained.

The Santa Fe National Forest must balance the need for motorized recreation, ability to manage recreational opportunities, and other factors such as effect to resources when designating its system of motorized trails. It is taking a logical, methodical approach to finding the best balance for designating its motorized trails.

Safety

Motorized loop roads help create public safety in case of mechanical failures.

It is not clear to us how loop routes increase public safety, and we are not aware of any studies that corroborate this statement.

The Forest Service should consider the safety of the proposed routes before designating them.

We have considered the safety of the proposed alternatives in chapter 3.

The Forest Service must adopt a forest-wide route density (outside of wilderness and semi-primitive nonmotorized areas) of 1 mi/sq mi because this is the standard supported by the preponderance of credible scientific literature to protect natural and cultural resources.

We were unable to locate scientific literature that supports this claim. Route densities, defined as the miles of routes divided by an area, vary greatly depending on how they are calculated. We followed the standards set forth in the "Santa Fe National Forest Plan" when developing the alternatives. All the proposed alternatives meet the standards in the forest plan. The effects analysis in the soil and water resources specialist report uses an open road density of 1 mile per square mile to analyze current road density and describe its effects on watershed condition. The reason is that the Forest Service uses an open road density of 1 mile per square mile or less as a guideline for "good" watershed condition in its watershed condition framework, a standard way to describe the condition of its watersheds.

To comply with law, regulation, and policy, the Forest Service needs to have site-specific data, including field visits, on every road and trail it proposes to open or close to motorized use.

The National Environmental Policy Act does not require perfect or complete information to make a decision. The regulations at 40 CFR 1502.22(b) tell agencies what to do when the overall costs of obtaining the information are exorbitant (as would be the case with site-specific analysis of the approximately 7,800 miles of known routes in the forest); we have done this on page 16. The Travel Management Rule does not require agencies to have a complete inventory of routes before completing the designation process (70 FR 68268, 68269).

The Forest Service should observe what is actually going on and not worry about science because the science shown so far is flawed.

The regulations at 40 CFR 1502.25 state that agencies are to ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.

Seasonal Closures

The Forest Service should not choose the year-round access in alternative 4 because in the winter roads are impassable due to snow and with snowmelt, there would be increased erosion and road damage.

This final statement contains a range of options for seasonal closures, from year-round access to specific closure dates. The forest supervisor will make her decision based on the analysis and public comment.

Signs

For the plan to be effective the Forest Service needs to sign the roads and trails because the large scale and format of the motor vehicle use map will not help users reliably know where they are.

We agree. We recognize that signs help people orient themselves. Signing roads and motorized trails is an ongoing process, and the effort received significant emphasis during 2009 and 2010. This emphasis will be continued after publishing the motor vehicle use map. Once the motor vehicle use map is published, it will be the forest visitor's responsibility to know where they are driving whether or not a sign is present.

Social and Economic

The Forest Service should improve or re-do their social and economic analysis section because not enough information is written about social benefits of off-highway vehicle recreation; thus, the forest supervisor cannot make a fully informed decision.

We agree that there are social benefits associated with off-highway vehicle use. Because of that, every action alternative proposes to increase the amount of managed, motorized system trails from its present level. We have not seen, however, any studies that link the mileage of off-highway vehicle use available on a national forest with a person's overall well-being. Improving overall social well-being is not part of the purpose and need of this project. The social and economic analysis discloses the potential social impacts for each alternative, including cultural and traditional uses that depend on motorized access. The recreation specialist report discusses how recreational opportunities are likely to change under each alternative.

The Forest Service needs to do the social and economic impacts analysis again and comply with statute and regulation because it failed to adequately address social and economic impacts of the changes that will affect the public who camp, hunt, and use the forest.

The "Social and Economic" section in chapter 3 examines the potential economic repercussions of all alternatives by evaluating (a) changes in the number of visitors for multiple activities (including public who camp, hunt, and use the forest), and (b) looking at the direct, indirect, and induced effects of these changes to all relevant industry sectors of the local economy. The recreation section analyzes how the alternatives will change recreation opportunities available to those who camp, hunt, and use the forest.

The agency's economic analysis on the effects of motorized users displacing nonmotorized users is insufficient. Non-motorized users provide the largest economic benefits to local communities.

The social and economic report discusses the displacement of people engaging in nonmotorized activities numerous times. First, the economic modeling explicitly included an assumption that nonmotorized activities would decrease for the alternative that proposed the most motorized use, alternative 4. Second, page 19 of the social and economic report specifically discusses this displacement effect. Third, the cumulative effects for each alternative states, "Furthermore, a change in management that would slightly reduce motorized use on the Santa Fe National Forest may have positive economic impacts in a number of other areas:

- Increased nonmotorized recreation in areas previously used for motorized recreation
- Increased nonmarket values to surrounding areas from resource benefits (e.g. clean water, increased wildlife populations, etc.) resulting from decreased motorized recreation on the Santa Fe National Forest. Last, the economic analysis is based on NVUM and ABV data, which shows that on the Santa Fe National Forest, nonmotorized use is greater than motorized use. These data are reflected in the economic analysis."

The Forest Service must develop a thorough and accurate description of the value of motorized forest access so that the responsible official can weigh the loss of this access.

The social and economic analysis evaluates the value of motorized access by modeling forest visitation, access restrictions on traditional and cultural uses, and other things affecting various industries. These are evaluated for each alternative for the responsible official to compare them.

The effects analysis for the economic effects fails to meet current Federal case law.

The economic analysis examines the potential economic impacts of each alternative using the best available science and models, such as the IMPLAN economic model. We cannot address the claim related to the specific case law since it was not provided.

The Forest Service should include the positive economic benefits of roadless areas to New Mexico's economy.

