Proposed Changes to the Motorized Travel System

Environmental Assessment

Sierra Vista Ranger District, Coronado National Forest
Cochise, Santa Cruz, and Pima Counties, Arizona
For More Information Contact:

Lynette Miller
300 W Congress
Tucson AZ 85701
Office: 520-388-8370

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA’s TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint_filing_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

**Note:** We make every effort to create documents that are accessible to individuals of all abilities; however, limitations with our word processing programs may prevent some parts of this document from being readable by computer-assisted reading devices. If you need assistance with this document, please contact the Sierra Vista Ranger District, Coronado National Forest at 520-378-0311.
Contents

Summary ................................................................. iii

Chapter 1. Purpose and Need for Action ................................................................. 1
  Introduction ................................................................. 1
  Background ................................................................. 3
  Purpose and Need for Action ................................................................. 7
  Public Involvement ............................................................... 7
  Decision Framework ............................................................... 10

Chapter 2. Alternatives ......................................................................................... 11
  Alternative 1 – No Action .............................................................................. 11
  Alternative 2 – Modified Proposed Action ................................................... 11
  Design Criteria ............................................................................................ 13
  Comparison of the Effects of the Alternatives .............................................. 14

Chapter 3. Environmental Effects .......................................................................... 19
  Soils ............................................................................................................. 23
  Water Resources ......................................................................................... 28
  Vegetation ................................................................................................. 34
  Invasive Species ......................................................................................... 38
  Scenery ....................................................................................................... 40
  Recreation ................................................................................................... 46
  Heritage Resources .................................................................................... 61
  Socio-Economic Resources ......................................................................... 65
  Air Quality ................................................................................................... 68
  Climate Change .......................................................................................... 69
  Special Status Species ................................................................................ 70

Chapter 4 - Consultation and Coordination ......................................................... 93
  Local Government ....................................................................................... 93
  State and Other Federal Agencies ............................................................... 93
  Tribes ......................................................................................................... 93
  Others ...................................................................................................... 93

Chapter 5. References ................................................................. 95

Chapter 6 – List of Preparers ............................................................................. 99
  USDA Forest Service, Coronado National Forest, Supervisor’s Office ............. 99
  USDA Forest Service, Coronado National Forest, Sierra Vista Ranger District ... 99

Appendix A. Abbreviations ............................................................................... 101

Appendix B. Forest Road Maintenance Levels .................................................. 105

List of Tables

Table 1. Miles of National Forest System roads affected by the modified proposed action on the Sierra
Vista Ranger District ...................................................................................... 15
Table 2. Comparison of road miles in no-action and modified proposed action alternatives .............................................. 16
Table 3. Comparison of potential effects from implementation of the no-action alternative, the modified
proposed action............................................................................................... 16
Table 4. Present, and reasonably foreseeable actions considered in Sierra Vista proposed changes to
motorized travel system environmental assessment ........................................ 20
Table 5. General ecosystem survey (GES) units covering both Huachuca and Whetstone Ecosystem
Management Areas ....................................................................................... 23
Table 6. Land area, in acres, of the vegetation communities in relation to the overall acreage of the district ................................................................. 35
Table 7. Changes in road mileage and acres affected by the roads in their respective vegetation communities for alternative 2, the modified proposed action ................................................................. 37
Table 8. Coronado National Forest Visitation, 2012 ................................................................................................................................. 47
Table 9. Top six recreation activities on the Coronado National Forest ................................................................................................. 48
Table 10. Percent of national forest visits indicating use of special facilities and areas on Coronado National Forest .................................................................................. 48
Table 11. Arizona resident current and expected recreation participation (selected activities) .......... 48
Table 12. Participation by involved recreation users in active land-based activities .......................... 50
Table 13. Summary of Forest Service sensitive plant species for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 75
Table 14. Summary of Forest Service sensitive invertebrate species for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 76
Table 15. Summary of Forest Service sensitive fish species for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 76
Table 16. Summary of Forest Service sensitive reptiles and amphibians for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 76
Table 17. Summary of Forest Service sensitive bird species for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 76
Table 18. Summary of Forest Service sensitive mammal species for Region 3 that may occur on the Sierra Vista Ranger District ............................................................................. 77
Table 19. Management indicator species known to occur in the area affected by proposed changes to the motorized travel system on the Sierra Vista Ranger District, Coronado National Forest ............................................................................. 78
Table 20. Threatened and endangered species considered in this analysis and summary determination of effects ........................................................................................................ 79

List of Figures

Figure 1. Location of Sierra Vista Ranger District in southeastern Arizona ........................................ 3
Figure 2. General ecosystem survey units, with water bodies and habitat mapping, for the Whetstone ecosystem management area ................................................................................. 24
Figure 3. General ecosystem survey units, with water bodies and habitat mapping, for the Huachuca ecosystem management area ................................................................................. 24
Figure 4. Watershed Condition Framework map for both the Huachuca and Winchester Ecosystem Management Areas ........................................................................................................ 29
Figure 5. Visual quality objectives for the Sierra Vista Ranger District ........................................... 43
Summary

To comply with the Travel Management Rule, the Coronado National Forest, Sierra Vista Ranger District proposes to provide a system of roads, trails, and areas designated for motorized use by making changes to the current motorized travel system. The proposed changes would result in a system of designated routes where motorized use is allowed on the district. The proposed changes and the designated motorized system of routes would not restrict non-motorized activities—such as hiking, camping, bicycling, hunting, and others. Motorized use off the designated system or roads, trails and areas without alternative authorization would continue to be prohibited.

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 by vehicle class and if appropriate, by time of year, for motor vehicle use. After these roads, trails, and areas are designated, motor vehicle use, not in accordance with these designations is prohibited...”

Currently, there are 704.25 miles of road open to all vehicles on the Sierra Vista Ranger District which represents alternative 1, no action. Alternative 2, the modified proposed action, would reduce the road system open to all public access by 173.06 miles or approximately 25 percent. Consistent with the 1986 Coronado National Forest Land and Resource Management Plan (1986 Forest Plan), cross-country motorized travel is prohibited. Under the 1986 Forest Plan and the Travel Management Rule, cross-country motorized travel will continue to be prohibited under both alternatives. Chapter 3 analyzes both alternatives in detail which will allow the Sierra Vista district ranger to make a final decision.
Chapter 1. Purpose and Need for Action

Introduction

Coronado National Forest staff prepared this environmental assessment to comply with the environmental review and disclosure requirements of the National Environmental Policy Act of 1969 (Public Law 91-190). The subject of the environmental assessment is a proposal to implement changes to the motorized transportation system on the Sierra Vista Ranger District in Santa Cruz, Pima, and Cochise Counties, Arizona (see figure 1). The motorized transportation system that is currently in place (alternative 1) was originally established according to direction in the 1986 Forest Plan.

This specific National Environmental Policy Act review focuses only on proposed changes to the Coronado’s transportation system already in place on the Sierra Vista Ranger District. It does not disclose the impacts of past, present, or reasonably foreseeable future actions related to all roads that comprise the current system. The analysis disclosed in this environmental assessment evaluates potential effects from proposed changes that are identified in table 3. The ground disturbance associated with the physical decommissioning of roads is not being analyzed in this document.

The overall net decrease in miles of National Forest System roads on the Sierra Vista Ranger District (maintenance levels 1 through 5) if the modified proposed action is approved, would be 159.98 miles. This is approximately a 21 percent decrease in current total National Forest System road miles. The modified proposed action would decrease the miles of National Forest System roads open to all public users (maintenance levels 2 through 5) by 170.6 miles, or approximately 24 percent of National Forest System roads currently open to all public access on the Sierra Vista Ranger District. Maintenance level 1 roads are closed to all motorized traffic but remain on the system and could be opened after a minimum of one year. Maintenance levels 2 through 5 roads are open to all users unless designated “restricted to authorized or permitted use only.” Decommissioned roads are removed from the system.

A transportation analysis plan was completed in March 2011. The plan evaluated the existing uses, associated purposes, maintenance level classifications, need, and expected future uses of every National Forest System road on the Sierra Vista Ranger District. The proposed changes are responsive to the findings reported in the transportation analysis plan, which provides the baseline for this analysis. All changes will comply with the requirements of subpart B of 36 CFR 212, Travel Management, regarding the designation of roads, trails, and areas for motor vehicle use on national forests and grasslands.

The proposed approximately 24 percent decrease in roads open to all motorized public use would reduce redundant road miles which provide recreation and user access to the same places via multiple routes, serving to decrease adverse impacts to resources such as riparian ecosystems.

1 See appendix B for a complete list with definitions of all road maintenance levels.

2 The transportation analysis plan is an integrated approach to transportation planning that evaluates both National Forest System roads as well as unauthorized routes. The transportation analysis plan is not a National Environmental Policy Act document; it is intended to complement or support, rather than replace or preempt National Environmental Policy Act reviews and decisions. The Sierra Vista transportation analysis plan is available at the district office.
Chapter 1. Purpose and Need for Action

threatened and endangered species, water quality, soils, and fragile desert ecosystems. The proposed changes, including designation of approximately 56 miles of unauthorized routes would increase access for recreational opportunities, including hunting, dispersed camping, hiking, horseback riding, and other activities, and provide important access for range and other permittees, while still addressing critical resource concerns created by heavy motorized use on the Sierra Vista Ranger District.

Motor vehicle use off the designated system would continue to be prohibited, except as identified on a revised motor vehicle use map. Motorized big game retrieval is not part of the modified proposed action because there are no elk on the Sierra Vista Ranger District. In the State of Arizona, motorized big game retrieval largely pertains to elk, and the national forests in Arizona that identify corridors for motorized big game retrieval do so for elk only. In an effort to maintain consistency in travel management regulations across the State, and since there are no elk on the Sierra Vista Ranger District, motorized big game retrieval corridors are not part of the modified proposed action. Furthermore, scoping, informal conversations, and historical observations across the district have not shown motorized big game retrieval to be a concern. Additional details about the changes are provided in chapter 2.

Types of proposed changes to the road and trail system on the Sierra Vista Ranger District include the following:

- add specific unauthorized roads\(^3\) to the national forest road system, thereby legitimizing their use as part of the district’s motorized transportation system
- decommission specific roads from the national forest road system in accordance with recommendations in the transportation analysis plan (TAP)
- decommission certain unauthorized roads by the use of signing, physical barriers and other non-ground-disturbing methods that deny access for motorized use
- revise designated uses, seasonal closures, maintenance levels, or some combination of those things assigned to National Forest System roads (for example, maintenance level change from “open to the public” to “restricted to administrative or permitted use only”)
- add or remove motorized trails
- designate the boundaries of corridors where motorized travel is permitted for dispersed camping within a 300-foot corridor

\(^3\) An unauthorized route, as defined in 36 CFR 212, is “a road that is not a National Forest System road or a temporary road and that is not included in a Forest transportation atlas.” These are not designated National Forest System roads and are not maintained. Motor vehicle operators on these roads and trails are subject to citation.
Background

Visitors to national forests and grasslands share a common interest in the enjoyment of outdoor recreation in a natural setting. The Forest Service currently manages more than 300,000 miles of roads and 35,000 miles of trails nationwide to provide visitors with motorized and trail access to recreational amenities, motorized access to those who use National Forest System lands under special authorizations, such as grazing or operation and maintenance of communication sites; and administrative access to agencies for fire and land management activities.

Until recently, access to national forests and grasslands and their amenities was the primary reason for motor vehicle use. However, in the past few decades, recreational use of off-highway vehicles has become another popular reason for motorized travel on National Forest System lands. In 2004, more than 11 million people used off-highway vehicles on national forests and grasslands,\(^4\) more than double their estimated use in 1972.

\(^4\) http://www.fs.fed.us/recreation/programs/ohv/ohv_use.pdf
Given this dramatic increase in off-highway vehicle use on National Forest System lands, there is a corresponding increased need to protect natural resources from damage by motor vehicles. To improve recreational vehicle management, the Forest Service published final travel management regulations in 2005 (Travel Management Rule; Federal Register Vol. 70, No. 216; Nov. 9, 2005, pages 68,264 through 68,291).

The following discussion focuses on the requirements of the Travel Management Rule relevant to travel management on the Coronado National Forest and Sierra Vista Ranger District, a description of the project location, and how the Coronado’s 1986 Forest Plan direction integrates with the Travel Management Rule.

**Overview of the Travel Management Rule**

The Travel Management Rule (36 CFR 212.50 (a)) requires each national forest and grassland to:

> “provide for a system of National Forest System (NFS) roads, NFS trails, and areas on NFS 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. Motor vehicle use off designated roads and trails and outside designated areas is prohibited by 36 CFR 261.13.”

Therefore, the Sierra Vista Ranger District is presenting this proposal to meet the Travel Management Rule requirements.

The Coronado National Forest has had a designated motorized transportation system in place for approximately 20 years prior to the Travel Management Rule becoming effective. Past decisions that served as a basis for the development of this system are not subject to retroactive transportation analyses and National Environmental Policy Act reviews, according to the rule. Because the Sierra Vista Ranger District had a designated motorized transportation system in place before the Travel Management Rule was codified, a National Environmental Policy Act review of the original system was not required prior to publishing the first Sierra Vista motor vehicle use map (MVUM) in May 2011.

The Travel Management Rule directs that:

> “the responsible official may incorporate previous administrative decisions regarding travel management made under other authorities, including designations and prohibitions related to motor vehicle use, in designating NFS roads and trails” (36 CFR 212.50 (b)).

Alternatively, responsible officials may choose to reconsider past decisions, with public involvement, as necessary to achieve the purposes of the final rule (70 FR 68269). This means all roads, trails, and areas that have been designated in the past for motor vehicle use do not have to be reevaluated in the current review of the modified proposed action described in this notice. Consequently, this environmental assessment addresses only those proposed changes to the motorized transportation system that are needed to accommodate administrative and user needs, including resource protection, not any past actions regarding motorized travel.

The Travel Management Rule prohibits motor vehicle use in areas off the system depicts in a motor vehicle use map, with exemptions for the following vehicles, uses, or both: 1) aircraft; 2) watercraft; 3) limited administrative use by the Forest Service; 4) use of any fire, military, emergency, or law enforcement vehicle for emergency purposes; 5) authorized use of any combat or combat support vehicle for national defense purposes; 6) law enforcement response to
Violations of law, including pursuit; and 7) motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations (36 CFR 212.51).

Motor vehicle use that is specifically authorized under a written authorization may include activities such as livestock operations, mining, logging, firewood collection, forest products, private land access, and maintenance of pipeline and utility corridors (36 CFR 212.51(a)(8) and 261.13(h)). Written authorizations allow continued multiple-use management on the Coronado National Forest in a manner that does not result in unnecessary resource impacts and that meets the intent and purpose of the Travel Management Rule.

Another requirement of the Travel Management Rule is to prohibit the use of motor vehicles on National Forest System lands not designated for motorized travel. Such unauthorized use of a Forest Service unit’s designated travel system is generally referred to as “cross-country” (or “off-road”) travel. The 1986 Forest Plan restricts cross-country travel:

“use of motorized vehicles is restricted to existing trails and roads. Some trails may be closed to motorized vehicles for safety, resource protection, and user conflict reasons”.

The 1986 Forest Plan does authorize vehicles to travel off roads or trails up to 300 feet for parking or camping when designated on the off-road vehicle map. Currently, there are unauthorized roads on the Sierra Vista Ranger District, and the Travel Management Rule allows changes to the designated road system. When Sierra Vista Ranger District personnel propose adding National Forest System roads to the motorized transportation system, removing them from the system, changing use designations, or making other related travel management actions decisions, a National Environmental Policy Act compliance review is required by the Travel Management Rule (36 CFR subpart B, section 212.52).

Subpart C—Over-Snow Vehicle Use

36 CFR subpart C, section 212.80 and section 212.81 requires travel management planning for over-snow travel. All ranger districts of the Coronado National Forest do not experience enough snow in terrain accessible for motorized over-snow travel. Occasional use could potentially occur on some road beds in the higher elevations; however such use is currently nonexistent. Further, most high-elevation roads capable of over-snow travel have seasonal closures prohibiting motorized travel. For these reasons, subpart C is not applicable to any ranger district of the Coronado National Forest, will not be analyzed in this analysis, and therefore will not be covered in this decision.

Project Location

The Sierra Vista Ranger District is located in southeastern Arizona, and in some places the district shares the international border with the state of Sonora, Mexico (see figure 1). Nearby communities are Sierra Vista, Nogales, Hereford, Sonoita, Benson, Whetstone, Huachuca City, and Patagonia. The district covers approximately 297,748 acres in two ecosystem management areas:5 Huachuca and Whetstone. This acreage does not include lands within the district boundary that are private or managed by other agencies.

---

5 An ecosystem management area is defined as a unique geographic area among the mountain ranges that comprise the Coronado. The 1986 Forest Plan has designated specific uses, goals, and objectives for management of each ecosystem management area and standards and guidelines for conserving resources in...
Chapter 1. Purpose and Need for Action

The Sierra Vista Ranger District currently manages (based on inventory) 704.25 miles of National Forest System roads (also called “system roads”) as open to the public for motorized travel. Another 10.98 miles of National Forest System roads are open for administrative or permitted vehicle use only, and 22.36 miles are closed to any motor vehicle use. During the transportation analysis process, 135.49 miles of unauthorized roads and trails were documented using a global positioning system (GPS). These have been, and continue to be, used for motorized travel by the public despite not being designated as National Forest System roads or otherwise authorized.

Forest Plan Direction

The most recent motor vehicle use map shows the designated motorized transportation system as of 2015. The system has evolved over the past 25 years in accordance with direction in the 1986 Coronado Forest Plan and includes the following classifications:

- **Roads open to highway-legal vehicles only**: These are roads open only to motor vehicles licensed under State law for general operation on all public roads. These roads are the equivalent of Forest Service maintenance level 3, 4, and 5 roads. These roads are generally maintained to be suitable for a prudently driven standard passenger car.

- **Roads open to all vehicles**: These roads are open to all motor vehicles; including smaller off-highway vehicles that may not be licensed for highway use (but not to oversized or overweight vehicles under State traffic law). These roads are the equivalent of Forest Service maintenance level 2 roads. These roads are generally maintained to be suitable for high-clearance vehicles.

- **Seasonal designations**: These apply to roads or trails open only during certain months of the year.

- **Dispersed camping**: Cross-country (off-road) motor vehicle travel is allowed within a specific distance (300 feet) from a road for the sole purpose of dispersed camping.