The focus of this project is on unmanaged motorized recreation, not IRAs. The social and economic report touches on the economic benefits of nonmotorized use and of nonmarket values, but not specifically on the inventoried roadless areas. The scale of analysis is at the forest level, not by specific kinds of management areas.

The economics discussion on page 107 of the DEIS fails to consider that wholesale route closures will affect every recreational sector. The ripple effect of these wholesale closures is not even considered in the DEIS.

We have clarified this point in the final environmental impact statement. The economic analysis in the social and economic report does consider all economic sectors. It uses the IMPLAN model to address how changes in activities such as OHV use, driving for pleasure, and participation in nonmotorized activities would affect all economic sectors. IMPLAN

considers not only direct and indirect effects, but also induced effects. This means it does consider the ripple effects. The model and its limitations are described in detail in the social and economic report.

The agency accounts for people going to the power sports store and buying an ATV, but it disregards the truck and trailer needed to haul it, the camping equipment needed to spend overnight in the forest, the fishing gear, the hunting gear, the specialized clothing for any of those activities, the specialized footwear, and the fuel, to name just a few places our forest visitor will spend his money in preparation for his trip to the forest.

The camping equipment, truck and trailer purchases, clothes, and everything else mentioned are captured as indirect or induced effects of decreasing or increasing motorized recreation or nonmotorized recreation in the IMPLAN model. Thus, these economic impacts were accounted for in the economic analysis.

In its economic analysis, the agency only looks at one sector (albeit the sector most burdened). The agency does not even consider the diversity of other activities people pursue on the forest, all of which are dependent upon motorized access.

We did consider the effects to other activities that depend on motorized use in the social and economic report. Its analysis divides recreational use among motorized recreation, nonmotorized recreation, and other. The analysis assumes that motorized recreation and nonmotorized recreation would be affected by each alternative. The changes to the amount of recreation in these categories were used to model economic impacts. Changes to the activities in the "other" category are expected to be minimal because no main roads necessary for access to campgrounds, trailheads, picnic areas, and other heavily used portions of the forest are proposed to be closed.

The economic analysis in the DEIS vastly underestimates the effects to the economy by the proposed route closures. Suppose there are 1,000 outdoor recreation businesses in the region studied for the DEIS. Multiply that 1,000 by the $4,000,000 that one businessman has already told the agency he will lose, and these forest closures actually have a $4,000,000,000.00 (four billion dollar) effect on the region wide economy.

The commenter's analysis is based on invalid assumptions. The main flaw in this reasoning is it assumes all OHV sales will immediately stop based on a travel management decision on the Santa Fe National Forest. This is highly unlikely considering that over 1,800 miles of routes will still be available for motorized use even if alternative 3 is selected. In addition, many private lands, BLM managed lands, and other national forests will still allow motorized use. Second, the statement assumes that all motorized retail businesses are exactly the same as the business referred to. This is highly unlikely. Third, the assumption that there are 1,000 outdoor recreational businesses that include OHV retail in the region is not supported by evidence, nor is the "region" defined.

The DEIS has no analysis of the cultural and social value of exploration. Exploration coupled with the feeling of adventure and accomplishment has been recognized as a social value of our country since its discovery.

Because no scientific references are included, it is unclear what is meant by the "value of social exploration." Implementing a decision under the Travel Management Rule does not rule out the kind of exploration primarily used since our country's discovery—nonmotorized—whatsoever. The "Recreation" and "Social and Economic" sections discuss the effects of the change in opportunity, or the cultural and social value referred to, from the existing condition.

During scoping, the agency received a letter from the owner of a local power sports business. It appears that the agency failed to realize the import of this business owner's concern, which encompasses 4 shops, 100 employees, and $20,000,000 in annual sales.

Unfortunately, it is not feasible to analyze the potential economic impact to each individual business that is directly or indirectly related to OHVs. We captured the predicted effects of designating a managed transportation system by "industry sector." As described in the social and economic report, many industry sectors, such as OHV manufacturers, may be directly impacted under some scenarios. Other industries, like hotels or parts manufacturers, may be indirectly impacted. The IMPLAN model used in the economic analysis is designed to account for all of these effects.

Nowhere in the DEIS or the Specialists reports, nor in any of the project record items made available, do we find any information about the benefits to individuals and to society of the present amount of motorized access to the forest.

The National Environmental Policy Act requires agencies to analyze the effects of a project. In this case, we propose to change the current amount of nearly unlimited motorized access to a designated motorized system. Each section in chapter 3 specifically addresses the predicted effects of this change. For example, in the social and economic report, the maximum number of jobs that may be lost is estimated using economic models and recreation activity data. Thus, the analysis does clearly show how current benefits would be reduced.

Part of the purpose of the NEPA is to maintain environmental quality "...to the overall welfare and development of man...and...create and maintain conditions under which man and nature can exist in productive harmony." This DEIS has completely overlooked that responsibility by not including the effects of this project on very high quality leisure activities, called "serious leisure" by researchers in the field.

This final statement does not include an analysis on what some researchers have called "serious leisure." While it may be true that high quality leisure activities are important to forest users, it is also well established in scientific literature that one person's high quality leisure experience (e.g., ATV riding) reduces the quality of another's leisure experience (Dolesh 2004). For this reason, the EIS discusses the changes in motorized opportunity and conflicts.

Conflicts between forest users is an extremely complex subject. Yet, the only basis of analysis in the DEIS for the social impact of use conflict is a simple mileage comparison (p. 91): "We chose

relative route density—the miles of roads and trails in a given area—as a measure for conflicts between motorized and nonmotorized users." This is not sufficient. The miles of roads and trails in a given area is one valid basis for measuring conflict.