The 1986 Forest Plan was amended in August 2010 to incorporate Travel Management Rule direction prohibiting motorized vehicle use off the Coronado’s designated motorized transportation system as depicted on the motor vehicle use map. Amendment direction is as follows:

> Motor vehicle use off the designated system of roads, trails, and areas is prohibited, except as identified on a Motor Vehicle Use Map (MVUM).

The decision document for the modified proposed action (if selected) would not require any project-specific amendments to the 1986 Forest Plan. The motor vehicle use map would be updated to reflect the proposed changes to the designated system of roads and trails available for motorized use.

---

6 Unauthorized routes and trails are not National Forest System roads or trails or temporary roads or trails and they are not included in a Coronado National Forest transportation atlas.

7 See appendix B for more information on road maintenance levels.
Consistency with the Forest Plan

The proposed changes to the motorized travel system on the Sierra Vista Ranger District was designed in conformance with direction given in the 1986 Forest Plan. The plan is a programmatic document currently undergoing revision. The 1986 Forest Plan establishes multiple goals and objectives intended to balance multiple uses of Coronado National Forest resources. It also establishes standards and guidelines applicable to management of specific resources and intended to minimize or avoid adverse environmental effects as projects are implemented. This environmental assessment is tiered to the 1986 Forest Plan and its final environmental impact statement and record of decision, in accordance with 40 CFR 1502.20.

Purpose and Need for Action

The purpose and need of this project is based on the need to change management to conform to the Travel Management Rule by providing a system of roads, trails, and areas designated for motor vehicle use on the Coronado National Forest, Sierra Vista Ranger District (36 CFR 212.50) that will minimize impacts to natural and cultural resources. The proposed actions are necessary to address unacceptable resource damage created by increased motorized use across the district over the last 30 years.

A need exists to address resource impacts associated with existing motorized use. This need is based on the intent of Executive Orders 11644 and 11989, and the Travel Management Rule, which require that motor vehicle use of trail and areas on Federal lands be managed to address environmental and other impacts, but that motor vehicle use on Federal lands continue in appropriate locations. On the Sierra Vista Ranger District:

- There is a need to comply with the Travel Management Rule by providing for a system of National Forest System roads, National Forest System trails, and areas on National Forest System lands designated for motor vehicle use by vehicle class (36 CFR 212.51(a)); and
- There is a need to manage motorized vehicle use on National Forest System lands on the Sierra Vista Ranger District in accordance with the provisions of the Travel Management Rule and 36 CFR parts 212, 251, and 261. Since 1986, there has been a designated motorized travel system on all districts of the Coronado National Forest, including the Sierra Vista Ranger District.

Public Involvement

Since 2006, the Coronado National Forest’s travel management planning process has included many opportunities for public involvement. Four open houses (one each in Tucson, Safford, Sierra Vista and Douglas) gave citizens an opportunity to view maps showing current motor-vehicle-use direction in the 1986 Forest Plan and encouraged public input regarding unique recreation opportunities; specific vehicle-class opportunities; access to significant-use locations; dispersed camping opportunities; and environmental concerns, safety concerns, or both related to specific roads.

Concurrent with transportation analysis process meetings, many public meetings have been held to date as part of the forest plan revision effort. Travel management was also discussed at these meetings, and public input regarding travel management was factored into the development of the modified proposed action addressed herein.
Chapter 1. Purpose and Need for Action

The original proposed action was then listed on July 1, 2011 on the schedule of proposed actions (SOPA) on the Coronado National Forest website. The original proposed action was published in the Sierra Vista Herald with scoping notices distributed to stakeholders and interested parties on November 30, 2011. An addendum to the scoping notice was sent out March 7, 2012. The scoping period was extended to April 06, 2012, and the schedule of proposed actions was updated accordingly. Comments on the proposed action were received from 156 individuals and organizations. Comments are filed in the project record and available upon request.

On January 28, 2012, Coronado National Forest personnel hosted a forestwide “kickoff” meeting for travel management collaboration. After this meeting, there were 5 subsequent district workshops on June 2, 7, and 14, 2012; September 22, 2012; and October 27, 2012. The workshops were facilitated by the Udall Foundation. From these meetings, a collaborative alternative team was identified and included individuals and groups interested in the travel management outcome. The role of these stakeholders was to bring their perspectives on the potential outcomes of the Travel Management Rule to the table and to work collaboratively with other participants to develop recommendations for meeting the needs of the public on the district. Based on the aforementioned collaborative effort and scoping, the current modified proposed action was developed.

Issues Identified

This section lists the issues identified as a result of the analysis of comments received during the scoping period. Issues are identified as those directly caused by implementing the modified proposed action. The analysis of issues and project objectives provides the basis for formulating alternatives that meet the purpose and need and for making decisions on the project (Forest Service Handbook 1909.15, Section 12.32-33).

The following key issues were identified:

1. **Designation of unauthorized (user-created), closed, decommissioned, or new roads and motorized dispersed camping corridors.** There is concern that designating unauthorized, closed, decommissioned, or new roads could have effects to natural or heritage resources. There is also concern that changes in roads designations could affect access to private property, public recreation, range, and special use facilities.

2. **Loss or reduction of motorized recreation opportunities.** There is concern that quality opportunities for motorized recreation, particularly opportunities for wider vehicles including full-size 4x4s, are not fully considered in the proposed changes. These concerns included:
   a. Requests for motorized trail opportunities for users desiring more challenges.
   b. Requests for additional designations for full-size vehicles and all-terrain vehicle opportunities.

---


9 “U.S. Institute for Environmental Conflict Resolution” is an independent and impartial agency of the federal government.

10 The development and actions of the collaborative alternative team are described in a final report prepared by the U.S. Institute for Environmental Conflict Resolution for the Forest Service (Coronado National Forest Travel Management Collaboration Forest-Wide Final Report December 11, 2012)
3. **Environmental impacts.** There is concern that motorized use designations being proposed could cause environmental impacts including:

   a. **Fragmentation and wildlife disturbance:** There is a concern that adding unauthorized roads to the system and designating them for motor vehicle use may increase fragmentation of wildlife habitat and create additional barriers to wildlife movement. There is also a concern that the addition of unauthorized routes will reduce wildlife habitat capability to sustain populations and increase areas of disturbance, especially in regards to federally listed threatened and endangered species and Forest Service sensitive species.

   b. **Impacts to drainage channels:** There is concern that designating routes and constructing new trail segments in areas with intermittent and ephemeral stream channels may impair the ecological and hydrologic function of drainage channels.

   c. **Impacts to soils:** There is concern about designation of unauthorized routes and continued high use of roads contributing to erosion, soil compaction, and runoff on the Sierra Vista Ranger District.

   d. **Impacts to vegetation:** Concern was expressed about the loss of vegetation due to increased vehicle use and spread of invasive species from seed sources dispersed by the inclusion of unauthorized routes.

   e. **Impacts to heritage resources:** There is concern about an increased potential for impacts to heritage resources by designation of unauthorized routes.

**Tribal Consultation**

Coronado National Forest staff consults with 12 Native American Tribes who have ancestral ties to lands currently managed by the Coronado: the Ak-Chin Indian Community, the Ft. Sill Apache Tribe, the Gila River Indian Community, the Hopi Tribe, the Mescalero Apache Tribe, the Pascua Yaqui Tribe, the Salt River Pima-Maricopa Indian Community, the San Carlos Apache Tribe, the Tohono O'odham Nation, the White Mountain Apache Tribe, the Yavapai-Apache Nation, and the Pueblo of Zuni.

Tribes were initially contacted concerning policies and regulations regarding off-highway vehicle users on unauthorized routes with a letter dated May 18, 2007. In response, the Ak-Chin Cultural Resource Office (letter from Gary Gilbert, June 4, 2007) expressed a concern with adverse impacts due to off-highway vehicle users, as their basket-making materials are collected on the Coronado National Forest.

Tribes were once again contacted during the scoping phase and sent letters asking for their comments and input on March 19, 2009. The White Mountain Apache Historic Preservation Office responded (letter from Tribal Historic Preservation Officer Mark Altaha, May 12, 2009) with the following comment:

“the proposed action will not have an effect to the White Mountain Apache tribe's Cultural Heritage Resources and/or historic properties. The project may proceed with the understanding that any ground disturbance should be monitored if there are reasons to believe that human remains and/or funerary objects are present, if they are encountered all construction activities are to be stopped and the proper authorities and/or affiliated tribe(s) be notified to evaluate the situation.”

Consultation on the travel management process continued in 2011. On November 18, 2011, the general scoping notice was mailed to all interested parties (including the 12 tribes noted above).
No tribal comments were received in response to the general scoping notice. On January 20, 2012, Coronado National Forest representatives made a presentation to the Four Southern Tribes Cultural Resources Working Group. On January 12, all 12 tribes were notified of the collaborative alternative team participation in the travel management process, and they were invited to participate. On February 14, 2012, additional information was sent to Mr. Peter Steere, Tribal Historic Preservation Officer for the Tohono O’odham Nation, again encouraging participation in creation of the collaborative alternative team alternatives. No tribal representatives participated in the subsequent collaborative alternative team meetings about Travel Management Rule implementation on the Sierra Vista Ranger District.

On January 4, 2016, all 12 tribes were sent a copy of Heritage Resource Report #2015-05-030 summarizing the results of archaeological surveys completed for proposed changes to the motorized travel system on the Sierra Vista Ranger District. No comments were received.

Decision Framework

Given the purpose and need for action and based in part on the findings of the impacts analysis disclosed in this environmental assessment, the Sierra Vista district ranger will decide (1) whether or not to approve implementation of the proposed changes to the motorized travel system on the Sierra Vista Ranger District and (2) what, if any, design criteria will be required to protect resources affected by the proposed roads changes in the project area. The district ranger’s decision will be documented in a decision notice that will be announced by legal notice in the Sierra Vista Herald and the Nogales International, the district’s newspapers of record. After it is signed, the decision will be posted on the project website.\(^\text{11}\)

\(^\text{11}\) [https://www.fs.usda.gov/project/?project=36560](https://www.fs.usda.gov/project/?project=36560)
Chapter 2. Alternatives

This chapter describes and compares the modified proposed action and the no-action alternative. It also includes the following key sections:

- alternatives considered but eliminated from detailed study
- mitigation and monitoring requirements to avoid or minimize adverse effects
- tabular comparison of the alternatives effects

Alternative 1 – No Action

The no-action alternative provides a baseline against which the effects of the modified proposed action may be compared. This baseline was developed from the best available data at the time of the travel analysis process, which was completed on the Sierra Vista Ranger District in 2011 and involved a review of current conditions on the ground and road status in the Forest Service’s Infrastructure (INFRA) database at that time. The travel analysis process was used to evaluate current conditions and proposed changes and has been maintained as the existing baseline for this travel management analysis on the Sierra Vista Ranger District. If no action is taken, the Coronado National Forest would not make the proposed changes to the motorized travel system on the Sierra Vista Ranger District. Even if no action is taken, a motor vehicle use map would still be published annually to comply with the Travel Management Rule. It would depict the current designated motorized travel system on the Sierra Vista Ranger District without any of the proposed changes listed under alternative 2, the modified proposed action. A 300-foot, dispersed camping corridor within 300 feet of open system roads would be permitted under the no-action alternative and is also provided for in the modified proposed action.

Sierra Vista Ranger District manages 704.25 miles of National Forest System roads as open to the public for motorized travel. Another 10.98 miles of National Forest System roads are open for administrative or permitted vehicle use only, and 29.43 miles are closed to any motor vehicle use. Before and during the transportation analysis process, 141.54 miles of unauthorized routes and trails were documented using GPS.

Alternative 2 – Modified Proposed Action

Under this alternative the motorized transportation system on the Sierra Vista Ranger District would incorporate the following proposed changes, which would be shown on the next published motor vehicle use map:

1. Add 36.85 miles of unauthorized routes (non-National Forest System roads) to the national forest road system and designate them as “open to all vehicles”. In general, these roads are needed to provide access for hunting, camping, hiking, off-highway vehicle travel, and other public uses. A road number would be assigned to each newly designated road, and the roads would be designated as maintenance level 2.\textsuperscript{12}

\textsuperscript{12} In general, maintenance level 2 roads are those suitable for high-clearance vehicles and not suitable for passenger vehicles, such as sedans.
2. Change the designation of 30.15 miles of National Forest System roads from “open to all vehicles” to maintenance level 2 “restricted to administrative or permitted use only”\textsuperscript{13}.

3. Add 18.14 miles of unauthorized routes to the national forest road system and designate them as maintenance level 2 “restricted to administrative or permitted use only”.

4. Decommission 171.51 miles of National Forest System roads currently “open to all vehicles (maintenance level 2 through 5)”. Motorized access would be physically blocked in the already disturbed current road prism (for example, bollards, boulders, berms, and signs). Their National Forest System road identification numbers would be physically removed on the ground and they would not appear on subsequent motor vehicle use maps.

5. Decommission 9.43 miles of National Forest System roads currently designated as “closed to all vehicles” (maintenance level 1), as described above in #4.

6. Change the designation of 1.75 miles of National Forest System roads from “open to all vehicles (maintenance level 2 through maintenance level 5)” to “closed to all motor vehicles (maintenance level 1)\textsuperscript{14}”. Expectation is for these roads to be closed for a minimum of one year and briefly opened and used for permitted access approximately once every ten years. They would not appear on subsequent motor vehicle use maps while they have maintenance level 1 status.

7. Convert 4.04 miles of National Forest System roads from “open to all vehicles” to “non-motorized trail”.

8. Designate 2.47 miles of unauthorized routes as non-motorized National Forest System Trails.

9. Designate 0.73 miles of unauthorized roads as “motorized trail for vehicles less than or equal to 50 inches in width,” and 2.68 miles of unauthorized routes as “motorized trails for vehicles greater than or equal to 50 inches in width”.

10. Add 1.41 miles of unauthorized routes to the national forest road system and maintain them as “closed to all vehicles (maintenance level 1)”, as described above in #6.

11. Decommission 78.76 miles of unauthorized routes, as identified above in #4.

12. Designate corridors of 300 feet from either side of newly designated roads open to all motorized vehicle use (maintenance levels 2 through 5) for cross-country (off-road) motor vehicle travel for the sole purpose of dispersed camping.

\textsuperscript{13} Open authorized restricted (OAR), restricted, and “restricted to administrative or permitted use only” are used interchangeably throughout this document. The roads shall be restricted to the public and only government officials or special use permittees will be allowed use.

\textsuperscript{14} Maintenance level 1 roads are closed to all motor vehicle travel for a period of one year or more.
These changes would result in an overall net decrease of 159.98 miles of National Forest System roads (maintenance level 1 through maintenance level 5) to the Sierra Vista Ranger District transportation system. If the modified proposed action is approved, the system would have the following:

- 533.65 miles of National Forest System roads “open to all vehicles” (maintenance level 2 through maintenance level 5)
- 23.16 miles of closed National Forest System roads (maintenance level 1)
- 59.27 miles of National Forest System roads “restricted to administrative or permitted use only” (maintenance level 2 through maintenance level 5)
- 0.73 new miles of motorized trails less than or equal to 50 inches
- 2.68 new miles of motorized trails greater than or equal to 50 inches
- 6.51 miles of non-motorized trails would be designated in the proposed changes.

Management of roads, trails, and areas in the Coronado National Forest boundary but not within Forest Service jurisdiction, such as State highways, County roads, or private land, are not a component of the modified proposed action. Private landowners and other agencies have been, and will continue to be, consulted during future transportation management planning. Non-motorized recreation activities (for example, hiking and horseback riding) are also not part of the modified proposed action but will be considered during cumulative effects analysis.

**Design Criteria**

The Travel Management Rule requires Forest Service personnel to “monitor the effects of motor vehicle use on designated roads, trails, and areas” (36 CFR 212.57). Design criteria would reduce the overall effects of the project and help the project meet visual quality objectives. The following measures are recommended for the modified proposed action to avoid or minimize potential adverse effects on resources.

- As required by the Travel Management Rule, newly designated National Forest System roads would be monitored, as appropriate and feasible, to determine user compliance with the motor vehicle use map.
- Newly designated National Forest System roads would have route markers installed on the ground; physical barricades of rock or other natural material at their end point, temporary man-made barriers, or some combination of these things, if necessary to prevent unauthorized extension of the road by vehicle users.
- Newly designated National Forest System roads would be opened to all motorized vehicles consistent with State laws and may be maintained to Forest Service maintenance level 2 standards.
- Decommissioning activities would be scheduled to occur outside the breeding season of the Mexican spotted owl (*Strix occidentalis lucida*), the common black hawk (*Buteogallus anthracinus*), western yellow-billed cuckoo, and other species known to be nesting in the area.
- Maintenance on all National Forest System roads will occur during the western yellow-billed cuckoo non-breeding season (1 October through May 31). If maintenance needs to occur within the breeding season, the site will be evaluated by a Forest Service biologist to determine if Section 7 consultation is necessary.
• Maintenance on all National Forest System roads within 0.25 miles of Mexican spotted owl protected activity centers will occur during the non-breeding season (1 September through April 30). If maintenance needs to occur within the breeding season, the site will be evaluated by a Forest Service biologist to determine if Section 7 consultation is necessary.

• The project would use weathered, dark-colored riprap and boulders to blend into the landscape.

• Routes converted to non-motorized trails at the wilderness boundary should be blocked to motorized access.

• Comply with the Clean Water Act and other relevant laws, regulations, and policies regarding resource protection.

Comparison of the Effects of the Alternatives

Table 1 summarizes the total amount of roads in mileage that will be affected by the modified proposed action.

The potential effects of the no-action alternative and alternative 2, the modified proposed action, are compared in table 2 and table 3. Both tables are derived from the effects analyses reported in chapter 3.
## Table 1. Miles of National Forest System roads affected by the modified proposed action on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Roads</th>
<th>Existing Road (miles)</th>
<th>Change to ML1 (miles)</th>
<th>Change to restricted or permitted use only (miles)</th>
<th>Add as NFSR ML2 (miles)</th>
<th>Decom. (miles)</th>
<th>Convert to motorized &lt;50 in. trail (miles)</th>
<th>Convert to motorized &gt;50 in. trail (miles)</th>
<th>Convert to non-motorized trail (miles)</th>
<th>Proposed District NFSR System* (miles)</th>
<th>Proposed District NFST System* (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFSR – open to public motorized travel (ML2 through ML5)</td>
<td>704.25</td>
<td>1.75</td>
<td>30.15</td>
<td>0</td>
<td>171.51</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4.04</td>
<td>496.8</td>
</tr>
<tr>
<td>NFSR - ML1, closed to all motor vehicle travel</td>
<td>29.43</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9.43</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20.0</td>
</tr>
<tr>
<td>NFSR - restricted to administrative or permitted use only</td>
<td>10.98</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10.98</td>
</tr>
<tr>
<td>Unauthorized routes</td>
<td>141.54</td>
<td>1.41</td>
<td>18.14</td>
<td>36.85</td>
<td>78.76</td>
<td>0.73</td>
<td>2.68</td>
<td>2.47</td>
<td>56.9</td>
<td>5.88</td>
</tr>
<tr>
<td>NFSR Subtotal</td>
<td>744.66</td>
<td>3.16</td>
<td>48.29</td>
<td>36.85</td>
<td>259.17</td>
<td>0.73</td>
<td>2.68</td>
<td>6.51</td>
<td>584.68</td>
<td>9.92</td>
</tr>
</tbody>
</table>

NFSR = National Forest System road; ML = maintenance level; Decom = decommission

* Alternative 2 (modified proposed action)
Table 2. Comparison of road miles in no-action and modified proposed action alternatives

<table>
<thead>
<tr>
<th>Roads</th>
<th>No Action</th>
<th>Modified Proposed Action</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NFSR ML 1-5</td>
<td>744.66</td>
<td>584.68</td>
<td>-159.98</td>
</tr>
<tr>
<td>Open NFSR ML 2-5</td>
<td>704.25</td>
<td>533.65</td>
<td>-170.6</td>
</tr>
<tr>
<td>Restricted NFSR ML 2-5</td>
<td>10.98</td>
<td>59.27</td>
<td>48.29</td>
</tr>
<tr>
<td>Closed NFSR ML 1</td>
<td>29.43</td>
<td>23.16</td>
<td>-6.27</td>
</tr>
</tbody>
</table>

NFSR = National Forest System road; ML = maintenance level

Table 3. Comparison of potential effects from implementation of the no-action alternative, the modified proposed action

<table>
<thead>
<tr>
<th>Resource</th>
<th>No-action Alternative</th>
<th>Alternative 2, Modified Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air quality</td>
<td>Fugitive dust and exhaust would continue to be released by motorized travel on District roads. Ambient air quality would not be measurably degraded. National ambient air quality standards would not be violated.</td>
<td>The changes specified by the modified proposed action are not expected to contribute measurable impacts to national ambient air quality standards. Overall, the changes specified by the modified proposed action are not expected to contribute measurable impacts to these national standards.</td>
</tr>
<tr>
<td>Climate</td>
<td>Vehicle exhaust contributes to greenhouse gases and climate forcing, and fugitive dust from roads contributes to particulate matter in the air that influences insolation and precipitation and thus could impact climate change. No change in the amount of vehicle use is expected under this alternative. Continued use of unneeded roads can result in more fugitive dust compared to other alternatives, but this difference is not measurable.</td>
<td>Changes in National Forest System roads are not expected to increase the amount of vehicle traffic on the district, as users would most likely use an alternative route. There may be slight reductions in fugitive dust from closing some roads. However, this reduction would be difficult to measure and is expected to be negligible compared to background levels.</td>
</tr>
<tr>
<td>Invasive species</td>
<td>The introduction and proliferation of invasive plant species by motor vehicles would continue.</td>
<td>The modified proposed action will result in an overall net decrease of roads on the district. These changes would result in an overall reduction in vehicular traffic and thereby the risk of spreading invasive weeds.</td>
</tr>
<tr>
<td>Water resources</td>
<td>Compaction and erosion of soils will continue to adversely affect water quality.</td>
<td>Effects are expected to be less than the existing condition because the modified proposed action will result in an overall net decrease of roads on the district. Therefore, the number of miles of roads within 300 feet of natural channels and numbers of road crossings of natural channels would be reduced. No aspects of the modified proposed action would have a direct effect on groundwater in the project area.</td>
</tr>
<tr>
<td>Resource</td>
<td>No-action Alternative</td>
<td>Alternative 2, Modified Proposed Action</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vegetation</td>
<td>There would be no change in vegetation composition and condition along authorized roads. Disturbance of vegetation in areas of unauthorized vehicle use would continue and may be exacerbated.</td>
<td>Overall the large decrease in acres affected by motorized travel should have a large scale benefit to all vegetation communities by encouraging revegetation. The revegetation of these areas will help reduce runoff and decrease erosion.</td>
</tr>
<tr>
<td>Recreation</td>
<td>Enhanced access to recreational amenities, as recommended in the transportation analysis plan, would not be provided if no action is taken. Demand for recreational use would continue to reflect increases in the area’s population.</td>
<td>Most of the roads to be added to the system would offer improved access to recreational amenities. Recreational use would be minimally affected by the decommissioning of roads because roads which provide access to developed recreation sites are not proposed for any changes. Most popular dispersed campsites would continue to have motorized access from existing or proposed designated routes. Campsites that cannot be accessed by proposed or existing roads would remain accessible by foot or other means.</td>
</tr>
<tr>
<td>Heritage resources</td>
<td>Heritage sites near unauthorized routes used for motorized recreation and areas of off-road motorized travel would continue to be at risk of damage and/or destruction. There would be no change in potential adverse effects on heritage sites from the continued motorized use of authorized roads.</td>
<td>The forest archaeologist determined the modified proposed action would result in no adverse effects to historic properties and no effects to Native American traditional cultural properties.</td>
</tr>
<tr>
<td>Special-status species</td>
<td>Effects on wildlife and their habitat would remain the same along authorized roads used for motor-vehicle travel. Habitat that has been fragmented, damaged, and/or disturbed by unauthorized route use and off-road motorized travel in areas where the off-road restriction is proposed would continue to be affected; impacts may be exacerbated over time.</td>
<td>The proposed changes under this alternative may affect, but are not likely to adversely affect federally listed endangered species. The proposed changes may impact some of Forest Service Region 3 sensitive species, but would not cause a loss of viability or a trend toward Federal listing. They also would not likely cause a detectable change in populations of management indicator species or a loss of occupied habitat. U.S. Fish and Wildlife Service concurrence on the determinations regarding Federally listed species and habitat is pending.</td>
</tr>
</tbody>
</table>
### Chapter 2. Alternatives

<table>
<thead>
<tr>
<th>Resource</th>
<th>No-action Alternative</th>
<th>Alternative 2, Modified Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenery</td>
<td>Degradation of scenic integrity from non-system roads and dispersed recreation areas (including loss of vegetation, bare and compacted soils, muddy rutted areas, and erosion) would continue until all non-system roads were obliterated and naturalized, which would likely take many years. Recovery of damaged soils and vegetation would take much longer.</td>
<td>Scenery would benefit by getting some roads out of drainages and thereby improving riparian vegetation, decommissioning some roads which would lead to more natural scenery, providing a road system that would be properly designed and maintained, and reducing impacts to visually sensitive areas including the Arizona National Scenic Trail, an inventoried roadless area, and wilderness.</td>
</tr>
<tr>
<td>Socioeconomic resources</td>
<td>There would be no change in land use, demographics, public services, and the economy of local communities if no action is taken.</td>
<td>There would be no measurable adverse effects on demographics, land use, public services, or the economy. There are no environmental justice concerns. No disproportionate adverse effects on minority and/or low-income populations would result.</td>
</tr>
</tbody>
</table>

Proposed Changes to the Motorized Travel System on the Sierra Vista Ranger District
Environmental Assessment
18
Chapter 3. Environmental Effects

In addition to the direct and indirect effects that would result from the alternatives, each resource includes a discussion on how the alternatives might have effects that would combine with the effects of other past, present, and reasonably foreseeable actions for a cumulative effect contribution. Table 4 lists the past, present, and reasonably foreseeable actions considered in the cumulative effects analyses. Since these actions and projects are listed in detail below, they are referenced only generally under each resource area to avoid duplication.

The Council on Environmental Quality has defined a cumulative impact as:

“… the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions” (40 CFR 1508.7).

These activities and occurrences have contributed incrementally to changes in ecological conditions in the project area and may continue to influence conditions in the project area over the term of the project.

The current condition of the Sierra Vista Ranger District was shaped by natural processes (wildfire and droughts) and past human activities that include fuelwood harvest and grazing. Substantial change to the land was first recorded as occurring during the 1880s when livestock were introduced by settlers.

Past actions are considered to have contributed to the current conditions. The cumulative effects discussions deal primarily with present activities and anticipated future actions that would combine cumulatively with the effects of each alternative considered in this analysis. The discussion of future actions focuses on those actions that are most relevant to cumulative impacts to a specific resource and generally does not include minor, routine, continual activities such as road maintenance, camping, wildlife grazing, and hiking.
### Chapter 3. Environmental Effects

#### Table 4. Present and reasonably foreseeable actions considered in Sierra Vista proposed changes to motorized travel system environmental assessment

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description of the Activity</th>
<th>Area Affected</th>
<th>Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camp Tatiyee land exchange environmental impact statement</td>
<td>The Coronado National Forest proposes to exchange one 344.24-acre parcel of Federal lands in the incorporated Town of Pinetop-Lakeside, Arizona for 1,719.32 acres of non-Federal lands within four national forests in Arizona. The Sierra Vista Ranger District will acquire 76 acres of non-Federal land in this exchange near Harshaw Creek. <a href="http://www.fs.fed.us/nepa/nepa_project_exp.php?project=5004">http://www.fs.fed.us/nepa/nepa_project_exp.php?project=5004</a></td>
<td>76 acres within the Travel Management Rule project area</td>
<td>2017 and early 2018</td>
</tr>
<tr>
<td>Grazing Management</td>
<td>The Sierra Vista Ranger District manages ongoing grazing activities on 32 grazing allotments, encompassing over 61,000 head months and situated on approximately 274,000 acres of National Forest System lands.</td>
<td>All of Travel Management Rule project area</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Recreational activities motorized and non-motorized</td>
<td>Public recreational activities include numerous locations on the Sierra Vista Ranger District for dispersed recreation, eight developed recreation sites (campgrounds and day-use sites), one wilderness area (20,228 acres), 147 miles of non-motorized trail, and one lake (Parker Canyon Lake).</td>
<td>All of Travel Management Rule project area</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Border Patrol activities</td>
<td>Border Patrol uses existing National Forest System roads to minimize illegal border activities on the Coronado National Forest, such as establishment of unplanned trails and camps, piles of trash and debris left from illegal immigration, property damage, illegal occupancy, threats to public and employee safety, wildfire, and drug trafficking.</td>
<td>All of Travel Management Rule project area</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Rosemont Mine</td>
<td><a href="http://www.rosemonteis.us/">http://www.rosemonteis.us/</a></td>
<td>5,400 acres or 30 miles from Travel Management Rule project area</td>
<td>2017 + 25 years</td>
</tr>
<tr>
<td>Huachuca Firescape</td>
<td>Fire and fuel reduction projects, including prescribed fire and mechanical treatment of up to 270,000 acres (184,000 of National Forest System lands). <a href="http://www.azfirescape.org/sites/azfirescape.org/files/huachuca_decision_notice.pdf">http://www.azfirescape.org/sites/azfirescape.org/files/huachuca_decision_notice.pdf</a></td>
<td>184,000 acres within the Travel Management Rule project area</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
## Chapter 3. Environmental Effects

### Activity Description of the Activity Affected

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description of the Activity</th>
<th>Area Affected</th>
<th>Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Army electronic proving ground special use permit</td>
<td>The Coronado National Forest is proposing to expand the current Sunnyside test area from 100 acres to 626 acres (plus or minus 14) to conduct military sensitive sensor and jamming technique test activities. <a href="http://www.fs.fed.us/nepa/nepa_project_exp.php?project=47437">http://www.fs.fed.us/nepa/nepa_project_exp.php?project=47437</a></td>
<td>626 acres (plus or minus 14) within the Travel Management Rule project area</td>
<td>2017</td>
</tr>
<tr>
<td>Carr Barn dip site</td>
<td>The Coronado National Forest proposes enlarging an existing pond by installing an aquatic-safe, fish-grade, PVC liner to create a permanent water source for wildlife and wildfire suppression response. Renovation has been initiated and completion is anticipated in 2018; total ground disturbance will be approximately 1.5 acres. This project will benefit numerous aquatic and riparian species including the Chiricahua leopard frog and the northern Mexican gartersnake. This site will also be managed as a potential dip site to aid in initial attack of fires in the Huachuca Mountains.</td>
<td>1.5 acres of the Travel Management Rule project area</td>
<td>2017</td>
</tr>
<tr>
<td>Arizona National Scenic Trail Relocation Project (Canelo Hills - West)</td>
<td>The Coronado National Forest proposes relocating the Arizona National Scenic Trail from its current alignment along 1.4 miles of wash bottom (arroyo) to sustainably construct a single track within the Coronado National Forest’s Sierra Vista Ranger District, south and west of Ashburn Mountain near RED Bank Well. The project has been identified as a priority for trail relocation by the Arizona Trail Association and consistently rates as problematic for trail users who frequently get lost when the trail “disappears” into the arroyo.</td>
<td>896 acres or 1.4 miles of the Travel Management Rule project area</td>
<td>2017-2018</td>
</tr>
<tr>
<td>Arizona National Scenic Trail Relocation Project (Canelo Hills – East)</td>
<td>The Coronado National Forest proposes relocating the Arizona National Scenic Trail from its current alignment along 2.5 miles of dirt roads to sustainably construct a single track within the Coronado National Forest’s Sierra Vista Ranger District, from southwest of Collins Creek to its current realignment in Middle Canyon. Primary needs for this project include public safety, sustainable recreation, compliance with the National Trails System Act, enhancing the Arizona Trail experience, and responding to input from trail users.</td>
<td>1,600 acres or 2.5 miles of the Travel Management Rule project area</td>
<td>2017-2018</td>
</tr>
</tbody>
</table>
## Other districts’ travel management analyses

Each ranger district on the Coronado National Forest is completing travel management analysis, in compliance with the Travel Management Rule. Nogales and Safford Ranger Districts have already completed National Environmental Policy Act analyses and decisions. Travel management analyses are ongoing on the Douglas and Santa Catalina Ranger Districts.

<table>
<thead>
<tr>
<th>Area Affected</th>
<th>Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of the Travel Management Rule project area</td>
<td>2017-2018</td>
</tr>
</tbody>
</table>

## Mining activities

Proposals on the Sierra Vista Ranger District include the following:

- **Hermosa-Taylor Deposit Drilling Project**
  - The Coronado National Forest proposes to approve a plan of operations that would authorize the proponent to drill eight exploratory holes to obtain characterization of mineralization.
  - [http://www.fs.fed.us/nepa/nepa_project_exp.php?project=50097](http://www.fs.fed.us/nepa/nepa_project_exp.php?project=50097)
  - Plan of operations, Humboldt Exploratory Drilling Project (on-hold)
  - The Coronado National Forest proposes to approve a plan of operations that would authorize the proponent to drill six exploratory holes to obtain evidence of mineralization. This project was formerly known as Sunnyside.
  - Plan of operations, Moore & Moore #4 Placer Exploration Project (on-hold)
  - Placer exploration accomplished by material excavation, physical processing with classifier and trommel.
  - [http://www.fs.fed.us/nepa/nepa_project_exp.php?project=41147](http://www.fs.fed.us/nepa/nepa_project_exp.php?project=41147)

<table>
<thead>
<tr>
<th>Area Affected</th>
<th>Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>At multiple locations of the Travel Management Rule project area</td>
<td>2017-2018</td>
</tr>
</tbody>
</table>
Soils

Affected Environment

Roads proposed for changes on the Sierra Vista Ranger District travel system are constructed of native soils. A general ecosystem survey was completed by the Coronado National Forest in 1991 (USDA 1991); it identified ecosystem survey units and cataloged soils including assessing erosion hazard based on slope gradient, soil depth, and drainage quality.

Most of the Whetstone and Huachuca Ecosystem Management Areas have deep soils with either alluvium or igneous (granite or rhyolite) parent material (see figure 2 and figure 3). Three climatic classes occur on these ecosystem management areas: High Sun Mild for most of both areas; Low Sun Cold for the central highlands, and Low Sun Mild for small portions of the Huachuca that are alluvium slopes at higher elevation on the west aspect (USDA 1991). High Sun Mild indicates areas where the majority of precipitation is during the months of April to September, during the monsoon season that has the strongest influence at lower elevations. Low Sun Cold and Low Sun Mild are areas of higher elevation where the winter storms have the greatest influence.

Erosion hazard depends on slope gradient, depth of soil, and characteristics of drainage. High-gradient slopes have more risk of surface wash than low-gradient slopes, and deep soils have more risk of landslips or gully erosion than shallow soils (see table 5). Units 146, 147, 240, and 370 are well-drained alluvium soils deposited on low-gradient fans or broad stream valleys; hence, they are rated with slight erosion risk. The other units have moderate to severe risks of erosion due to combinations of deep soils, steep slopes, or both. Unit 490 has moderate to severe erosion risk as it typically occupies large fans of sand and conglomerate that may be prone to gullies. Soils are deep, except for Units 472, 475, and 592 which are shallow and occupy steep rocky slopes.