It appears to us that the "miles of roads and trails in a given area" is the same as route density, which we have used to illustrate the potential for conflicts. We recognize the complexity of the subject, and have provided a number of scientific references discussing it. This final statement and specialist reports address the issue of conflict qualitatively by illustrating how the alternatives may impact traditional uses and by analyzing roadless values, wilderness values, and the amount of motorized trail in and near semiprimitive nonmotorized areas.

The DEIS only covers economics, noise, property values, cultural practices and traditions, and environmental justice. There has been no analysis or even description of social organizations, attitudes/beliefs/values, lifestyles, and land use as they pertain to the social sciences.

The National Environmental Policy Act states that agencies shall use the scoping process to "determine the scope (§1508.25) and the significant issues to be analyzed in depth in the environmental impact statement (40 CFR 1501.7)." The subjects listed by the commenter are those that the forest supervisor decided to include in the scope of the analysis. The social and economic report draws heavily from data from attitude/beliefs/values studies conducted on the Santa Fe and surrounding national forests and uses available data to look at a large number of social groups including ethnic minority groups, poor and underserved communities, and groups that depend on national forest lands for cultural and traditional practices.

The Forest Service has not met the requirements of its own guidance in FSH 1909.15 Chapter 1973 (sic) for conducting the social analysis.

We have met the management direction for social analysis. The social and economic analysis includes an indepth analysis of social and economic conditions, desired conditions as identified in the forest plan, and how management activities may affect these systems. It looks at the economic impacts by analyzing how alternatives may affect jobs and labor income. The recreation specialist report analyzed motorized opportunities and conflict. The social analysis looks at how alternatives may affect cultural uses.

The decision will hurt communities that are already suffering from economic hardships.

Most economic uses of the Santa Fe National Forest, like collecting and selling forest products or grazing cattle, require a permit. The Travel Management Rule exempts "motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulation" (36 CFR 212.51(8)) from the designations. This means that as long as someone has a permit, they will be able to conduct economic activities using a vehicle as stipulated in the permit.

The Travel Management Rule is a way to accomplish the aims of environmental groups and includes removing people from their land and taking their water rights and land without just compensation.

The Travel Management Rule requires that national forests and grasslands provide for a system of roads, trails, and areas designated for motorized use. It does not remove people from their land or take their water rights.

Soil, Water, and Riparian

The Forest Service should not allow motorized use in riparian areas because its own analysis shows the negative effects from the proposed corridors for motorized dispersed camping and from having routes near creeks and drainages. Allowing motor vehicles to drive to the water's edge—or even cross streams—in the corridors for camping and game retrieval does not meet the forest's Best Management Practices.

The action alternatives present a range of options that balance the need for access and resource protection. All reduce the places where people could drive in and near riparian areas by nearly eliminating motorized cross-country travel. Though allowing motorized use in riparian areas may not be desirable—the soil and water resources specialist report describes these effects—in some situations, it is unavoidable. Many forest roads have existed for decades in riparian areas and it would be impossible to eliminate traffic on these roads. Forest Road 376, for example, is one of the most heavily traveled roads on the forest and is in and near riparian areas.

The effects analysis of motorized use on water quality needs to be improved by: (1) using the sixth-level watershed scale; (2) identifying and analyzing routes proposed on erosive soils; (3) showing the differences in effects from miles of road, miles within 300 feet, and number of stream crossings; and (4) considering 16 USC §1604(g)(3)(C).

(1) After reading comments from the public, we too believe that the sixth code watershed level is the appropriate scale for this analysis, and rewrote the soil and water resources specialist report accordingly; (2) The soil and water resources specialist report describes the effects of motorized use on soil types; (3) The soil and water resources specialist report contains these measures. Keep in mind that the analysis is based on the change to the existing travel policy only; and (4) 16 U.S.C. §1604(g) (3) (c) is part of a statute requiring the Forest Service to adopt certain regulations and does not apply to this project.

The Forest Service should not designate motor vehicle use on roads near streams and water because it must comply with statutes and regulations including the Clean Water Act and the National Environmental Policy Act.

Assumption 1 in chapter 3 states there will be no measurable change in motorized use from closing some routes. Therefore, there will be no noticeable change in water quality from closing routes. However, we do propose to eliminate almost all motorized cross-country use in all the action alternatives; alternatives 2M and 3 would not allow vehicle use within riparian areas at all. As described in the soil and water specialist report, not having motorized cross-country use could improve water quality. We cannot predict exactly by how much because many factors outside the scope of this project contribute to water quality.

The Forest Service needs to ensure that the selected alternative complies with Forest Plan direction to "maintain water quality or to meet or exceed state water quality standards" and that the FEIS documents which alternatives are consistent with the forest plan.

Appendix 3 describes each alternative's compliance with the forest plan's direction for soil and water resources.

The Forest Service needs to use an analytical tool such as WEPP to conclude whether the elimination of motorized travel alone will have any effect on sedimentation. If it cannot show this, then the agency needs to choose alternative 4.

This comment asks for 2 things: that we use a model such as WEPP and that we base our decision on the change in sediment predicted. No measurable change in motorized use from closing some routes is predicted (assumption 1, chapter 3). In addition, in the 15-year timeframe we use in the effects analysis, the footprint of most routes will stay on the landscape (table 19). Thus, we do not believe there will be a change in sediment production during the timeframe analyzed in this final statement. A model such as WEPP requires there be a change in conditions. Since we do not foresee a change in conditions, we do not believe WEPP is an appropriate tool to analyze the effects of this project.

As to the second point, the forest supervisor is likely to have many reasons for choosing a particular alternative, for example, cost, wildlife, heritage, need for access, or sedimentation. She can choose any of the action alternatives regardless of whether motorized travel alone will have any effect on sedimentation.