Table 5. General ecosystem survey (GES) units covering both Huachuca and Whetstone Ecosystem Management Areas

<table>
<thead>
<tr>
<th>GES Unit</th>
<th>Slope (%)</th>
<th>Soil Depth</th>
<th>Parent Material</th>
<th>Erosion Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>0-15</td>
<td>deep</td>
<td>granite alluvium</td>
<td>slight</td>
</tr>
<tr>
<td>146</td>
<td>0-40</td>
<td>deep</td>
<td>alluvium fans</td>
<td>slight</td>
</tr>
<tr>
<td>147</td>
<td>0-15</td>
<td>deep</td>
<td>alluvium fans</td>
<td>slight</td>
</tr>
<tr>
<td>240</td>
<td>0-15</td>
<td>deep</td>
<td>sandstone alluvium</td>
<td>slight</td>
</tr>
<tr>
<td>370</td>
<td>0-15</td>
<td>deep</td>
<td>alluvium valley fill</td>
<td>slight</td>
</tr>
<tr>
<td>472</td>
<td>15-40</td>
<td>shallow</td>
<td>granite hills</td>
<td>moderate</td>
</tr>
<tr>
<td>475</td>
<td>40-80</td>
<td>shallow</td>
<td>granite/rhyolite hills</td>
<td>moderate</td>
</tr>
<tr>
<td>476</td>
<td>60-100</td>
<td>deep</td>
<td>granite hills</td>
<td>moderate</td>
</tr>
<tr>
<td>490</td>
<td>0-25</td>
<td>deep</td>
<td>granite/rhyolite alluvium</td>
<td>severe</td>
</tr>
<tr>
<td>592</td>
<td>40-120</td>
<td>shallow</td>
<td>limestone hills</td>
<td>severe</td>
</tr>
</tbody>
</table>
Environmental Effects

General Effects Common to Both Alternatives

Effects common to alternative 2 (modified proposed action) and the no-action alternative are related to soil compaction, loss of soil productivity, concentrated runoff resulting in erosion and
Chapter 3. Environmental Effects

sediment production, and loss of vegetative ground cover on existing routes. The presence ofoads across the Coronado National Forest has already resulted in negative impacts to the soil
resource. There has been disturbance of the soil resource when the route was established, which
resulted in loss of soil productivity and vegetative cover. With the implementation of either
alternative, there will be a continued disturbance of the soil resource and associated impacts, with
effects remaining the same, increasing, or decreasing. Negative effects are not limited to the road
prism alone but include direct and indirect effects to areas adjacent to the motorized route. Roads
are a major source of sediment and contribute more off-site sediment than any other land
management activity (Gibbons and Salo 1973, Meehan 1991). Soil compaction occurs when soil
particles are pressed together reducing the amount and size of pore spaces between soil particles.
Soils with higher clay content are more susceptible to compaction. When soils are wet, they are
also more susceptible to compaction, and to a greater depth, than when dry. As a result of soil
compaction, a series of additional direct impacts occur to soils, including decreased soil porosity,
increased soil bulk density, reduced infiltration rates, increased surface runoff, increased surface
erosion, reduced nutrient cycling, and reduced plant growth.

Direct and Indirect Effects

Alternative 1 – No Action
The no-action alternative would include keeping the current status of the road system unchanged.
Soil disturbance would continue, with effects either staying the same or increasing over time.

Alternative 2 – Modified Proposed Action
The addition of 56.9 miles of unauthorized roads to the national forest road system is not
expected to cause a significant change in soil resource damage, because these miles already
experience vehicle travel even though they are unauthorized routes. Altogether, the road
segments in question occupy about 125 acres (0.04 percent) of the district area.

Roads added to the system would be maintained to Forest Service standards appropriate to their
maintenance level, as funding and maintenance prioritization allows. These roads would now be
maintained, which may help with some erosion issues. Maintenance and improved drainage
would prevent deeper rutting and ponding that may lead to soil erosion. However, these roads
would also likely experience more travel, and would therefore be more compacted, and more
susceptible to erosion. So, the net change is expected to be minimal.

The Water Erosion Prediction Program model was used to demonstrate the merits of road
decommissioning by showing the difference in erosion between a high-traffic road and a
decommissioned road. The model is a physically based soil erosion model that can provide
estimates of erosion and sediment yield considering the soil texture, climate, ground cover, and
slope (Elliot 2004). Assumptions common to both model runs were native surface road beds and
moderate gradient. Each road segment was run in the model with an engineered drainage ditch,
but the closed segments assumed the ditches had some vegetation cover. Each model road
segment was 200 feet long. A high-traffic road on the Huachuca and Whetstone Ecosystem
Management Areas produce 290 and 179 pounds of sediment per year, respectively. Closed roads
produce 71 pounds of sediment on the Huachuca Ecosystem Management Area and 61 pounds on
the Whetstone Ecosystem Management Area per year. This assumes that resource conditions
improve over time in the manner predicted.
Chapter 3. Environmental Effects

In the long term, soil compaction and erosion from district roads would decrease because of decommissioned miles. Planting may help mitigate issues of surface erosion and infiltration, but over time, most of these roads will revegetate or gradually adopt a profile that is stable.

Altogether 259.17 miles (180.94 of current National Forest System roads maintenance levels 1 through 5 and 78.76 miles of unauthorized roads) are recommended for decommissioning and the majority of these miles are on general ecosystem survey unit 490 which has a severe risk of erosion. The 490 unit within the Sierra Vista Ranger District is associated with large alluvium fans derived from granites or volcanic flow rock. This unit occurs on the margin on the Coronado on relatively shallow slopes of deep soil mantle that may have a tendency to gully.

It is important to note, however, that soil resource damage doesn’t immediately go away just because a road is decommissioned. For example, an eroding road that is decommissioned will still erode unless remediation actions are taken to stop the erosion or until soil resource conditions re-stabilize, which could take many years. In the interim, the erosion could even foreseeably get worse without road maintenance being done to stop it, and until soil condition improves and reaches new stability. So, over time, there would be an improvement to soil resources, but the effects would not be complete and immediate to the road being decommissioned.

For roads for which there will only be a change in maintenance level, but they will still be used, it is not expected that there will be significant changes in road erosion as a result of the change. If the use of a road will become more restricted, it will not be maintained as frequently. So, there will be less soil disturbance from road use, but less maintenance to prevent or fix issues that amplify erosion on and from the road. So, net change is expected to be minimal.

Cumulative Effects

Past, present and reasonably foreseeable actions that are relevant to soil resources are described in table 4. The cumulative effects analysis covers the Santa Cruz and San Pedro watersheds in the Sierra Vista Ranger District and includes projects and activities predicted for ten years into the future.

Grazing currently occurs within the Sierra Vista Ranger District boundaries. Soil compaction may occur in areas more heavily utilized by livestock, such as near water sources. Vegetation at these locations would be more limited and there would be an increased potential for erosion, depending on slope, soil type, and rock fragments, among other factors. It is possible a road could be adjacent to a more heavily utilized area and that the road could be eroding such that conditions at the more heavily utilized area could contribute to increased erosion at that location, but that would be expected to be limited in number and extent. However, in consideration of this potential, the proposed alternative would be expected to have a lesser potential for this than the no-action alternative due to less length of road and the preferential selection of resource degrading roads for decommissioning.

Recreation in the form of motorized and non-motorized use of roads and trails occurs throughout the Sierra Vista Ranger District. Considering that roads will remain available to access recreation trails, there is not expected to be a change to the use of trails as a result of the implementation of either alternative, and therefore no projected change to soil resources on trails.

Fires that have burned through the district include the Soldier Basin Fire of 2013 and the Wildcat Fire of 2012. In the short term after a fire, and particularly if the fire burned at moderate to high severity, there is often an increase in soil erosion due to less ground cover and changes to soil condition. As vegetation re-establishes in the burned area, the land re-stabilizes and the potential...
for erosion starts to decrease. The time that it takes to do this varies. Low burn severity areas may revegetate such that erosion is substantially reduced after one growing season, but high burn severity areas may take many years to re-establish vegetation and soil condition sufficient enough to reduce soil erosion to pre-fire conditions. So, if there are areas of these fires that burned at moderate to high severity, then they may still be eroding at higher rates than what would have occurred before the fire. Roads next to, or going through, these burned areas may have contributed, and may continue to contribute, concentrated flow that can cause additional damage to slopes weakened by not-yet-restored vegetation and soil stability. Decommissioning some of these roads through the modified proposed action is not expected to result in substantial enough decreases in road runoff in a timely enough manner to have significant impacts on erosion on slopes from the Soldier Basin Fire and the Wildcat Fire. However, it would be expected to result in decreased runoff from decommissioned roads for fires that may occur within the next ten years. Since the no-action alternative does not involve the decommissioning of any roads, and the existing length of system roads would therefore be retained, there will be no change in the effects of road runoff on burned areas.

Huachuca Firescape implementation would result in prescribed burning and shrub and tree thinning to reduce fuel load available for wildfires. This would generally result in wildfires that burn less severely and therefore cause less soil resource damage. It may also result in more herbaceous vegetation growing, resulting in improved soil condition. Since less burn severity can be expected from fires, the increased erosion from road runoff, as described above, would not be expected to be as pronounced, though it may still occur to some extent. Otherwise, it is not expected that soil condition effects resulting from either travel management alternative would have significant additional effects to soil resource changes resulting from Huachuca Firescape.

The Rosemont Mine would be thirty miles from the project area. It is not expected that changes in soil resources resulting from the implementation of either travel management alternative would have significant impacts to erosion and other soil resource issues resulting from the planned mining.

Placer mining is the mining of river sediments for mineral resources. Access to river channels may de-stabilize streambanks and therefore increase erosion at those locations. Also, disturbed river channels are more likely to erode. It is not expected that soil resource impacts resulting from the implementation of either alternative for this project would have significant additional impacts to soil disturbance effects occurring from placer mining.

Exploratory drilling for nonrenewable resources may occur within the project area. Access to exploratory drilling sites and the area disturbed for the drilling itself would be expected to result in increases in erosion at these locations. It is not expected that changes in soil resources resulting from the implementation of either travel management alternative would significantly impact disturbance from exploratory drilling.

Abandoned mine sites may experience increased erosion since mineralized rock, topsoil removal, and mineralized soil may prevent the establishment of sufficient vegetation to control erosion from these sites. Also, excessive slopes as may exist at these sites can also increase the probability for erosion. Roads associated with those mines may also have erosion issues that can make erosion from an abandoned mine worse. For example, a road above a mine may have some minor erosion coming off of it due to concentrated flow moving off of the road at a particular location. That erosion continues down onto the mined land below, which is more vulnerable to erosion due to slope, disturbed condition, and lack of vegetation, and the erosion then quickly worsens and becomes a gully going down the slope. Therefore, decommissioning some of these
Chapter 3. Environmental Effects

roads may help reduce this erosion over time. Over the years, as the soil condition of the road stabilizes, erosion coming off of the road would decrease, and so the potential for eroding into a mined slope declines. Existing gullies, however, would require a more active remediation to resolve damage already made through erosion. In consideration of the effects associated roads can have with abandoned mines, decommissioning roads through the proposed alternative would be expected to reduce road-amplified erosion on mine slopes over time. Since the no-action alternative does not involve decommissioning any roads, there would be no such benefit through this alternative.

A U.S. Army proving ground special use permit would allow access by the U.S. Army for designated purposes and may involve some disturbance and compaction of the soil resource which could contribute to increased erosion. Any such effects are expected to be minor on a watershed scale. It is not expected that changes in erosion and soil condition resulting from the implementation of either travel management alternative would have significant additional impacts to soil resource issues resulting from U.S. Army proving ground activities.

Range water developments may help improve the distribution of livestock on allotments on the project area. This may result in reductions in compaction over time in some areas that may be over-utilized by livestock, which can reduce the potential for erosion. The actual installation of the range water developments would result in short term soil disturbance from access to the project location and from the physical excavation of trenches for buried pipeline (as applicable). It is not expected that changes in soil erosion and other soil resource changes resulting from either travel management alternative would have significant additional impacts to soil resource effects from range water developments.

Water Resources

Affected Environment

Surface Water
The Arizona Department of Environmental Quality (ADEQ) is the regulating authority for water quality in Arizona. Every two years, the department is required by the Clean Water Act to report on surface water quality throughout the state with determination of standards met. The report is submitted to the Environmental Protection Agency (EPA) for approval. The Arizona Final 2016 Integrated 305(b) Assessment and 303(d) Listing Report, the latest to have EPA approval, indicates most of the waters on the Sierra Vista Ranger District have not been fully assessed. However, on Huachuca Ecosystem Management Area, Parker Canyon Lake has been determined to be impaired for mercury in fish tissue. Also, several creeks draining to Sonoita Creek have been assessed and have been determined to be impaired. Harshaw Creek is impaired due to copper and pH. Alum Gulch is impaired due to low pH, zinc, copper, and cadmium. Three R Canyon is impaired due to cadmium, beryllium, copper, zinc, and pH. Humbolt Canyon is impaired due to cadmium, copper, zinc, and pH. Lastly, Cox Gulch is impaired due to cadmium, copper, beryllium, zinc, and pH. Sonoita Creek itself, for a tested section located south and west of the town of Patagonia, is impaired for zinc and low dissolved oxygen (ADEQ, 2016). Natural mineral deposits, a long history of mining, and geology and hydrology of the area are all likely major culprits for impairments of these streams. Road sediment may also be a contributor. There are no impaired streams or lakes indicated for the Whetstone Ecosystem Management Area. More information can be found on ADEQ’s website at http://gisweb.azdeq.gov/arcgis/emaps/?topic=assessed. The Huachuca Ecosystem Management
Area is in the Santa Cruz and San Pedro watersheds. The Whetstone Ecosystem Management Area is in the San Pedro watershed. Factors of impairment listed in 303(d) for the San Pedro and Santa Cruz Rivers, which are not located on the Sierra Vista Ranger District but receive water from drainages coming off of Sierra Vista Ranger District, are heavy metals, dissolved oxygen, and \textit{E. coli} bacteria (ADEQ, 2016), which are not typically primarily attributed to sediment from National Forest System roads.

**Watershed Condition**

In 2010, a national effort was launched to assess the condition of all 6th code watersheds on National Forest System lands. 6th code watersheds are typically 10,000 to 40,000 acres in size. Twelve indicators were assessed including condition of: water quality, water quantity, aquatic habitat, aquatic biota, riparian/wetland vegetation, road and trail network, soil, fire regime or wildfire effects, rangeland vegetation, terrestrial invasive species, forest cover, and forest health. Each indicator was assessed a numerical score of 1 to 3 based on its condition, with 1 meaning good condition, 2 meaning fair condition, and 3 meaning poor condition.

Each 6th code watershed was then given an overall rating of functioning properly, functioning at risk, or functionally impaired based on the indicator scores discussed in the prior paragraph. The condition of most 6th code watersheds on the Huachuca Ecosystem Management Area is functioning at risk. The condition of most 6th code watersheds on the Whetstone Ecosystem Management Area is functioning properly. See figure 4 below (USDA 2011), which can be found at https://apps.fs.usda.gov/wcatt/.

![Figure 4. Watershed Condition Framework map for both the Huachuca and Winchester Ecosystem Management Areas](image)

On the Huachuca Ecosystem Management Area, common issues attributed to the rating of “functioning at risk” are aquatic habitat, aquatic biota, terrestrial invasive species, water quantity, road and trail condition, and fire regime and wildfire effects. On the Whetstone Ecosystem Management Area, common issues attributed to watersheds that are “functioning at risk” include fire regime and wildfire effects, which rated as poor for all “functioning at risk” watersheds on the Whetstones. Also, riparian and wetland vegetation, water quantity, soil condition, aquatic habitat, road and trail condition, and range vegetation were commonly listed as only in fair condition.
Although some of these indicators are not likely to be greatly improved through travel management, road and trail condition was certainly one of the reasons for the decision to change the designated use of some roads or decommission them through travel management. So, although road and trail condition would be expected to improve slowly due to decommissioning, unless remediation actions are taken, it can be expected that this indicator would improve with time. There may be benefits to wetland and riparian vegetation over time since one of the factors considered for decommissioning or restricting the use of a road was whether it was located such that it was causing harm to wetland or riparian areas. If the road is decommissioned, riparian or wetland vegetation can re-establish over time. Also, aquatic habitat may improve over time with less sediment introduction from decommissioned roads and improved riparian vegetation.

Road Interactions with Streams

The road network on the Sierra Vista Ranger District, has a certain footprint that is part of the channel form, function, and water quality. The modified proposed action will change that dynamic by small degrees on a district-wide basis, mostly through decommissioning of some resource degrading or unnecessary roads. Road decommissioning does not immediately result in a total reduction of erosion just because it is decommissioned. Erosion and sediment delivery to streams would be expected to continue to occur unless remediation actions are taken or until the resource condition improves naturally, which could take years.

The improvement of unauthorized roads would encourage more traffic and increase the sediment produced by the roads. Road traffic and maintenance accounts for 68 percent of sediment from road surfaces according to a study in Montana by Sugden and Woods (2007). Bringing a road into maintenance standard may be a positive if poor surface or drainage is a factor in rutting or ponding that facilitates sediment runoff from roads. If such a road segment is part of a stream crossing or is close to a stream, sediment delivery to the channel will be increased. So, bringing the road into a maintenance standard may help to address this increased sediment delivery through the installation of improved drainage and by addressing erosion issues occurring on the road.

Environmental Effects

General Effects Common to Both Alternatives

The primary effect to water quality from the motorized route system is sedimentation from road erosion. Researchers (for example, Gibbons and Salo 1973; Meehan 1991) have established roads are a major source of sediment delivered to streams in otherwise relatively undisturbed watersheds, such as forests and rangelands. Sediment from roads can result in adverse effects to streams and aquatic habitat (Meehan 1991; Dissmeyer 2000; Gucinski et al. 2001; MacDonald and Stednick 2003).

When roads cut across hillsides, they often intercept surface and subsurface water flow. This flow is then channeled down the road surface or road ditches or across the road where it picks up sediment and delivers it to stream channels. Increased deposits of sediment into the drainage network of a watershed can come from roads and trails that are directly and indirectly connected to a channel.

A motorized route system can affect water quality directly through the physical crossing of a stream by a route and indirectly through the connectivity of the road system to the drainage network. The further away a road is from a stream channel, the less risk there is of direct deposits of sediment into the drainage. Literature supports that disturbance within 300 feet of streams has
the greatest potential to impact water quality, via overland flow (Burroughs and King 1989; Belt et al. 1992). When a road is close to a stream channel, there is less available vegetation and land surface to buffer or capture the transport of eroded material and other pollutants that may become mobilized during runoff events. Roads constructed near a stream pose a higher risk to water quality, and they can also modify hydrologic response of streamflow from runoff events. Because road and trails intercept and concentrate water, the closer they are to a drainage channel, the quicker water is delivered to the stream channel, potentially increasing runoff response.

Assumptions in the Analysis

- The modified proposed action involves the decommissioning of roads to vehicle use by the public and not the physical removal of roads. It typically can take more than 20 years for unused roads to revegetate to background conditions, if traffic is successfully eliminated. The no-action alternative would not change the current roads situation on the district. Road length and category of use would remain the same.

- Decommissioning should encourage a revegetated condition. In some cases, routes would not disappear from the landscape until additional actions were taken to decompact soils and revegetate the area. These routes would continue to be a source of sediment and erosion to some degree. Soil compaction can reduce or eliminate water infiltration, resulting in accelerated runoff that increases the potential for soil erosion.

- The modified proposed action would change the designation of a number of roads to make the use more or less restricted. For the purposes of this soil and water analysis, any road not decommissioned would be considered open for traffic in regards to impacts. The road bed would remain in place, soils would remain compacted, and the disturbed area would be a source of potential erosion and water quality impacts. On roads where there is less traffic, there might be a reduction in loose sediments and dust, but this reduction would not be significant. Over time, some of these routes should revegetate; however, soil compaction and changes in surface hydrology would not be completely mitigated.