The soil and water effects analysis fails to account for potential obliteration of routes within the 15-year timeframe of the analysis.

In this project's context, the obliteration of routes would be a cumulative action. For the effects of a cumulative action to be considered in the NEPA process, the action must be "reasonably foreseeable" (among other things). The courts have defined reasonably foreseeable as "projects that are proposed rather than contemplated" and those that are not "speculative" (Weinberger v. Catholic Action of Hawaii, 454 U.S. 139, 70 E.Ed.2d 298 (1981); Kleppe v. Sierra Club, 427 U.S. 390 (1976)). Because no future road obliteration projects have been proposed, no cumulative effects from them exist.

The Forest Service should reduce route densities to reduce sedimentation into streams and protect aquatic species. It should also close any road or trail that is degrading water quality, such as every route located within a stream channel.

Every action alternative reduces open road densities to a level that meets the standards in the "Santa Fe National Forest Plan." As described in the "Soil and Water" section, the existence of most routes closed to motorized use will not change, nor will the amount of sediment contributed by them change. Closing every route in a stream channel is not possible because of needs for access, such as to private land.

The Forest Service should work with the State of New Mexico Water Quality Control Commission to prevent the deterioration of watersheds.

This suggestion is outside the scope of this project, which proposes to designate roads, trails, and areas for motorized use. Staff on the Santa Fe National Forest, however, work with the New Mexico Environment Department and many other partners on watershed improvement projects.

The Forest Service needs to explain how water quality will be improved or which areas will be improved in the alternatives. The Forest Service must explain, with specificity, how the project will ensure that 303(d)-listed streams will come into compliance with water quality standards for sediment and/or water temperature. This includes assessing routes that will remain on the ground even after the designation process.

The purpose of this project is to regulate where people can drive on the forest, not to improve water quality. The National Environmental Policy Act requires agencies to disclose the effects of its proposal. The soil and water resources specialist report does this by analyzing how closing routes and areas to motorized use affects water quality, and then compares how many miles are within a certain proximity of 303(d) listed streams. It does the analysis at the HUC 6 level, a scale appropriate for a forestwide project. We do not need to assess the impacts of routes that will remain on the ground after the designation process since those have nothing to do with this proposal. The soil and water resources specialist report does describe the cumulative effect of the routes that remain on the landscape after the designation process.

The Forest Service must demonstrate that it is complying with the NFMA and not causing permanent impairment of soils and explain how it has incorporated its BMPs into the designation process.

The "Legal Consistency" section of the soil and water resources specialist report outlines how the alternatives comply with the National Forest Management Act. Routes that are not designated for motor vehicle use have the potential for restoration, either natural or planned by the Forest Service or others. Best management practices apply to projects where ground disturbance occurs. This project proposes no ground disturbance; it only specifies where people are allowed to drive.

The Forest Service should conduct a more detailed analysis for a selected impaired stream outside the Travel Management process.

We understand this commenter to be requesting a detailed study on how impaired streams respond to various activities and treatments. We like this idea; however, it is outside the scope of the project.

We do not believe the discussion that states, "…alternative 4 does not move the soil and water resource toward a desired condition" fairly represents what can be done through good management combined with the significant reduction of access over the current condition.

Because alternative 4 proposes to close 45 percent of the forest's routes and nearly eliminates cross-country travel, it may seem counterintuitive to say that it does not move the soil and water resource toward a desired condition. The existence of good management practices and the reduction of routes and areas do not mean that alternative 4 moves the soil and water

resource toward a desired condition. The soil and water resources specialist report analyzes the actions proposed individually. As grouped in this report, the actions are: (1) close roads and trails to motorized use; (2) close stream crossings to motorized use; (3) designate corridors for motorized big game retrieval; (4) close areas to motorized use; and (5) designate corridors for motorized dispersed camping. In sum, the effects of items 1, 2, and 3 result in no change from the existing condition. Item 4 would improve the soil and water resource. Item 5—for alternative 4—would move the soil and water resource away from desired conditions.

The analysis incorrectly states, "having less motorized use near streams reduces the potential for sediment to get to a stream…" The construction and existence of roads and trails potentially affects water quality far more than continued travel along them.

While it is true that the construction of routes can affect water quality, it is well documented that the use of the route can also contribute to water quality impairments. The soil and water resources specialist report describes the effects of the use, existence, and maintenance of routes. It does not address construction because none is proposed in this project.

The DEIS needs to provide site-specific data on the number, type, and effects of stream crossings.

This final statement, using the best available data, lists the number of stream crossings and describes the effects that they have on soil and water. The soil and water resources report does determine (through a GIS stream/road intersection analysis) the number of stream crossings per mile. Site-specific analysis of each stream crossing is not necessary for the forest supervisor to make a decision. Analyzing the effects of each alternative at the sixth code watershed level is appropriate for the forestwide scale of this project.

The DEIS needs to be revised to disclose the total amount of existing routes within riparian areas and 300 feet of all streams in order to reasonably describe existing conditions and cumulative effects of the alternatives.

The measures used in the soil and water resources specialist report summarizes the miles of routes within 300 feet of all streams and in riparian areas for each sixth code watershed. The cumulative effects section shows the same information for all the existing routes.

The DEIS needs to disclose the effects of designating routes on soils with high erosion hazard.

None of the action alternatives would change the effects of routes on soils with a high erosion hazard, but does reduce the number of these open for driving. Per the roads specialist report, there will be no measurable change in motorized use across the forest from closing some routes. In addition, in the 15 years considered in this analysis, the footprint of the route will stay on the landscape. As a result, we do not believe there will be a change in sediment production during the timeframe analyzed in the FEIS.

The DEIS needs to be revised to reasonably disclose the existing conditions of riparian areas and assess how they will be affected by the alternatives.