- For the purposes of the soil and watershed analysis, roads which are decommissioned would remain in place and be a source of soil and water impacts in the short term. In the long term, soil and watershed conditions are expected to gradually improve.

- The reduction or elimination of vehicle traffic on a road or trail near or crossing a stream would result in less sediment delivered from the road to the stream over time. This relates to the reduction in the amount of loose material on the road surface and also the increase in the amount of vegetative litter and other cover on the road surface. Erosion rates from a decommissioned road may decrease to near background levels as the density of vegetation on the surface of the road increases (Dissmeyer 2000).

- There would not be any change in the amount of motorized traffic between the no-action alternative and modified proposed action because alternative routes would be used.

Direct and Indirect Effects

**Alternative 1 – No Action**

Selecting the no-action alternative would mean none of the unauthorized routes would be brought in to the Coronado National Forest road system. It is expected that they would continue to be used to the same extent that they currently are. They would have the same, or possibly increasing, negative effects to soil and water over time.
Chapter 3. Environmental Effects

Overall, effects to watershed conditions and water quality would be long term, localized, and dispersed across the two ecosystem management areas. The no-action alternative would therefore not result in significant changes to watershed conditions or water quality.

**Alternative 2 – Modified Proposed Action**

Alternative 2, the modified proposed action, would result in 56.9 miles of unauthorized routes becoming system roads. These roads could then be maintained to standards appropriate for the maintenance level of the road, based on funding and maintenance priorities. The unauthorized routes are currently being used by motor vehicles, receive no road maintenance, and often have poor drainage; the net change would not cause additional negative effects to water resources, and may even cause some improvements due to less sediment draining off of these roads and entering streams.

A total of 259.17 miles of roads of all classifications would be decommissioned. On the Huachuca Ecosystem Management Area, 141 road crossings are on roads that would be decommissioned. In addition, 28 crossings might see a reduction in traffic as they would come under more restricted use; for example, open authorized restricted or maintenance level 1. These changes would account for about 29 percent of the total crossings in intermittent or perennial channels or water bodies in the Huachuca Ecosystem Management Area and 6 percent in the Whetstone Ecosystem Management Area.

Decommissioning, or restricting motorized use on, stream crossings would reduce the potential for surface water contamination from vehicles. Decommissioning, or restricting use on, roads with stream crossings would result in improved water quality and reduced sediment delivery to channels in localized areas, but it is unlikely these benefits would have significant effects to water quality of the Santa Cruz or San Pedro Rivers.

Negative effects on surface water quality due to the modified proposed action are expected to be less than current condition because the miles of road within 300 feet of natural channels and the number of road crossings of natural channels would be reduced. Reducing the road-stream connectivity would improve water quality by decreasing sediment input and associated runoff volume.

Reducing the miles of roads open to motorized use, assigning a more restrictive use to other roads, and adding some unauthorized routes to the national forest road system would result in localized benefits from reduced erosion. Depending on the length of roads involved within a 6th code watershed, the resource damage attributed to those roads, the level of improvement expected, and the amount of that 6th code watershed that is within the Sierra Vista Ranger District, there may be some improvements to the condition of that 6th code watershed over time.

Alternative 2 would not affect groundwater in the project area. The potential for contamination of unconfined aquifers from leaks or spills of fuels or engine fluids would remain the same because the roads proposed for addition are already being used by motor vehicles, and the frequency of this use is not expected to change under alternative 2.

**Cumulative Effects**

Past, present, and reasonably foreseeable actions relevant to water resources are described in table 4. The spatial boundary for the cumulative effects analysis is the Santa Cruz and San Pedro watersheds within the boundaries of the Sierra Vista Ranger District. The temporal boundary includes projects and activities predicted for ten years into the future.
Grazing currently occurs within the Sierra Vista Ranger District boundaries. It is not expected that any areas of road erosion amplified by an adjacent area of higher grazing utilization, located close to a stream channel, would contribute such additional sediment that stream water quality would be significantly impacted over what may already occur, regardless of whether the no-action alternative or modified proposed action is selected.

Recreation in the form of motorized and non-motorized use of roads and trails occurs throughout the district. Considering that roads will remain available to access all recognized recreation trails, there is not expected to be a change to the use of trails as a result of the implementation of either alternative, and therefore no projected change to water resources on these trails due to that recreation.

Fires that have burned through the Sierra Vista Ranger District include the Soldier Basin Fire of 2013 and the Wildcat Fire of 2012. It can also be reasonably expected that other fires may occur within the project area over the next ten years. In the short term after a fire, and particularly if the fire burned at moderate to high severity, there is often an increase in soil erosion due to less ground cover and changes to soil condition. This increase in erosion impacts downstream water quality. Also, water quantity in drainages can be impacted since less water soaks into the ground, and drainage water is carrying additional sediment and debris. As vegetation re-establishes in the burned area, the land re-stabilizes and the potential for erosion starts to decrease. Stormwater flows begin to return in quality and quantity to a more pre-fire condition. The time that it takes to do this varies. Low burn severity areas may revegetate such that erosion is substantially reduced and water infiltration into the ground is substantially improved after one growing season, but high burn severity areas may take many years for this to occur. So, if there are areas of the 2012 and 2013 fires that burned at moderate to high severity, then they may still be eroding at higher rates than what would have occurred before the fire, and water quantity and quality downstream may still be impacted. Roads can be starting points for erosion problems due to concentrated flow coming off of the road. Damaged soil conditions on adjacent slopes from a fire result in a resource base that is more susceptible to erosion. Therefore, increases in erosion on these slopes is frequently observed after a fire. So, decreasing the length of roads would reduce the number and magnitude of concentrated flow locations over time. As a result, stream sediment contributions that occur as a result of this erosion would decline over time with the proposed alternative since overall road length will decrease. Since the no-action alternative does not result in any change in road designations or length, these benefits would not be expected.

Current mining, mining to be commenced within the next ten years, and abandoned mine sites may all have impacts on water quality depending on size and type of the operation, location, proximity to stream, land slope, hydrology of the area, wastewater treatment, and minerology and geology of the area. If the mining is such that water quality standards are barely being met or exceeded for some contaminants, it is possible for slight water quality changes over time as may be attributed to sediment washed from roads through travel management to have an effect. In consideration of that, it is possible that having less sediment washed from roads over time (as would be the case with the modified proposed action) would help to achieve water quality standards where they were barely being met or only slightly in exceedance prior to the implementation of the modified proposed action.

Current mining and mining to be commenced within the next ten years commonly also require water inputs. The quantity of water required depends on the type of mining and scale of operation. It is not expected that the selection of either alternative for this project would have
significant additional impacts on water quantity over what is occurring with current and future mining.

A U.S. Army proving ground special use permit would allow access by the U.S. Army for designated purposes, and may involve soil disturbance, which may cause some sediment transport to streams, depending on the use of the land, land slope, vegetation, and other factors. However, this disturbance is normally expected to be minimal and incorporate best management practices to control erosion and prevent water quality issues. It is therefore not expected that changes in water quality resulting from the implementation of either travel management alternative would have significant additional impacts to any minor water quality issues as may result from U.S. Army proving ground activities.

Range water developments may help improve the distribution of livestock on allotments on the project area. This may result in reductions in compaction over time in some small areas that may be over-utilized by livestock, which can reduce the potential for erosion from these areas, and the potential for sediment from that erosion to be introduced into streams, depending on slope of the compacted area, rock fragments, and distance to a stream. However, the changes to water quality resulting from this would not be expected to be significant due to relative small size of these areas as compared to watershed size, the relatively small amount of sediment that may have run off from these areas and reached a stream to begin with, and the relatively small number of areas where any significant sediment runoff may have been occurring. It is therefore not expected that any changes to water quality as a result of the implementation of either travel management alternative would have significant additional impacts.

The actual installation of the range water developments would result in short-term soil disturbance from access to the project location and from the physical excavation of trenches for buried pipeline (as applicable), which can lead to sediment introduction into streams. However, since best management practices are commonly used to prevent water quality issues and higher slopes are generally avoided anyway for pipelines, significant sediment runoff from the pipeline installation itself is expected to be unlikely. It is not expected that changes in water quality resulting from either travel management alternative would have significant additional impacts to water quality effects from range water developments.

Huachuca Firescape implementation would result in prescribed burning and shrub and tree thinning to reduce fuel load available for wildfires. This would generally result in wildfires that burn less severely and therefore cause less soil resource damage. Less soil damage means water infiltrates better into the soil, and there is at least some residual vegetation, so there is less runoff and less sediment carried with that runoff. The benefits in regards to smaller flood flows and less topsoil running downstream with those flood flows can be orders of magnitude better as compared to a catastrophic wildfire where flood flows can be such that they can damage infrastructure such as bridges, culverts, roads, and buildings. It is not expected that water quality changes from either travel management alternative would have significant additional effects to flood flow changes resulting from Huachuca Firescape.

Vegetation

Affected Environment

Elevations on the Sierra Vista Ranger District range from approximately 3,800 feet to nearly 9,470 feet. The landscape is equally varied and includes mountains, hills, plains, plateaus, deep
canyons, and escarpments. The vegetation communities of the district reflect these diverse terrains and elevations with a variety of ecosystems.

There are eleven vegetation communities (excluding lakes) and sparsely vegetated areas such as rock outcrops:

1. Desert communities
2. Semi-Desert Grassland
3. Plains Grassland
4. Interior Chaparral
5. Juniper Grass
6. Pinyon-Juniper Evergreen Shrub
7. Madrean Encinal Woodland
8. Madrean Pine – Oak Woodland
9. Mixed-Conifer Forest
10. Ponderosa Pine – Evergreen Oak
11. Riparian communities

<table>
<thead>
<tr>
<th>Vegetation Community</th>
<th>Approximate Acres on the Sierra Vista Ranger District</th>
<th>Approximate Percent of the District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert Communities</td>
<td>8,037</td>
<td>2.7</td>
</tr>
<tr>
<td>Semi Desert Grasslands</td>
<td>35,408</td>
<td>11.9</td>
</tr>
<tr>
<td>Plains Grassland</td>
<td>22,762</td>
<td>7.6</td>
</tr>
<tr>
<td>Interior Chaparral</td>
<td>1,035</td>
<td>0.3</td>
</tr>
<tr>
<td>Juniper Grass</td>
<td>16,487</td>
<td>5.5</td>
</tr>
<tr>
<td>Pinyon-Juniper Evergreen Shrub</td>
<td>13,470</td>
<td>4.5</td>
</tr>
<tr>
<td>Madrean Encinal Woodland</td>
<td>163,592</td>
<td>54.8</td>
</tr>
<tr>
<td>Madrean Pine-Oak Woodland</td>
<td>26,337</td>
<td>8.8</td>
</tr>
<tr>
<td>Mixed-conifer Forest</td>
<td>2,260</td>
<td>0.7</td>
</tr>
<tr>
<td>Ponderosa Pine – Evergreen Oak</td>
<td>3,059</td>
<td>1.0</td>
</tr>
<tr>
<td>Riparian areas</td>
<td>1,308</td>
<td>0.4</td>
</tr>
<tr>
<td>Water or sparsely vegetated (for example, rock outcrops)</td>
<td>4,940</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Approximately 93 percent of the Sierra Vista Ranger District is made up of grasslands and woodlands. The remaining 8 percent is made up of Desert Communities, Riparian Communities, Mixed-conifer Forests, Ponderosa Pine – Evergreen Oak Communities, and water or sparsely vegetated areas.
Environmental Effects

Direct and Indirect Effects
Acres occupied by roads and motorized trails lack the beneficial effects of vegetation on soil stability. Compacted surfaces, such as dispersed campsites, reduce or eliminate water infiltration, increase surface runoff, and reduce revegetation potential. Surface runoff can cause soil loss in plant communities which makes the site less suitable for plant persistence and recruitment. Erosion on unstable soils can remove vegetation which can then create gullies and rills, or worsen those that are presently there. This may occur on existing roads and trails and also within the 300-foot dispersed camping corridor.

Alternative 1 – No Action
The no-action alternative does not decommission roads or restrict their use. Therefore, existing conditions would continue, with a majority of the effects occurring within the 300-foot corridor for dispersed camping. Approximately 17 percent (51,224 acres) of the Sierra Vista Ranger District would potentially be affected by motorized use in the 300-foot corridor under the no-action alternative. The Plains Grassland and the Interior Chaparral vegetation communities have about 36 and 43 percent, respectively, of their total acres potentially affected by the 300-foot corridor; the riparian community has approximately 67 percent of its acres affected. Affected areas in the remaining vegetation communities range from 8 to 20 percent.

The acres in the 300-foot corridor are potentially affected by soil compaction from dispersed camping; this can reduce or eliminate water infiltration and increase surface runoff, reducing revegetation potential. Surface runoff increases the potential for soil erosion and soil loss in the adjacent plant communities. These effects have been taking place since the 1986 Forest Plan and before. It is not anticipated that an increase in dispersed camping would occur, so the present effects to vegetation communities should remain the same under this alternative.

Alternative 2 – Modified Proposed Action
Under alternative 2 (modified proposed action), the 300-foot corridor applies to open roads, maintenance levels 2 through 5. The corridor does not apply to restricted system roads, maintenance level 1 roads, motorized trails, or roads proposed for decommissioning. The modified proposed action has a number of existing unauthorized routes that will be added to national forest road system. It also proposes decommissioning a number of system roads, changing them to maintenance level 1, or classifying them as restricted system roads. Although restricted system roads and maintenance level 1 roads are not open to motorized public use, they are still a part of the national forest road system. However, they are not included in the 300-foot corridor calculations.

The effect of open system roads, maintenance level 2 through 5, is measured by the number of acres open to such uses as dispersed recreation. The modified proposed action would have a net decrease of approximately 12,565 acres affected by motorized travel and a net decrease of 159.98 miles of roads of all classifications over the no-action alternative. The 12,565 acre reduction in this alternative is nearly 4 percent of the Sierra Vista Ranger District, leaving approximately 13 percent of the total acres on the district potentially affected by motorized travel.

The open plains grasslands and the riparian communities would have the largest reduction in percent acres affected for their respective communities. The reduction in acres affected for the plains grassland type might have the most beneficial effect since most of these areas are readily accessible to motor vehicles due to the lack of woody species to prevent travel. Overall, the
decrease in acres affected by motorized travel should have a large scale benefit to all vegetation communities by decreasing the amount of acreage that vehicular disturbance would be allowed to occur in. The revegetation of these areas will help reduce runoff and decrease erosion. Table 7 shows the change in road miles and acres by vegetation community.

Summary of Effects
The difference in effects between the no-action alternative and alternative 2, the modified proposed action, is measurable. Acres affected by the no-action alternative occupy approximately 17 percent of the total acres on the district. The acres affected by the modified proposed action alternative occupy approximately 13 percent of the total acres on the district. This is a net decrease of approximately 4 percent or 12,565 acres (see table 7). The net decrease of 12,565 acres of vegetation affected from the no-action alternative compared to modified proposed action should be beneficial to vegetation communities. These areas will have the opportunity for roads and parking areas to revegetate, thus reducing the amount of runoff and soil erosion and deposition occurring in these areas. The reduction in runoff and soil erosion and deposition into the neighboring vegetation communities will benefit vegetation by allowing young plants to become established and promote better soil infiltration with reduced compaction effects.

Table 7. Changes in road mileage and acres affected by the roads in their respective vegetation communities for alternative 2, the modified proposed action

<table>
<thead>
<tr>
<th>Vegetation Community</th>
<th>Total Decrease in Miles</th>
<th>Total Decrease in Acres Affected</th>
<th>% Decrease in Acres Affected by Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert Communities</td>
<td>5.0</td>
<td>363.6</td>
<td>4.5</td>
</tr>
<tr>
<td>Semi Desert Grasslands</td>
<td>26.0</td>
<td>1,454.5</td>
<td>4.1</td>
</tr>
<tr>
<td>Plains Grassland</td>
<td>36.0</td>
<td>2,618.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Interior Chaparral</td>
<td>2.1</td>
<td>154.9</td>
<td>15.0</td>
</tr>
<tr>
<td>Juniper Grass</td>
<td>11.0</td>
<td>800.00</td>
<td>4.9</td>
</tr>
<tr>
<td>Pinyon-Juniper Evergreen Shrub</td>
<td>8.0</td>
<td>581.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Madrean Encinal Woodland</td>
<td>68.0</td>
<td>4,945.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Madrean Pine-Oak Woodland</td>
<td>17.0</td>
<td>1,36.4</td>
<td>4.7</td>
</tr>
<tr>
<td>Mixed-conifer Forest</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ponderosa Pine – Evergreen Oak</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Riparian areas</td>
<td>5.2</td>
<td>378.2</td>
<td>28.9</td>
</tr>
<tr>
<td>Sparsely Vegetated</td>
<td>0.5</td>
<td>32.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Total</td>
<td>173.1</td>
<td>12,565.8</td>
<td></td>
</tr>
</tbody>
</table>

Cumulative Effects
Past, present, and foreseeable future activities considered in the cumulative effects analysis can be found in table 4. The spatial boundary for the cumulative effects analysis falls within the boundaries of the Sierra Vista Ranger District and the temporal boundary includes projects and activities predicted for ten years into the future.

Alternative 1 – No Action
The no-action alternative does not decommission roads, and while use of unauthorized routes is prohibited, it would likely continue at current levels. Therefore, existing conditions would continue, with a majority of the effects occurring on existing roads and trails and within the 300-
foot corridor for dispersed camping. Approximately 17 percent (51,224 acres) of the Sierra Vista Ranger District would potentially be affected by motorized use in the 300-foot corridor under the no-action alternative. The Plains Grassland and the Interior Chaparral vegetation communities have about 36 and 43 percent, respectively, of their total acres potentially affected by the 300-foot corridor; the riparian community has approximately 67 percent of its acres affected. Affected areas in the remaining vegetation communities range from 8 to 20 percent.

**Alternative 2- Modified Proposed Action**

Direct and indirect effects to vegetation are only minimized with best management practices. However, to date there is not any know significant cumulative effects to vegetation with respect to ongoing and foreseeable projects, and this would include the current road system. The reduction in acres affecting vegetation proposed in the modified proposed action would further benefit vegetation communities by allowing more acres to re-vegetate over time and reduce the potential for invasive species dispersal. It is not anticipated that the modified proposed action combined with the known past, present and reasonably foreseeable actions would have a cumulative effect on the vegetation resource.