Alternative 1 describes the existing condition of the forest's riparian areas. The "Soil and Water" section and specialist report describe the effects of each alternative on riparian areas.

The DEIS needs to be revised to assess and disclose existing water quality conditions that would be affected by each alternative, their effects on beneficial uses, and relationship to water quality standards.

This final statement does describe the existing condition of water quality in the forest's streams, how it would be affected by each alternative, and the relationship to water quality standards and beneficial uses.

The DEIS does not provide an adequate discussion of the magnitude of effects to soils in the corridors proposed for motorized dispersed camping and motorized big game retrieval.

The discussion in this final statement and the soil and water resources specialist report contains the information needed for the forest supervisor to make her decision. Measures 10–14 in the soil and water resources specialist report display how the proposed corridors for motorized dispersed camping will affect soil and water quality under each alternative. The soil and water resources report also discloses the effects of the proposed corridors for motorized big game retrieval. In sum, the effects from motorized big game retrieval under alternative 1 are already small, and will be further limited in space and time under each of the action alternatives. Chapter 3 discloses the potential for site-specific effects under alternatives 2, 4, and 5 if motor vehicles drive through sensitive soils, ford streams, or traverse riparian areas.

The DEIS does not disclose the amount of routes within off-route motorized use corridors that are within 300 feet of non-perennial streams under alternatives 2, 4, and 5.

The soil and water resources specialist report provides the miles of routes and the acres of corridors within 300 feet of all streams (perennial, intermittent and ephemeral combined) and their effects for each alternative. The Travel Management Rule contains no requirement to inventory every route on the forest in order to make a decision. Because we cannot anticipate where people will drive in corridors, we assume that all the acres proposed in a corridor for motorized dispersed camping would be used (assumption 21) in order to perform a comparative analysis of the alternatives. We also acknowledge that terrain, vegetation, and topography are likely to limit the acres where people can drive (assumption 9).

The changes in route and corridor use under the alternatives have profound effects on the impacts of routes on watershed and aquatic resources. These impacts are not adequately described in the DEIS.

We agree that use of routes can have significant effect to watershed resources. Per the roads specialist report, there will be no measurable change in use from closing some routes (assumption 1, chapter 3). Therefore, we do not believe there will be a change in sediment production during the timeframe analyzed in the final environmental impact statement.

It is essential that the density and miles of routes open to motorized use under all of the action alternatives be disclosed in the forthcoming FEIS at the forest and watershed scale for occupied fish habitats and impaired streams.

This final environmental impact statement shows the miles of routes open to motorized use for all the action alternatives. The "Soil and Water" section further breaks this down by sixth

code watershed level. The forest plan specialist report displays the open road density by forest plan management area because this is the standard required. It also shows the open route density, which includes motorized trails, by management area for purposes of comparison.

The DEIS does not adequately address motorized use on wet soils.

All the action alternatives propose to nearly eliminate motorized cross-country travel, so travel on wet soils will be greatly reduced regardless of the alternative we choose. In addition, the action alternatives propose to close between nearly half or more of the roads on the forest, so travel on those roads when wet will be prohibited. Finally, each alternative describes how the forest would handle closing routes when they are wet.

It is likely that the Santa Fe National Forest has information that is not disclosed in the DEIS regarding damage to specific streams associated with specific motorized routes and off-route corridors that would be open for use under the alternatives. The FEIS needs to disclose these and describe their impacts.

This final environmental impact statement contains the information needed for the forest supervisor to make her decision; that is, we focused on the effects from the proposed changes at the forestwide scale. Where site-specific data is pertinent, we describe it, such as the effects of motorized use on Polvadera Creek.

The Forest Service should conduct a more detailed analysis for a selected impaired stream outside the TM process.

This suggestion is outside the scope of this project, which decides where people can drive in the Santa Fe National Forest.

Travel Analysis Process

The Forest Service should re-write the Travel Analysis Process report to reflect a more accurate and unbiased assessment of benefits, risks, problems, and growing demand for managed motorized recreational activity on National Forest lands.

The "Travel Analysis Process Report" informed the NEPA process, but does not control it. This final environmental impact statement discloses the benefits and problems associated with the proposed changes to the alternatives.

Threatened or Endangered Species

Applying seasonal closures to routes in Mexican spotted owl habitat is not enough to address the indirect and cumulative effects from motorized use (soil compaction, accelerated erosion, denuded vegetation, and loss of plant diversity resulting in reduced prey populations and the spread of invasive plants) that results in diminished site productivity.

The overall reduction in places where people would be allowed to drive within Mexican spotted owl habitat under alternatives 2–5 is expected to benefit the owl.

The Forest Service should eliminate trails, roads, and camping in Mexican spotted owl protected activity centers and any endangered species habitat, including riparian areas, since these degrade habitat quality.

The complete elimination of trails, roads, and camping in Mexican spotted owl habitat would not provide a reasonable amount of public access and recreation. Some protected activity areas are traversed by major roads on the forest, such as FR 376. Nonetheless, all the action alternatives propose to reduce the places where people can drive in Mexican spotted owl habitat.

The conclusion that any of the action alternatives may negatively affect individual spotted owls, but not likely to reduce survival and recovery in the wild is suspect. Do not individuals make up the collective plural of owls? Isn't the Forest Service required to protect the entire owl population?

We believe that the commenter is confused by the terminology used to describe the "effects call" to the Mexican spotted owl. The Mexican spotted owl is a threatened species under the Endangered Species Act (ESA) as well as a management indicator species in the "Santa Fe National Forest Plan." The commenter is correct in that the agency has the responsibility to not authorize or carry out activities that would cause a decline in owl populations. The forest also has to evaluate effects to individuals as directed under the ESA, resulting in the language used. Admittedly, this language is confusing (but standard with the U.S. Fish and Wildlife Service) and has been clarified in this final statement and the biological evaluation.