**Huachuca Firescape** – The landscape scale vegetation management project can effect vegetation by removing or reducing woody and herbaceous plants. These effects are generally conducted with a prescription that would encourage a positive ecological condition for the project area since the purpose is to promote restoration of vegetation resources on a landscape scale. Some projects require cross-country travel which can lead to soil compaction and loss of vegetation. These are generally short-term effects, and they are usually minimized by implementing best management practices for off-road vehicles. The short-term effects of the implementing of Firescape projects do not contribute to the cumulative effects of the project.

**Mining (Production and Exploratory)** – There are several exploratory projects listed on the schedule of proposed actions for the Sierra Vista Ranger District and in table 4. It can also be assumed that additional exploratory projects will be proposed in the future. These projects are either currently being analyzed through the National Environmental Policy Act process or will be in the near future, their effects to resources are also still being analyzed. In general, these projects can affect vegetation by compacting soil, removing vegetation, and contributing to increased erosion. However, these projects are generally small, and the vegetation communities affected would represent a very small percentage of the community across the Sierra Vista Ranger District. The projects would also reclaim disturbed areas and implement best management practices.

The modified proposed action would have a net decrease of approximately 12,565 acres affected by motorized travel. This would have a beneficial long-term effect on vegetation communities in the district, including riparian, wetland, and upland vegetation types.

**Invasive Species**

**Introduction**

The Forest Service defines invasive species as “alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Executive Order 13112). Alien refers to species that are nonnative to the ecosystem they have infested. Roads in general are one of the most effective modes of dispersal for invasive weed seeds and vegetative propagules (Clark 2003; Cal-IPC 2012; DiVittorio et al. 2012). Weeds can be spread by vehicles traveling from other regions and from infestations within a national forest or district. Roads in
remote areas are especially concerning because invasive species can establish and spread undetected until infestations are large and more difficult to control. Other Required Direction

The following objectives are presented in the Forest Service National Strategic Framework for Invasive Species Management (USDA Forest Service 2013) and the Guidance for Invasive Species Management in Region 3 (USDA Forest Service 2014):

- prevention – actively prevent the introduction and spread of invasive species into U.S. forest and rangeland ecosystems
- detection – find, identify, and quantify new infestations of aquatic or terrestrial invasive species prior to establishment as sustainable, expanding populations
- control and management – identify and prioritize which invasive species will be controlled and implement effective management plans for priority species
- rehabilitation and restoration – attempt to rehabilitate or restore degraded areas to an appropriate proper ecological function that will prevent new invasive species infestations or prevent reoccurrence of invasive species after removal

Affected Environment

In 2011, the Monument Fire and several smaller fires (Arlene, Duke, Duquesne, North Tank, and Wildcat) occurred in the Huachuca Mountains on the Sierra Vista Ranger District. In 2013, the Soldier Basin Fire occurred in the Patagonia Mountains. Fire can offer weeds the opportunity to establish or increase due to the reduction in cover and competition from native vegetation caused by the fire itself, as well as soil disturbance and transport of seeds by fire-fighting activities (Clark 2003; Cal-IPC 2012). Post-fire invasive plant surveys were conducted following the 2011 and 2013 fires. The results indicate Lehmann lovegrass (Eragrostis lehmanniana), natal grass (Melinis repens syn. Rhynchelytrum roseum), Johnsongrass (Sorghum halepense), and yellow bluestem (Bothriochloa ischaemum) are the most serious invasive exotic weeds on the district (Elliott 2011 and 2013). There are other nonnative invasive species on the Sierra Vista Ranger District (for example, tree of heaven, Ailanthus latissimus, and giant reed, Arundo donax), but the infestations are small and they are unlikely to be spread by roads.

The 2011 survey also found a small infestation of buffelgrass (Cenchrus ciliaris) at Parker Canyon Lake that appeared to have been brought in with fill dirt during road construction. The infestation was removed and subsequent monitoring failed to detect any new plants. Buffelgrass is cold-intolerant, and at approximately 5,200 feet elevation, the seeds and seedling apparently could not persist. Although this is the only known occurrence of buffelgrass on the Sierra Vista Ranger District so far, suitable habitat for buffelgrass (below approximately 4,500 feet elevation) exists, as well as abundant seed sources on Arizona State Highway 90 and across the international border with Mexico.

Environmental Effects

Direct and Indirect Effects

The Sierra Vista Ranger District has several invasive, nonnative plants with the potential to be spread by roads and trails. Since roads represent major transmission corridors for the spread of nonnative seeds and vegetative propagules, this analysis assumes that fewer miles of road reduce opportunities for the establishment or increase of invasive plant infestations.
Alternative 1 – No Action

The no-action alternative would increase the potential spread of invasive exotic plants more than the modified proposed action because it allows for the most miles of open, authorized National Forest System roads, and would not decommission any roads.

Alternative 2 – Modified Proposed Action

Of the two alternatives, the modified proposed action would reduce the potential spread of invasive exotic plants more than the no-action alternative because it has the lowest number of miles of open, authorized National Forest System roads and decommissions the greatest number of unauthorized routes (the no-action alternative decommissions no roads). The designation of motorized trails under the modified proposed action (alternative 2) could potentially increase dispersal of invasive plants since off-road vehicles typically create more disturbance than vehicles confined to roads. However, the number of miles is small compared to the total number of miles of roads on the Sierra Vista Ranger District, and since these trails were formerly designated as open roads or were unauthorized routes, they were likely already being used by off-road vehicles. Likewise, designating open and unauthorized routes as non-motorized trails would be unlikely to increase the spread of invasive weeds because they represent so few miles and exclude motorized uses which are known weed vectors.

Cumulative Effects

Past, present, and foreseeable future activities considered in the cumulative effects analysis can be found in table 4. The spatial boundary for the cumulative effects analysis falls within the boundaries of the Sierra Vista Ranger District and the temporal boundary includes reasonable foreseeable projects and activities predicted for ten years into the future.

Any of these activities may create conditions conducive to the establishment or spread of invasive nonnative plants due to soil disturbance and the removal of native vegetation cover and competition. These activities also have the potential to transport weed seeds and vegetative propagules by vehicles, animals, or foot traffic. The Forest Service has provided direction on what can be anticipated in terms of the effects of climate change (USDA Forest Service 2012). These changes may provide opportunities for nonnative species to invade or spread due to soil disturbance, reduced competition from native species, and adaptation to warmer and drier conditions. Past, present, and future actions, when combined with travel management decisions (either the no action or the modified proposed action) would not significantly increase the potential spread of invasive nonnative plants on the Sierra Vista Ranger District. Therefore no cumulative effects are expected.

Scenery

Affected Environment

The 1.7 million acre Coronado National Forest is comprised of 12 “sky island” mountain ranges which offer high quality scenery and a diverse range of settings. Coronado visitors have opportunities to sightsee along forest roads, camp in developed and back-country camping areas, hike, rock climb, mountain bike, and enjoy extraordinarily high scenic quality in predominantly undeveloped landscapes. The results of a the 2012 National Visitor Use Monitoring survey show that nearly 58 percent of visitors to the Coronado National Forest participate in viewing nature features (scenery), that this activity was the second most popular primary activity after hiking and walking, and that 23.4 percent of visitors travel on a forest scenic byway.
The scenic, natural landscapes of the Sierra Vista Ranger District are important to local residents and forest visitors, and implementation of the 2013 Travel Management Rule would provide long-term benefits to scenic resources. Without the project, resource damage from user-created roads and dispersed use would continue to diminish scenic integrity, and needed roads not currently on the official road system would not be built or maintained to standard. However, the proposed project would also implement recommendations which may negatively impact scenic quality.

The landscape character of the Sierra Vista Ranger District, which includes the Huachuca and Whetstone Ecosystem Management Areas, includes low-elevation deserts and grasslands, mid-elevation chaparral and oak woodlands, and high-elevation pine-oak, ponderosa pine, and mixed-conifer forests. There is riparian vegetation along many drainage bottoms at all elevations. Landforms vary from relatively gentle slopes in the foothills to steep and rugged mountains and sharply carved canyons.

Many areas on the district are known for their impressive scenery, including Miller Peak Wilderness (which tops out at 9,466 feet elevation), Parker Canyon Lakes (a popular recreation area), and the golden grasslands around Sonoita and the San Rafael Valley.

Although nature and scenery are primary attractions for visitors, the valued landscape also includes a system of 744.66 miles of roads (most of which provide access to the forest and recreation opportunities), a network of hiking trails (including the Arizona National Scenic Trail), developed recreation areas (including campgrounds, trailheads, and a marina), and historic sites. Arizona Department of Transportation designated State Routes 82 and 83 from I-10 to Nogales as “Patagonia-Sonoita Scenic Road” in 1985. The scenic road winds through the towns of Sonoita and Patagonia, and travelers enjoy Coronado National Forest scenery along the route.

Modifications to the valued landscape character include various past and present land uses (such as fuelwood harvesting, vegetation management, and grazing) which are visible in some areas but have little impact on scenic quality, wildfires, which have negatively impacted scenery in some areas but are recovering, facilities (communication and administrative sites) which are negative visual elements but are relatively small and isolated, unmanaged recreation activities (such as off-highway vehicle use) which has resulted in bare soils and impacts scenery in some areas, and U.S. Border Patrol facilities (including walls, fences, surveillance towers, and major roadways), some of which are minor impacts and others dominate the scenery. Public roads and trails are generally not considered negative visual elements because they provide access to the forest. Public recreation sites (campgrounds, trailheads, historic sites, etc.) are evident, but are part of the valued landscape and have not resulted in substantial impacts to scenic resources, so these facilities and not usually considered negative impacts. Mines and quarries have degraded scenery in some locations.

Current direction in the 1986 Forest Plan includes the following forestwide standards and guidelines for visual resource management (page 28):

- maintain and protect the visual integrity of the landscape
- rehabilitate or enhance the existing visual quality in the process of accomplishing other resource management practices

The existing condition of scenic resources on the Sierra Vista Ranger District is good. Although effects from human modifications are evident in many areas outside of wilderness, visitors are
treated to mostly natural landscapes that are markedly different from the urban setting where their journey began. The Miller Peak Wildernesses offers scenery that is generally in excellent condition.

The proposed project lies within Management Areas 1, 3, 3A, 4, 7, 8, and 9. Scenic quality standards and guidelines for Management Area 1, 3, 3A and 7 require that "Visual quality objectives will be met" (see “Management Emphasis and Intensity” on pages 47, 55, 59, and 67). Scenic quality standards and guidelines for Management Area 4 require that “Visual quality objectives will be met or exceeded” (see “Management Emphasis and Intensity” on page 62). Standards and guidelines for Management Area 8 are to manage for retention in research natural areas and partial retention in the Research Ranch (see “Management Emphasis and Intensity” on page 75). Standards and guidelines for Management Area 9 are to manage for 100 percent visual quality objective of preservation (see “Management Emphasis and Intensity” on page 79).

Visual quality objectives for every acre of the Coronado National Forest were established in the early 1980s and incorporated into the 1986 Forest Plan. Visual quality objectives are based on two components:

1. Variety class: A measure of the visual variety or diversity of landscape character. The three variety classes are A (distinctive), B (common), and C (minimal).
2. Sensitivity levels and distance zones: Sensitivity levels are a measure of the viewer interest in scenic qualities of a landscape. The three levels are 1 (highest), 2 (average), and 3 (lowest). Distance zones include foreground (up to 1/2 mile), middleground (1/2 mile to 5 miles), and background (over 5 miles).

There are no maps of sensitivity levels for the project area. However, a review of the visual quality objective maps indicates many roads are sensitivity level 1, including State Routes 82, 83, and 92, Carr Canyon Road (FR368), and National Forest System Roads 48A, 49, 56, 58, 59, 61, 201, 202, 227, 827, 850, 1413, 1484, 4756, 4757, 4758, 4775, and 4776. A project-level review of sensitivity levels confirms these are appropriate, though most of the trails across the Sierra Vista Ranger District also meet criteria for level 1.

Visual quality objectives on the Sierra Vista Ranger District vary from preservation to maximum modification. Definitions for visual quality objectives are:

- preservation: only ecological changes are allowed
- retention: management activities should not be evident to the casual forest visitor
- partial retention: management activities must be visually subordinate to the characteristic landscape.
- modification: management activities may dominate the characteristic landscape, but must, at the same time, utilize naturally established form, line, color, and texture
- maximum modification: management activities may dominate the characteristic landscape, but should appear as natural occurrences when viewed as background

Figure 5 shows visual quality objectives for the Sierra Vista Ranger District.
Environmental Effects

Direct and Indirect Effects

Alternative 1-No Action

Under the no-action alternative, no changes would be made to the road system on Sierra Vista Ranger District, and use of the 141.54 miles of unauthorized routes would continue to be prohibited. It is difficult to enforce these prohibitions, so some use (and associated impacts) is expected to continue, at least in the short term. It is difficult to enforce these prohibitions, so some use (and associated impacts) is expected to continue, at least in the short term.

Degradation of scenic integrity from non-system roads and dispersed recreation areas (including loss of vegetation, bare and compacted soils, muddy rutted areas, and erosion) would continue until all non-system roads were obliterated and naturalized, which would likely take many years. Recovery of damaged soils and vegetation would take much longer.
Alternative 2- Modified Proposed Action

The modified proposed action would benefit scenic resources by:

- Getting some roads out of drainages, which would improve riparian vegetation and therefore benefit scenery.
- Decommissioning some roads, which may result in short-term impacts to scenery, but once these areas were naturalized, scenic quality would be improved.
- Adding roads to the National Forest road system. System roads would be properly designed and maintained, which would reduce scenic impacts such as rutting and erosion.
- Restricting the use of some roads to administrative and/or permittee use only, which would limit vehicular use and associated damage (and would also provide additional quiet, scenic settings for visitors who seek non-motorized settings).
- Reducing impacts to the Arizona National Scenic Trail, which is a non-motorized trail that currently lies on or parallel to some roads in the Santa Rita Ecosystem Management Area. The project would benefit the scenic trail setting by restricting vehicles on a number or existing roads on which the trail lies or is near.
- Decommissioning unauthorized routes in an inventoried roadless area, where natural scenery is a major part of the setting.

The project is expected to be implemented over many years, and degradation of scenic integrity from non-system roads would continue until all non-system roads were decommissioned and naturalized.

Roads in areas with visual quality objectives of partial retention, modification, and maximum modification are usually compatible with visual resource objectives. Roads in areas with a visual quality objective of retention can be compatible if they are designed and constructed to minimize impacts to the valued landscape. Roads are not generally compatible with a visual quality objectives of preservation. Although most of the proposed road changes are located in areas with compatible visual quality objectives, there would be some changes in the retention and preservation visual quality objectives, and these are analyzed below.

Proposed changes in retention visual quality objective:

- In the Whetstone Ecosystem Management Area, six segments of roads are located in areas with a visual quality objective of retention. Two are existing National Forest System roads, one would be added to the national forest road system, one would be converted to a non-motorized trail, one would be decommissioned, and one would be obliterated. These changes would better meet the visual quality objective of retention by naturalizing areas or reducing vehicular use.
- In the Huachuca Ecosystem Management Area, there are numerous road segments located in areas with a visual quality objective of retention. Many of these would be decommissioned, restricted to administrative and permittee use, converted to off-highway vehicle use, or closed. These changes would better meet the retention visual quality objective by naturalizing areas or reducing vehicle use. In some locations, unauthorized routes would be added to the national forest road system and be properly designed and maintained, which would better meet the retention visual quality objective.
Proposed changes in preservation visual quality objective:

- There are two segments of unauthorized routes (with a combined total of 0.80 miles) on the Sierra Vista Ranger District located in an area with a visual quality objective of preservation. Both are in the Miller Peak Wilderness. Both would be converted to non-motorized trails, which would benefit scenery by better meeting the preservation visual quality objective.

Proposed changes in inventoried roadless areas:

- Routes in inventoried roadless areas in the Huachuca Ecosystem Management Area are within the Miller Peak Wilderness. See benefits mentioned above.
- There are 8 road segments in inventoried roadless areas in the Whetstone Ecosystem Management Area. Proposed changes (including decommissioning, closing, and changing maintenance levels for existing Forest system roads) would help protect scenery within roadless areas.

Comparison of Alternatives

Both the no-action alternative and the modified proposed action are expected to meet visual quality objectives. The modified proposed action would provide more benefits to scenery than no action for all of the reasons described above. Mitigation measures would help reduce negative impacts.

Cumulative Effects

The spatial area of analysis for cumulative effects to scenery is the Sierra Vista Ranger District and the east side of the Santa Rita Mountains. Roads in the Santa Rita Mountains are often used by forest visitors, and the Santa Rita Mountains are highly visible to forest visitors using the road system on the Sierra Vista Ranger District. Although other sky islands are also visible by visitors using the Sierra Vista Ranger District road system, they are considerably farther away and less prominent. The time boundary for cumulative effects to scenery is 10 years. It will likely take at least this long to fully implement travel management and for scenic impacts from roads and unauthorized routes to naturalize.

Past and present trends in the area include continued population growth of the communities surrounding the project area and increasing use of National Forest lands as a result. Past and present actions on the Sierra Vista Ranger District have been described in the “Affected Environment” section.

Reasonably foreseeable future actions in the project area that would affect scenic resources include:

- Huachuca Firescape, which would improve forest health and reduce the risk of catastrophic fire, and therefore benefit scenery in the long term.
- The Camp Tatiyee land exchange, which would result in the Coronado acquiring a 76-acre parcel of private land near Harshaw Creek. There are two visually sensitive travelways across this parcel (FR58 and FR49) and the land would be used to protect visual, soil, and watershed resources. Therefore, acquiring this parcel would benefit scenery.
- Motorized and non-motorized recreational activities including developed sites, Miller Peak Wilderness, trails, and Parker Canyon Lake, all of which generally have only minor effects on scenery.
• Border Patrol activities, which include towers, walls, fences, and roads that contrast with the natural landscape and negatively impact scenery. Impacts from illegal immigration and drug smuggling include camps, trash and debris, and unplanned trails which negatively impact scenery. However, impacts from all of these border activities are generally localized.