Tourism

The Forest Service should restrict motorized use of the national forest because it threatens nonmotorized related tourism (hiking, backpacking, horseback riding, fishing, and others).

All the action alternatives propose having fewer roads, trails, and areas available for motorized use than exist now. The social and economic report discusses the asymmetrical relationship between motorized and nonmotorized recreation and uses this as a basis to analyze the social and economic impacts for each alternative. The recreation specialist report also discusses how motorized recreation can displace or affect nonmotorized recreation opportunities.

The Forest Service should keep the existing roads and trails open for motorized use because it supports businesses such as motorbike shops, grocery stores, hotels, and others near the Santa Fe National Forest.

The potential economic effects of restricting motorized access are analyzed in detail in the "Social and Economic" section in chapter 3. Specifically, the analysis includes economic modeling to estimate the potential maximum loss of jobs and income from restricting motorized use under each alternative.

Traditional Use

The restrictions proposed will prevent people from gathering traditional forest products such as wood, berries, herbs, and pinon nuts.

Though permitted activities—such as firewood collection—are exempt from the Travel Management Rule, the potential impact of each alternative on cultural and traditional forest uses is analyzed in the "Social and Economic" section of chapter 3.

Unauthorized Routes

Calling routes "unauthorized" confers an air of illegitimacy to them. For this reason, the term "unauthorized" shouldn't be used.

The term "unauthorized" comes directly from the Travel Management Rule, and we use it for consistency's sake.

The Forest Service should not designate any unauthorized routes because they damage natural and cultural resources, were created illegally, and lead to more illegal use.

Some of unauthorized routes have been created in locations that involve less environmental impacts than unrestricted cross-country travel and provide excellent recreational opportunities. The Santa Fe National Forest believes that use on some of these routes is appropriate and has included them in this final statement. Because motorized cross-country use is allowed on over half the forest, many of the unauthorized routes weren't illegally created.

We note that Table 3 of the DEIS, row 1 under-represents the existing mileage based on its exclusion of unauthorized routes.

Table 3 did not exclude the unauthorized routes. It displayed the Santa Fe National Forest's current travel policy—where people should and should not be driving. Row 4 displays the miles of unauthorized routes we are aware of. The footnote to the table acknowledged that if an unauthorized route is located in a place where motorized use is allowed, then use of the route is also allowed.

Before user-created routes can be added to the designated system, the Forest Service must ensure they are constructed according to engineering standards to ensure these routes comply with best management practices and prevent resource degradation. Each user-created route proposed must have this documentation in the FEIS.

The Forest Service Manual (FSM) describes two things: (1) what we must analyze when deciding to add a road or a trail to the forest transportation system; and (2) what we must do when actually adding the road or trail to the system, that is, including it in the Infra database and on the motor vehicle use map. The requirements for roads, outlined in FSM 7703.26, are different from the requirements for trails (FSM 7703.13). Neither section mandates that we ensure the routes are constructed to standards before deciding or adding them to the system. Like the Travel Management Rule, the manual contains a list of things we must consider before deciding or adding a route to the system. By conducting this NEPA process, we meet the requirements for deciding to add a route. We will also follow the requirements for adding the route.

User Conflict

User-conflict is not appropriate to address as part of Travel Management. The Forest Service does not have the authority to regulate user conflict or make land-planning decision based on user conflict and the travel management rule cannot be used for regulating nonmotorized designations, therefore Alternative 5 is inappropriate.

The Travel Management Rule provides general criteria that the responsible official should consider when designating a motorized system, including conflict among uses and provision of recreational opportunities (36 CFR §212.55(a)). Executive Order 11644 also requires agencies to consider user conflict when designating a motorized system. User conflict was determined to be a significant issue during scoping and alternative 5 was designed to address the issue.

The DEIS does not prove that user conflict exists to an extent as to be a "significant issue," especially as the analysis describes motorized use as "infrequent" (Social Economic Report), especially on high-clearance vehicle routes which are the primary routes proposed for closure. Instead, the discussion of user conflicts focuses around individual routes and specific areas in the Jemez and Pecos/Las Vegas Ranger Districts.

We regret that the commenter disagrees with our interpretation of what issues are significant. We agree that user conflicts do not appear to be widespread and are focused on specific routes, as stated in this final environmental impact statement. The courts give agencies considerable deference in deciding what issues are significant.

Wildfire Danger

The Forest Service should limit off-highway vehicle use during periods of moderate to high fire danger.

The Forest Service currently restricts and will continue to restrict the use of off-highway vehicle use during periods of moderate to high fire danger. Restrictions vary from prohibiting smoking outside of vehicles to not allowing anyone to enter the national forest.

The Forest Service should reduce route densities in order to reduce the risk of fire.

All the action alternatives reduce open route densities across the forest. In regards to wildfire, the majority of wildfires on the Santa Fe National Forest are caused by lightning, so road densities have little effect on the overall amount of wildfire ignitions on the Santa Fe National Forest.

The Forest Service must analyze the effects of response times to lightning caused wildfires.

Chapter 3 contains this discussion.

Wildlife

The alternative selected should include large swaths of nonmotorized land to ensure wildlife habitat remains intact and the impacts to wildlife (inbreeding, mortality, and edge creation) are minimized.

All the action alternatives proposed to reduce the places where people can drive, potentially increasing nonmotorized areas and improving habitat for wildlife.

The Forest Service should correct the wildlife analysis in the No Action Alternative (#1), because, as currently written, it fails to fully disclose pertinent information which would undermine the specialist's conclusions that Alternatives 2 through 5 would be more beneficial to elk herds. Under the current conditions associated with Alternative #1, there is already an overpopulation of elk, which necessitates special population control measures just to hold elk populations at current levels, and prevent herd expansion.