• The U.S. Army Proving Ground special uses permit, which would result in 10 new sites, 11 total, 300 feet by 250 feet in size across the southeastern Huachuca Ecosystem Management Area. Each site could introduce industrial-looking features (mobile trailer, communications shelter, port-a-potty, fuel tank, up to 20 vehicles, generator, and lighting) into the landscape and contrast sharply with the natural scenery. Although the buildings are considered temporary, the expected duration of the project is 20 years and these sites would be visible from roads. It is anticipated that the Army would occupy 3-4 of the permitted locations for 2 weeks at a time. Equipment would not be left on site when not in use. Up to 6 operations a year could occur. Impacts are localized, but would negatively impact scenery in each area when they are in operation.

• Mineral exploration projects, which would cause short-term negative impacts to scenery, but with planned reclamation would result in no long-term impacts.

• The Carr Barn Dip Site, which would enlarge a pond at an administrative site and would minimally change the scenery at this site.

• Relocation of the Arizona National Scenic Trail in two areas, which would benefit scenery by moving the trail off of roads and providing a more sustainable trail route for visitors to enjoy the scenery.

• Travel management on the Santa Rita Ecosystem Management Area, which would benefit scenery for the same reasons that travel management benefits scenery on the Sierra Vista Ranger District.

• The Rosemont Mine, which would displace motorized recreation and users are expected to move to nearby areas including the Sierra Vista Ranger District. Motorized users don’t always stay on roadways, and off-road travel can damage vegetation and soils, resulting in negative effects to scenery.

Past, present, and future actions, when combined with travel management decisions (either the no-action alternative or the modified proposed action), would not substantially alter scenic resources on the Sierra Vista Ranger District, and some would provide benefits. Therefore no cumulative effects are expected.

Recreation
The Travel Management Rule provides criteria for recreation considerations in 212.55, "Criteria for designation of roads, trails, and areas." The responsible official shall consider effects on the following:

• provision of recreational opportunities

• conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands

• conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands
affected environment

there are four popular attractions associated with the sierra vista ranger district: coronado national monument, arizona national scenic trail, kartchner caves, and parker canyon lake. coronado national monument, located on the southwest side of the huachuca mountains, is managed by the national park service. the monument is the only unit in the national park system that commemorates the francisco vásquez de coronado expedition of 1540 to 1542 (national park service 2015). the arizona national scenic trail runs through the sierra vista ranger district. the trail, which starts at the u.s.-mexico border, is an 800 mile stretch that begins on the coronado national memorial of the national park service and utilizes the district’s designated national forest trail system along the huachuca mountains. it is used by visitors from around the world. kartchner caves state park is managed by arizona state parks. it is located in the eastern portion of the whetstone mountains. this cave is home to the world’s longest soda straw stalactites, the tallest and most massive column in arizona, the world’s most extensive formation of brushite moonmilk, the first reported occurrence of “turnip” shields, and the first occurrence of “birdsnest” needle quartz formation (arizona state parks 2015). this cave is visited by tourists from around the world. lakeview campground and rock bluff group site are managed by the forest service and provide both day-use and overnight camping opportunities to the public. this year-round lake receives visitors from across the united states, as well as canada and mexico.

the sierra vista ranger district serves the local communities of benson, sierra vista, whetstone, huachuca city, palominas, hereford, sonoita, and patagonia. though a majority of visitation is associated with these local communities, visitors also include residents from tucson and phoenix, as well as from across the united states, canada, and mexico.

the sierra vista ranger district is not a contiguous district as it is comprised of two ecosystem management areas: the huachuca (276,350 acres) and the whetstone (45,023 acres). these two mountain ranges are located in cochise county, arizona. the district is surrounded by other land management agencies such as arizona state land department, the national park service, bureau of land management, and arizona state parks. private landowners also surround the district.

visitation, recreation use, seasonal use

visitor use: while coronado national forest personnel do not track visitation by district, the 2012 national visitor use monitoring survey estimated visitation to coronado as shown in table 8.

<table>
<thead>
<tr>
<th>visit type</th>
<th>visits (1,000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>total estimated site visits</td>
<td>2,912</td>
</tr>
<tr>
<td>day use developed site visits</td>
<td>736</td>
</tr>
<tr>
<td>overnight use developed sites visits</td>
<td>394</td>
</tr>
<tr>
<td>general forest area visits</td>
<td>1,156</td>
</tr>
<tr>
<td>designated wilderness visits</td>
<td>625</td>
</tr>
<tr>
<td>total estimated national forest visits</td>
<td>2,433</td>
</tr>
<tr>
<td>special events and organized camp use</td>
<td>76</td>
</tr>
</tbody>
</table>
National visitor use monitoring (NVUM) indicates visitors come across from the local area, the surrounding region (Arizona, New Mexico, Mexico), from across the Nation and abroad. The top 6 recreation activities of visitors to the Coronado National Forest have not changed although the numbers participating in activities fluctuates as shown in table 9.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percent participation 2008 NVUM</th>
<th>Percent participation 2012 NVUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking/walking</td>
<td>75.6</td>
<td>67.4</td>
</tr>
<tr>
<td>Viewing natural features</td>
<td>68.2</td>
<td>57.9</td>
</tr>
<tr>
<td>Viewing wildlife</td>
<td>65.9</td>
<td>50.9</td>
</tr>
<tr>
<td>Relaxing</td>
<td>45.9</td>
<td>41.0</td>
</tr>
<tr>
<td>Picnicking</td>
<td>12.8</td>
<td>21.5</td>
</tr>
<tr>
<td>Driving for pleasure</td>
<td>23.7</td>
<td>20.4</td>
</tr>
</tbody>
</table>

Table 10. Percent of national forest visits indicating use of special facilities and areas on Coronado National Forest

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Percent of National Forest Visits By Facility*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorized single-track trails</td>
<td>2.3</td>
</tr>
<tr>
<td>Motorized dual-track trails</td>
<td>8.0</td>
</tr>
<tr>
<td>Designated off-road vehicle area</td>
<td>5.8</td>
</tr>
<tr>
<td>Forest roads</td>
<td>9.7</td>
</tr>
<tr>
<td>Scenic byway</td>
<td>23.4</td>
</tr>
</tbody>
</table>

The latest report from Arizona State Park's 2013 Statewide Comprehensive Outdoor Recreation Plan (SCORP) shows outdoor recreation in Arizona is expected to increase in the future. Table 11 and table 12 illustrate the expected increase by user type below.

<table>
<thead>
<tr>
<th>Recreation Activity</th>
<th>Current Days or Visits per year</th>
<th>Expect to increase in the future (amount of increase in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting</td>
<td>1.67</td>
<td>10.9%</td>
</tr>
<tr>
<td>RV camping</td>
<td>2.3</td>
<td>25.6%</td>
</tr>
<tr>
<td>Tent camping</td>
<td>3.0</td>
<td>32.0%</td>
</tr>
<tr>
<td>Ride off-highway vehicle</td>
<td>8.93</td>
<td>24.0%</td>
</tr>
<tr>
<td>Drive for pleasure</td>
<td>22.9</td>
<td>34.1%</td>
</tr>
<tr>
<td>Hike or jog</td>
<td>27.7</td>
<td>38.4%</td>
</tr>
</tbody>
</table>


National trends in recreation indicate that traditional activities such as hunting and fishing that were once considered primary recreation activities have declined in popularity. Now viewing and photographing birds has become the fastest long-term growing activity, growing 287 percent since 1982 to 1983 and having more participants now than both hunting and fishing combined (Cordell et al. 2009). The next fastest growing in terms of percentage increase is day hiking at almost 210 percent since 1982 and 1983. The next 4 fastest growth activities include backpacking.
(+161 percent), off-road motor vehicle driving (+142 percent), walking outdoors (+111 percent), and canoeing and kayaking (+106 percent).

As recreation use increases, the types of recreation activities visitors engage in are likewise increasing and diversifying as the State’s population grows and demographics shift. Sierra Vista Ranger District personnel have observed that recreational activities on the district occur in both developed and dispersed settings, and occur in all seasons.

Of the 297,748 acre Sierra Vista Ranger District, 20,238 acres are closed to all motorized travel (about 7 percent). There is one designated wilderness area on the District: the Miller Peak Wilderness. No change in wilderness policy (that is, no motorized vehicle use in designated wilderness) is proposed. The 1964 Wilderness Act prohibits the use of motorized vehicles, motorized equipment, and mechanical transport in designated wilderness areas. Two routes exist within the Miller Peak wilderness: unauthorized, user-created extensions of National Forest System Roads 367 and 5732. They are physically blocked to motorized access on the ground but could provide access directly into the Miller Peak Wilderness and do not meet Coronado National Forest resource or other management objectives. They are both proposed for conversion to non-motorized trails in alternative 2, the modified proposed action.
### Table 12. Participation by involved recreation users in active land-based activities

<table>
<thead>
<tr>
<th>Current Participation Rate</th>
<th>Not at all</th>
<th>Once Low Use</th>
<th>A few times Moderate Use</th>
<th>Once a month Moderate Use</th>
<th>Once a week High Use</th>
<th>Twice a week or more High Use</th>
<th>Percent who say this will increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting</td>
<td>45%</td>
<td>3%</td>
<td>24%</td>
<td>16%</td>
<td>5%</td>
<td>5%</td>
<td>34%</td>
</tr>
<tr>
<td>Tent camping</td>
<td>28%</td>
<td>9%</td>
<td>44%</td>
<td>17%</td>
<td>1%</td>
<td>1%</td>
<td>34%</td>
</tr>
<tr>
<td>Day hiking</td>
<td>12%</td>
<td>5%</td>
<td>38%</td>
<td>21%</td>
<td>13%</td>
<td>10%</td>
<td>33%</td>
</tr>
<tr>
<td>Walking, jogging, or running on trails or at a park</td>
<td>18%</td>
<td>4%</td>
<td>34%</td>
<td>13%</td>
<td>12%</td>
<td>18%</td>
<td>33%</td>
</tr>
<tr>
<td>RV camping</td>
<td>43%</td>
<td>6%</td>
<td>30%</td>
<td>17%</td>
<td>1%</td>
<td>2%</td>
<td>32%</td>
</tr>
<tr>
<td>Target shooting</td>
<td>33%</td>
<td>5%</td>
<td>31%</td>
<td>20%</td>
<td>6%</td>
<td>4%</td>
<td>32%</td>
</tr>
<tr>
<td>Backpacking</td>
<td>38%</td>
<td>11%</td>
<td>35%</td>
<td>12%</td>
<td>2%</td>
<td>1%</td>
<td>29%</td>
</tr>
<tr>
<td>4-wheel driving</td>
<td>33%</td>
<td>5%</td>
<td>29%</td>
<td>22%</td>
<td>6%</td>
<td>5%</td>
<td>26%</td>
</tr>
<tr>
<td>Bicycling or mountain biking</td>
<td>53%</td>
<td>7%</td>
<td>20%</td>
<td>6%</td>
<td>6%</td>
<td>8%</td>
<td>24%</td>
</tr>
<tr>
<td>Off-highway vehicle use</td>
<td>52%</td>
<td>4%</td>
<td>19%</td>
<td>13%</td>
<td>6%</td>
<td>5%</td>
<td>24%</td>
</tr>
<tr>
<td>Horseback riding</td>
<td>73%</td>
<td>9%</td>
<td>18%</td>
<td>3%</td>
<td>1%</td>
<td>2%</td>
<td>17%</td>
</tr>
<tr>
<td>Rock or mountain climbing</td>
<td>68%</td>
<td>9%</td>
<td>18%</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Playing golf</td>
<td>74%</td>
<td>4%</td>
<td>12%</td>
<td>5%</td>
<td>3%</td>
<td>1%</td>
<td>10%</td>
</tr>
<tr>
<td>Playing softball or baseball</td>
<td>80%</td>
<td>4%</td>
<td>10%</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Proposed Changes to the Motorized Travel System on the Sierra Vista Ranger District
Environmental Assessment

50
## Chapter 3. Environmental Effects

<table>
<thead>
<tr>
<th>Current Participation Rate</th>
<th>Not at all</th>
<th>Once Low Use</th>
<th>A few times Moderate Use</th>
<th>Once a month Moderate Use</th>
<th>Once a week High Use</th>
<th>Twice a week or more High Use</th>
<th>Percent who say this will increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing soccer</td>
<td>88%</td>
<td>3%</td>
<td>6%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
</tr>
<tr>
<td>Playing football</td>
<td>90%</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Skateboarding</td>
<td>95%</td>
<td>1%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Forest Plan
Direction for recreation management in the 1986 Forest Plan is listed below:

Forest Plan Goals, page 9

- “Maintain the current spectrum of developed, dispersed, and primitive recreation opportunities and increase those opportunities within the capability of the resources and the framework of this plan as needs and funds develop.”
- “Increase the public’s awareness of their obligation to the resource and their responsibility in caring for it.”
- “Nurture partnership with other recreation agencies, the private sector, and professional organizations, to develop a full spectrum of recreation opportunities in southern Arizona and southwest New Mexico.”
- “Maintain or enhance the visual resource through sound landscape management principles.”

The 1986 Forest Plan currently prohibits motorized travel off National Forest System roads. However, since the plan predates the Travel Management Rule, it also provides direction that “Vehicles may travel off roads up to a distance of 300 feet for parking and camping.” The 1986 Forest Plan does not specify any “areas” designated for motorized use as defined by Travel Management Rule. However, it does have three designations with associated guidelines pertaining to motorized travel as shown on the motor vehicle use map:

- Closed to all motorized travel.
  ♦ Guidelines: Closed to all motorized vehicles at all times, except those uses authorized by law, permits, and orders in connection with resource management and public safety.

- Restricted. Generally closed to all cross-country motorized travel. Roads and trails open to travel are designated.
  ♦ Guidelines: Generally closed to cross-country travel by all motorized vehicles except those uses authorized by law, permits, and orders in connection with resource management and public safety.
  ♦ All roads and trails open to motorized travel are signed. Vehicles may pull off roads or trails up to 300 feet for parking or camping.

- Restricted. Generally closed to all cross-country motorized travel. Roads are open to travel except when posted closed. All trails are closed to motorized travel.
  ♦ Guidelines: Closed to cross-country travel by all motorized vehicles except those uses authorized by laws, permits, and orders in connection with resource management and public safety.
  ♦ All roads are open to motorized travel unless posted as closed. All trails are closed to motorized travel. Roads and trails will be identified with standard route markers to accommodate all users. Vehicles may pull off roads up to 300 feet for parking or camping (USDA Forest Service 1986).
The 1986 Forest Plan divides the Coronado National Forest into management areas. The proposed project lies in Management Areas 1, 3, 3A, 4, 7, 8, and 9:

**Management Emphasis and Intensity:**

- **Management Area 1:** Manage for visual resources and semi-primitive dispersed recreation opportunities including those related to wildlife (p. 47).
- **Management Area 3:** Manage for a variety of dispersed recreation opportunities while protecting or maintaining the unique physical, biological, and cultural resources. Other activities should maintain or enhance recreational opportunities (p. 55).
- **Management Area 3A:** Manage for a variety of developed recreation opportunities while mitigating the impact on the unique physical, biological, and cultural resources. Other activities will maintain or enhance the recreational opportunities (p. 59).
- **Management Area 4:** Dispersed recreation activities may occur except for those that adversely affect the productivity of the land or resources (p. 62).
- **Management Area 7:** Manage to perpetuate the unique wildlife or vegetative species. Improve and manage riparian areas (as defined by Forest Service Manual 2526, Riparian Watershed Management) to benefit riparian-dependent resources. Dispersed recreation activities and other uses may be allowed to the extent they do not degrade the unique values. Facilities may be allowed and maintained for the purpose of protecting these resources. Visual quality objectives will be met (p. 67).
- **Management Area 8:** Manage to provide opportunities for non-disruptive research and education (p. 75).
- **Management Area 9:** Manage for wilderness values while providing livestock grazing and providing recreation opportunities that are compatible with maintaining wilderness values and protecting resources (p. 79).

**Recreation Opportunity Spectrum**

Coronado National Forest personnel manage for a multitude of recreational experiences by designating areas according to the recreation opportunity spectrum within management areas. The recreation opportunity spectrum addresses the appropriateness, frequency, and duration of human sounds and sights in discretely defined settings. Recreation opportunity spectrum classifications are based on the magnitude and nature of this human influence. Within the recreation opportunity spectrum setting, there are several classifications that apply to the Sierra Vista Ranger District: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded modified, roaded natural, rural, and urban and are described as follows:

- **Primitive:** Characterized by an unmodified natural environment with some evidence of trails. Motorized use is prohibited.
- **Semi-primitive non-motorized:** Characterized by few and/or subtle modifications by people, and with a high probability of isolation from the sights and sounds of people.
- **Semi-primitive motorized:** Characterized by moderately dominant alterations by people, with strong evidence of primitive roads or trails.
- **Roaded modified:** Characterized by substantially modified motorized settings in which the sights and sounds of humans are readily evident. Recreation experiences in these areas often depend on vehicular access off the primary routes via secondary roads.
Chapter 3. Environmental Effects

- Roaded natural: Characterized by predominantly natural environment with evidence of moderate permanent resource use. Evidence of sights and sounds of people is moderate, but in harmony with the natural environment. Opportunity exists for both social interaction and moderate isolation from sights and sounds of people.
- Rural: Characterized by a substantially modified natural environment to the point that developments are dominant to the sensitive observer.
- Urban: Characterized by areas of concentrated use and areas where facilities dominate the natural setting.

The purpose of the recreation opportunity spectrum is to identify different parts of the Sierra Vista Ranger District to facilitate different recreational experiences. Since non-motorized users may experience a decrease in recreational benefits due to the sights and sounds of motorized users, road access is one of the driving factors that would result in conflict with providing a non-motorized recreation experience. The recreation opportunity spectrum represents management objectives and not actual user experience. Based on the increase in motorized use over the past several decades, the opportunity for semi-primitive non-motorized experiences has decreased, whereas the opportunities for semi-primitive motorized opportunities have increased at its expense.