Several researchers (Lyon 1983, Lyon 1985, Wisdom et al. 2000, Johnson et al. 2000, and others) have documented the effects to elk from motorized use. The "Wildlife" section in chapter 3 displays the change in motorized routes in key elk habitats. Alternatives 2 through 5 would reduce disturbance in key elk habitats, such as calving areas, and improve habitat quality for elk over alternative 1. Additionally, the action alternatives would eliminate motorized cross-country use on the forest, further reducing potential for habitat disturbance. Population targets for game management units are determined by the New Mexico Department of Game and Fish and are based on many factors such as habitat capacity and conflicts with landowners.

The agency's Biological Evaluation is not specific enough to determine the effects to wildlife from trails, which is certainly different from roads.

We are unable to locate scientific studies that describe the difference in effects to wildlife from either the use or existence of roads versus trails. For this reason, the assumptions 5 and 6—that roads and trails have the same effects as do the kinds of vehicles—applies.

The Forest Service fails to analyze the impacts to hearing mechanisms of amphibians by ORVs considering there is scientific evidence that this occurs.

Recent studies (Eigenbrod et al. 2009 and Parris et al. 2009) looked at the effects of road noise on amphibians. These studies considered high-use highways and urban settings, which do not reflect the type of activity on the Santa Fe National Forest.

The Forest Service must describe the habitat and population trend for each species analyzed in the No Action alternative.

The wildlife report and biological evaluation describe the population data and trends at the forest level, the habitat trend at the forest level, and the predicted effects to management indicator species as required.

The Forest Service fails to describe the effects to migratory birds in alternative 1.

Effects to migratory birds were described in the wildlife report section titled "Effects of Motorized Routes on Migratory Birds." This section describes the regulatory requirements and the method used to address Executive Order 13186 (2001) and the Forest Service Land Bird Conservation Strategic Plan. This method included review of the list of bird identified by Bird Conservation Region (USDI 2008) region 16 (Southern Rockies/Colorado Plateau Bird Conservation Region) and review of important bird areas indentified by the New Mexico Partners in Flight (2007).

The Forest Service should follow the New Mexico Department of Game and Fish's recommendations (in its 2008 scoping letter) for road closures and route densities.

All the comments, including those from the New Mexico Department of Game and Fish, are taken into account when forming the alternatives and making the decision.

The Forest Service needs to analyze the effects of motorized use in relation to the "white nose syndrome" affecting bats.

There is no current scientific research linking motorized use and white nose syndrome in bats. Federal agencies in conjunction with New Mexico State agencies have developed strategies to reduce the introduction and infestation of the syndrome when discovered within the State.

The Forest Service has no reason to close routes to motorized use because the population trends of wildlife are upwards under the current condition.

As described throughout the travel management process and in the Travel Management Rule (36 CFR 212.55), the Forest Service must consider a number of things, including minimizing effects to wildlife, when designating roads or trails.

The DEIS does not fully explain the loss of effective habitat from the motorized use of roads and trails.

The wildlife report and biological evaluation display the change in motorized use in wildlife habitat by species among the alternatives. This varies by species because some species are more affected by the physical presence of the road and others are more affected by the use of the road.

The DEIS needs to describe the effects of motorized use and route density outside of wilderness for elk habitats. Including wilderness in the route density calculations makes it difficult to compare the alternatives as to how they meet our recommendations of 1.0 mi/sq mi.

The wildlife report explains the reason for including wilderness in the calculation of route density. Namely, elk do not differentiate between wilderness and nonwilderness, and we used species' entire potential habitat when calculating route density. Studies show that road density is an important measure to analyze and minimize impacts to some wildlife (van Dyke et al.1986, Mech et al. 1988, Rowland 2000, Forman 2000). All the action alternatives reduce route densities for most species assessed in the wildlife report and biological evaluation. This reduction of road density will be a benefit to those species, such as elk and birds, where vehicle use disturbs normal behaviors.

The Forest Service needs to provide scientific evidence showing the effects that routes and motorized use have on each species of wildlife.

This final statement, the wildlife report, and the biological Eevaluation (BE) contain several research citations documenting the general effects of roads to wildlife species. Species-specific research on the effects from roads has not been done on all species addressed in the wildlife report and BE; however, the body of research done on the effects of roads to wildlife substantiates the overall negative effects roads have on wildlife. We have analyzed the effects of the different alternatives to wildlife.

The Santa Fe National Forest should participate in the North Central New Mexico Conservation Modeling Effort under New Mexico State University.

We could look into this outside of the travel management planning process.

Proximity to wildlife is the only rationale for closing a road or trail.

The Travel Management Rule requires the Forest Service to consider many factors other than wildlife when designating routes (36 CFR 212.55). Nonetheless, there are many attributes of roads that affect wildlife discussed in the reports (wildlife and biological evaluation). They are species specific and include such effects as fragmentation (e.g. effects from the physical presence of the road) and disturbance (e.g. the use of the road).

The Forest neglected to address the differences in effects between roads and trails. Trails are much narrower and do not have the same effects.

For reasons described in assumption 5, forest staff assumed that the effects of roads and trails are the same. Studies show the type of effects are similar (i.e., increases bare ground, reduces vegetative cover), but the magnitude may be different. The forest does not have sufficient information to quantify these differences considering the wide range of road and trail types on the forest (e.g., level 2 roads, level 3 roads, high clearance two track roads, ATV trails, motorcycle trails, etc.).

The DEIS's claim that roads are bad for wildlife is too general not supported by scientific evidence.

The wildlife specialist report discusses the effects of motorized use and routes on wildlife and its habitat in detail, including a number of scientific references that document these effects.

The DEIS should compare the effects of different kinds of trail users on wildlife. For example, the effects of a 2,000-pound horse have to be different from a motorcycle.

The National Environmental Policy Act requires agencies to analyze the effects of a proposal. In this case, we propose to designate where people can drive in the Santa Fe National Forest. Thus, analyzing the direct and indirect effects of other kinds of use of trails is outside the scope of this analysis. We have, however, included past, present, and reasonably foreseeable uses of the national forest in the cumulative effects analysis.

Extrapolating the research on the effects of roads on wildlife to imply effects from trails is not scientifically credible. The Santa Fe National Forest needs to find or conduct research specifically on the effects to wildlife from trails.

Few studies on the effects of motorized trails to wildlife exist; we, therefore, draw upon the larger body of well documented research on the effects of roads to wildlife. The types of effects—such as bare ground—caused by roads and trails are the same. The magnitude of the effects varies with the width and length. As explained in assumption 5, the width of proposed roads and trails varies enough across the forest that we consider them the same in our effects analysis. We acknowledge that at individual locations the magnitude of the area disturbed may be different depending on the width and use of the route, but it isn't necessary to describe these site-specific effects on every route (indeed this would not be possible) before making a decision.

The analysis of effects to the yellow-billed cuckoo includes the risk of collision even though the cuckoo may not exist on the Forest.

It is possible that the cuckoo inhabits the forest, though the possibility is low. Nonetheless, we are required to show the predicted effects to all species that could or do live in the forest. The risk of collision with a vehicle is one of the potential effects.

Volunteers

The Forest Service should do a better job of cultivating cooperative and volunteer working relationships with the off-highway vehicle community.

The Santa Fe National Forest has an ongoing relationship with its volunteers and volunteer organizations, including off-highway vehicle groups. During the planning for this project, it was not appropriate to accelerate the emphasis on volunteer maintenance by motorized users because the specific location of the motorized trail system was not yet decided. After the decision on designation is made, we fully intend to move into the next phase of fostering and managing volunteer work on our motorized trail system.

Appendix 8. Errata

This appendix describes the minor changes made to the alternatives between April 2011 and publication of this final environmental impact statement.

In April 2011, the six alternatives were "frozen" so that analysis could be done on a consistent set of maps, resulting in consistent calculations and figures. The specialists used the figures for their analysis, which is summarized in chapter 3 of this statement.

The items listed here are errors discovered or changes made between April 21, 2011, and April 13, 2012. The changes total approximately 24 miles.

These changes are to be incorporated into the alternative for which they are listed.

At the forestwide scale, there is no change in the effects analyzed for any of the alternatives. These changes fall within the range of alternatives already analyzed in this final environmental impact statement. These changes constitute approximately 0.01 percent or less of the changes proposed in the action alternatives.

Road or Trail Number	Change Made	Miles
102	Alt. 2M Add Road	0.3
103FJ	Alt. 2M Remove Road	0.4
10DE	Alt. 2M Remove Road	0.2
124D	Alt. 2M Remove Corridor	0.4
124H	Alt. 2M Remove Corridor	0.2
139	Alt. 2M Remove Road	2.3
139C	Alt. 2M Remove Road	0.8
144	Alt. 2M Remove Corridor	0.4
144V	Alt. 2M Remove Road and Corridor	0.2
144VA	Alt. 2M Add Road and Corridor	0.1
144VAA	Alt. 2M Add Road and Corridor	0.2
173AE	Alt. 2M Remove Road	0.1
181	Alt. 2M Remove Corridor	1.3
264B	Alt. 2M Remove Road	0.4
289	Alt. 2M Remove Corridor	0.5
316	Alt. 2M Remove Corridor	0.1
376I	Alt. 2M Remove Road	0.1
418	Alt. 2M Remove Corridor	0.5
418P	Alt. 2M Remove Corridor	0.2
442D/Trl 279	Alt. 2M Remove Trail	0.2
442R	Alt. 2M Remove Trail	1.1
446CC/Trl 286	Alt. 2M Change from Trail to Road	0.6
446F	Alt. 2M Add Road	1.6
520D	Alt. 2M Remove Corridor	0.2
539	Alt. 2M Remove Corridor	0.4

Road or Trail Number	Change Made	Miles
615EM	Alt. 2M Remove Corridor	0.6
71F	Alt. 2M Remove Road	0.3
71O	Alt. 2M Remove Road	0.2
71Q	Alt. 2M Remove Road	0.1
76	Alt. 2M Remove Corridor	0.2
8	Alt. 2M Remove Corridor	0.1
8ZH	Alt. 2M Remove Trail	0.2
83GFB	Alt. 2M Remove Corridor	0.4
Trl 113	Alt. 2M Remove Trail	2.1
Trl 279	Alt. 2M Remove Trail	1.4
UNAU105	Alt. 2M Remove Road	0.2
UNAU116	Alt. 2M Remove Road and Corridor	0.1
UNAU121	Alt. 2M Remove Road	0.3
UNAU124	Alt. 2M Remove Road	0.1
UNAU16	Alt. 2M Remove Road	0.2
UNAU17	Alt. 2M Remove Road	0.1
UNAU19	Alt. 2M Remove Road	1.0
UNAU28	Alt. 2M Remove Road	0.0
UNAU55	Alt. 2M Remove Road	0.3
UNAU60	Alt. 2M Remove Road	0.2
UNAU61	Alt. 2M Remove Road	0.5
UNAU69	Alt. 2M Remove Road	0.1
UNAU84	Alt. 2M Remove Road	2.3
UT605	Update Trail with GPS	0.7
UT691	Update Trail with GPS; Alt. 3 Remove Trail	0.2

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