In the 1986 Forest Plan, recreation opportunity spectrum is designated by management area as indicated below:

- Management area 1: Emphasize semi-primitive motorized and semi-primitive non-motorized recreation opportunities. When roads are no longer needed, close them in order to create more opportunities for semi-primitive non-motorized or primitive experiences (p. 47).
- Management area 2: Maintain at least the current amount of semi-primitive non-motorized acres and limit additional semi-primitive motorized and roaded natural acres by closing roads which are determined to be not needed and allowing creation of temporary roads only for resource utilization (p. 50).
- Management area 3: Maintain current roaded natural recreation opportunities while creating increased semi-primitive non-motorized opportunities when possible by closing roads which are determined to be not needed (p. 55).
- Management area 3A: All other roads will be maintained to level 4 (p. 59).
- Management area 4: Maintain existing recreation opportunity spectrum class composition, except if any existing roads are determined to be unneeded, close them to create more opportunities for semi-primitive non-motorized or primitive experiences (p. 62).
- Management area 7: Maintain current roaded natural recreation opportunities while creating increased semi-primitive non-motorized opportunities when possible by closing roads which are determined to be unneeded, and creating temporary roads only for resource utilization projects (p. 67).
- Management area 8: Motorized vehicles are not permitted in research natural areas. Within the Research Ranch, use of motorized vehicles is permitted only on designated roads and trails. Some trails may be closed to motorized vehicles for safety reasons, to eliminate conflicting users or to further protect resources. Maintain semi-primitive non-motorized opportunities that exist within the Research Ranch. If any existing roads are determined to
be unneeded, close them to create more opportunities for primitive or semi-primitive non-motorized experience (p. 75).

- MA 9: Use of motorized vehicles is prohibited except as approved for emergency or other special needs. Maintain existing recreation opportunity spectrum classification composition except recognize potential to increase primitive and semi-primitive non-motorized opportunities by closing adjacent roads which are deemed unnecessary (p. 80).

Environmental Effects

Effects Common to All Alternatives
There would be no change in areas where motorized travel is currently prohibited (campgrounds, administrative sites, and cross-country travel).

Direct and Indirect Effects

Alternative 1 - No Action

Designated Road System: If the no-action alternative is implemented through this project, Coronado National Forest personnel would not make the proposed changes to the motorized travel system on the Sierra Vista Ranger District or restrict off-road motorized travel for dispersed camping in certain locations. Roads shown on the current motor vehicle use map would include 744.66 miles of National Forest System roads, of which 704.25 would be open to all vehicles (open authorized) and 135.49 miles of unauthorized routes on the Sierra Vista Ranger District would continue to be prohibited for motorized use.

Dispersed Recreation: There would be no change in dispersed recreation and camping opportunities under the no-action alternative, since the existing conditions would continue to occur on both designated National Forest System roads and unauthorized routes. The public would continue to have the ability for off-road travel up to 300 feet off maintenance level 2 open roads for the purpose of parking and camping. The following effects, based on trending data (Statewide Comprehensive Outdoor Recreation Plan 2013), would occur under this alternative:

- An increase in demand for camping would result in an increase in the development of dispersed camping spots if existing camping spots are occupied.
- An increase in dispersed camping spots would result in trampling and degradation of the resources. An increase of trampling of vegetation would result in bare ground which is not aesthetically pleasing.

Hunting: There would be no change in hunting opportunities under the no-action alternative since this type of activity is already occurring under the existing access provided by the designated National Forest System roads. Dispersed camping 300 feet off the road would continue to occur for hunters resulting in impacts such as increased camp spots, and trampling of vegetation.

Inventoried Roadless Areas: If alternative 1 was selected, no changes would be made to existing roads and unauthorized routes in inventoried roadless areas. The Sierra Vista Ranger District has one inventoried roadless area located in the Whetstone Ecosystem Management Area, totaling 20,712 acres. Motorized use of unauthorized routes would continue to be illegal, but would likely continue at current levels. This would continue to affect the condition of the designated inventoried roadless area, would not meet the intent of the 2001 Roadless Area Conservation
Rule, and would likely allow for continued and increasing motorized use in undesignated locations not analyzed for new road construction.

Under this alternative, forest access and visitor use would not change, as there would be no new additions or restrictions on existing motor vehicle use and system routes. There are currently approximately 141 miles of unauthorized routes being used by the public on the Sierra Vista Ranger District. The 300-foot dispersed camping corridor would continue, but dispersed camping on currently unauthorized routes and motorized cross-country travel would continue to be prohibited. Alternative 1 does not designate any new non-motorized trails, so hiking opportunities would not increase.

Wilderness: 0.81 miles of existing unauthorized motorized travel routes illegally extending from National Forest System roads into the Miller Peak Wilderness would continue to exist. While they are physically closed to motorized access on the ground, these routes have the possibility of creating further encroachment into wilderness and their continued existence on the system would result in a high likelihood of continued motorized use in these wilderness areas, which would further degrade the settings and would not meet 1986 Forest Plan and other resource management objectives.

Alternative 2 - (Modified Proposed Action)

Designated Road System: Under the modified proposed action, 584.68 miles of National Forest System roads, maintenance levels 1 through 5, would be part of the national forest road system on the Sierra Vista Ranger District. This would reduce the total miles of National Forest System roads on the district by 167.15. This alternative would provide 533.65 miles open (maintenance levels 2 through 5) for public access or 170.6 fewer miles of open public roads than the no-action alternative. These differences would not affect recreationists who prefer amenities provided in developed campgrounds, day-use sites, or trailheads since access to these facilities are not affected.

Alternative 2 proposes decommissioning 180.41 miles of National Forest System roads, of which, 171.51 miles would affect the public since these roads are currently maintenance level 2 through 5. Hunters, off-road enthusiasts, and dispersed campers may be affected with these changes since some of the roads proposed to be decommissioned may have been used for recreation purposes in the past. Many of the roads proposed for decommissioning are impassable and are located on soils that are generally steep and erodible, making them difficult to maintain. Reducing overall miles of roads on the Coronado National Forest would likely add some congestion on remaining and newly designated National Forest System roads.

Under the modified proposed action, 56.9 miles of user-created roads would be designated as new National Forest System roads on the district, of which, 36.85 miles would be open to all public access, providing legal access for recreationists where prior access was illegal on user-created unauthorized routes. This would benefit recreationists by providing legal access for dispersed camping, hunting, equestrians, and off-highway vehicle use.
Though 180.41 miles of National Forest System roads are proposed for decommissioning, many of them:

- are nonexistent on the ground due to lack of use and vegetation regrowth, or have washed away due to soils that are generally steep and erodible;
- are parallel or redundant to other roads;
- lead to the same locations as other open roads; or
- are dead-end roads in areas that do not provide good turn-arounds for vehicles.

Quiet recreationists would also benefit with less noise and a quieter experience. However fewer roads to travel could result in some areas on the Sierra Vista Ranger District increasing in certain types of recreational use. The result would be slightly more noise in selectively popular areas.

**Dispersed Recreation:** The modified proposed action would designate 36.85 miles of unauthorized routes as “open to all vehicles” (maintenance levels 2 through 5) for recreation access. Since these user-created roads are already being utilized by the public, this change would not have an effect on recreation settings since resource damage such as vegetation trampling or removal has already occurred. Designation of these roads would continue to allow opportunities since there are established dispersed camping sites that are currently being utilized on the Sierra Vista Ranger District.

The net decrease in roads is 171.51 miles. The most notable effect of this change to the user would be in the loss of the corresponding 300-foot dispersed camping corridor on previously open maintenance level 2 roads. Open roads on the district could see added pressure from users who can no longer use the closed, restricted, or decommissioned roads. This could concentrate motorized use on the district. However, the Sierra Vista Ranger District would still offer abundant motorized travel routes, and routes to popular developed recreation sites would not be affected, so the effects to the user should be minimal.

**Wilderness:** Alternative 2 proposes that two unauthorized extensions of National Forest System roads, 0.61 miles of National Forest System Road 367 and 0.20 miles of National Forest System Road 5732 that have been illegally extended into the Miller Peak Wilderness, be converted to non-motorized trails. Currently these are both inaccessible by motor vehicles due to a locked gate on National Forest System Road 5732, and vehicle barriers on National Forest System Road 367, which only allow foot and horse access beyond the wilderness boundary. National Forest System Road 367 is also signed as a non-motorized trail on the ground. Both roads have been physically closed on the ground to motor vehicles for over 20 years and would be removed administratively from the system and converted to non-motorized trails through this travel management process.

The permanent closure from vehicles in these areas would better preserve the undeveloped and natural qualities of wilderness character by protecting these areas from unauthorized motorized use. Specifically, classifying and managing these trails as class 1 or 2 would be consistent with the 1986 Forest Plan and agency guidance regarding trails in wilderness and would therefore have minimal effect on these qualities of wilderness character. Administratively, designating unauthorized motorized routes as non-motorized trails on existing disturbed areas would not involve any new ground disturbance in the wilderness. This administrative action does not involve any manipulation of the ecosystem and therefore would not be considered a trammeling action. Prohibiting motorized use and concentrating non-motorized use to existing trail corridors would reduce the risk of more severe trammeling by recreationists in the future. Similarly, the...
outstanding opportunities for solitude or primitive and unconfined recreation within the wilderness would increase as recreational use is limited to non-motorized users.

This would increase protection of the Miller Peak Wilderness area by formally converting what is inventoried as user created unauthorized routes to non-motorized trails. No noticeable effect would come of this designation primarily because the roads mentioned here have been managed as trails and closed to motorized travel since the wilderness was designated in 1984.

**Inventoried Roadless Area:** If Alternative 2 was selected, existing roads in the inventoried roadless area not proposed for changes would remain under current road maintenance level designations. National Forest System Road 4589 (0.54 miles) was proposed for changes during scoping. After review of Road 4589 during scoping and the collaborative alternative team (CAT) process, it was found to be beneficial to remain open, thus it is proposed to remain as a maintenance level 2 open road and is not proposed for any changes under the modified proposed action. The reason for this is to allow continued access to an existing non-motorized trail. The system road existed prior to the inventoried roadless area designation and can continue as a maintenance level 2 road under the Roadless Rule.

Some National Forest System roads are proposed for changes to other maintenance levels or decommissioning, in compliance with the 2001 Roadless Rule. Unauthorized routes in inventoried roadless areas would either be decommissioned or designated as motorized or non-motorized trails in compliance with the 2001 Roadless Area Conservation Rule. This proposal falls within 36 CFR Part 294 Special Areas; Roadless Area which states:

"A trail is established for travel by foot, stock, or trail vehicle, and can be over, or under, 50 inches wide. Nothing in this paragraph as proposed was intended to prohibit the authorized construction, reconstruction, or maintenance of motorized or non-motorized trails that are classified and managed as trails pursuant to existing statutory and regulatory authority and agency direction (Forest Service Manual 2350)."

The modified proposed action would change the designation of several short road segments and unauthorized routes within the district’s only inventoried roadless area located in the Whetstone Mountains. These roads can be found on the southern end of the inventoried roadless area and have a combined total of 1.74 miles. The desired effect of decommissioning unauthorized routes in the inventoried roadless area is to comply with 2001 Roadless Rule. This protects values of soil and water resources, while still allowing for primitive or semi-primitive recreation as outlined in the Roadless Rule. National Forest System Road 778A (including 0.65 miles of unauthorized spurs extending from Road 778A) are proposed for decommissioning. National Forest System Road 4014 (0.65 miles) is proposed maintenance level 2 restricted to reduce resource impacts and to provide only the access needed to service range and water resources. While motorized recreation users will no longer be able to access these routes, non-motorized recreation will not be affected. Route 4014-1.57R-1(0.44 miles) is proposed to be designated as a motorized trail greater than 50 inches. This would continue to allow off-highway vehicle access to the area while still meeting the Roadless Rule objectives.

These changes would increase recreation access via motorized and non-motorized system trails in designated inventoried roadless area on the Sierra Vista Ranger District, providing more opportunities for off-highway vehicle users and hikers on the Sierra Vista Ranger District, while meeting the requirements of 2001 Roadless Rule.

**Hunting:** The modified proposed action would create more opportunities for motorized access for hunters in some locations on the district, while reducing access in others, since this action
would include additions of user-created roads which would be legal and legitimate to use by this user group. This also includes the addition of new dispersed camping opportunities along roads designated open for all public users.

With an overall net decrease of 159.98 miles of designated National Forest System roads, hunting opportunities will vary. This alternative would provide more opportunities for quiet hunting where hunters can more easily sneak up and it would also result in fewer animals fleeing from motorized vehicles. The effect would be a possibly higher success rate for hunting game animals on the Sierra Vista Ranger District. For some hunters, less motorized access could make hunting more difficult due to the added hiking and reduced motorized access to some locations on the district.

Cumulative Effects
Cumulative effects from the implementation of the modified proposed action on the Sierra Vista Ranger District in conjunction with other activities may impact recreation on a local scale. Since the implementation of the modified proposed action is on a districtwide basis, and the exact impacts of the various projects and actions can be difficult to quantify, the activities will be discussed in a general sense.

Past, present and reasonably foreseeable future (up to 10 years) activities that have affected or may affect recreation on the Sierra Vista Ranger District are described below.

- Recreational activities, motorized and non-motorized
  - Approximate date: Ongoing
  - Area affected: Sierra Vista Ranger District

  The modified proposed action would reduce motorized access (maintenance levels 2 through 5) by 170.6 miles on open public roads. There would still be 533.65 miles of open roads, maintenance levels 2 through 5, for the public to enjoy opportunities for recreation. The modified proposed action will add 6.51 miles of non-motorized trails, 0.73 miles of motorized trails less than or equal to 50 inches, and 2.68 miles of motorized trails greater than or equal to 50 inches. These activities would continue to occur regardless of losing or gaining mileage. The modified proposed action is the preferred alternative since routes considered in this proposal would be best balance of sustainability while still providing high quality recreational opportunities.

- Camp Tatiyee land exchange
  - Approximate date: within 2 years
  - Area affected: Approximately 75.8 acres in the project area

  The exchange would result in the Coronado National Forest acquiring a 75.8-acre parcel of private land near Harshaw Creek. There are two travelways across this parcel (National Forest System Roads 58 and 49) and while the roads themselves remain the same, the land around these roads would provide permissive recreation usage previously not available.
Chapter 3. Environmental Effects

• Rosemont Mine
  ♦ Approximate date: next 25 years
  ♦ Area affected: 5,400 acres 30 miles from project area

Though this project is 30 miles away from the project area, the mine would displace motorized recreation, and users are expected to move to nearby areas including the Sierra Vista Ranger District. This could increase motorized users to use unauthorized routes on the district. Off-road travel would increase impacts to vegetation and soils, resulting in an increase of dispersed camping spots which would be more difficult for recreation staff to patrol during routine operations and maintenance duties. For this reason, the modified proposed action would be better to contain this Coronado National Forest road system and would have fewer cumulative effects than the no-action alternative.

• Mining Activities:
  ♦ Approximate date: within 2 years
  ♦ Area affected: Multiple Locations

Mining exploration projects would cause minimal impacts to recreation since developed recreation facilities are outside these project areas. While National Forest System roads would remain open, dispersed recreational users may be displeased with the noise associated with operations and the presence of equipment.

• Other districts’ travel management analyses and decisions:
  ♦ Approximate date: 2017-2018
  ♦ Area affected: Sierra Vista Ranger District

The travel management changes on other districts are not likely to cause a noticeable effect to the Sierra Vista Ranger District. The neighboring ranger districts of Nogales and Douglas have such minor changes to their system of roads that is unlikely that the Sierra Vista Ranger District would notice an increase or decrease in recreational users. It is possible that some change would occur, however it would be nominal.

• Arizona National Scenic Trail Relocation Projects
  ♦ Approximate date: 2017-2018
  ♦ Area affected: Canelo Hills

Two trail construction projects will be moving portions of the Arizona National Scenic Trail from National Forest System roads and unsustainable locations to designated non-motorized trail. The new sections of the trail will provide much more sustainable designs while providing a decrease in user conflict. The combined projects will move approximately 3.9 miles of the Arizona National Scenic Trail off roads. The effects to the recreation should be positively received by both off-highway vehicle users and non-motorized users.
Chapter 3. Environmental Effects

- Activities identified in table 4, that are not imposing to recreation due to the modified proposed action and would not change as part of the Travel Management Rule process are:
  - Carr Barn Dip site;
  - grazing management;
  - U.S. Army electronic proving ground special use permit;
  - Border Patrol activities, and
  - Huachuca Firescape.

These activities should not change with the modified proposed action nor pose noticeable effect to the recreational users.

Summary
Any of these activities may affect recreational opportunities on the district. Although the above activities may result in slightly higher recreation use on the Sierra Vista Ranger District, the modified proposed action would not cause significant cumulative effects to recreation with respect to the list of ongoing and foreseeable projects. The reduction in overall miles of National Forest System roads affecting recreation proposed in the modified proposed action would benefit the district with a more sustainable system of roads that provide for positive recreation experiences. It is not anticipated that the modified proposed action combined with the known past, present, and reasonably foreseeable actions would have a significant cumulative effect on the recreation resource.

Recommended Mitigation
Routes converted to non-motorized trails at the wilderness boundary should be blocked to motorized access.

Heritage Resources
Under Section 106 of the National Historic Preservation Act, the Forest Service has the responsibility, in consultation with the State historic preservation officer, tribes, and other interested parties, to identify historic properties within the area of potential effect and to determine the effects that a proposal could have on historic properties and cultural resources. Section 106 treats sites eligible for the National Register of Historic Places on an equal basis with listed sites. The general process for identifying historic properties, potential effects, and possible mitigation is defined in the National Historic Preservation Act’s implementing regulations at 36 CFR section 800. The Advisory Council on Historic Preservation oversees the process.

For Region 3, the section 106 consultation process is described in the Forest Service, Region 3 First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities. This agreement, developed under 36 CFR 800.14, was signed by the regional forester; the Arizona, New Mexico, Texas, and Oklahoma State historic preservation officers; and the Advisory Council on Historic Preservation. Appendix I of the programmatic agreement is a “Standard Consultation Protocol for Travel Management Route Designation (protocol),” which was adopted in 2007. In their analysis of the impacts of travel management actions on historic properties, Forest cultural resource specialists may use the protocol in lieu of State Historic Preservation Office consultation procedures defined in the programmatic agreement and 36 CFR section 800.
Chapter 3. Environmental Effects

The protocol affirms that designating routes to authorize motorized use has the potential to affect cultural resource sites and accordingly, constitutes an undertaking requiring National Historic Preservation Act section 106 consultation, for designations that involve the following:

1. Previously closed roads and trails not open to motor vehicle use
2. Unauthorized routes and trails, which are those not designated with National Forest System identification numbers and which may include, but are not limited to, user-created roads, former temporary roads, and other unclassified roads and trails
3. Unauthorized fixed routes or spurs and their associated features used by the public to access dispersed camp sites or areas, including the dispersed camp sites and areas themselves
4. Fixed-distance corridors along certain roads, including exempt roads, that will be designated for motorized dispersed camping
5. Areas open to cross-country motorized travel
6. Roads or trails considered to be historic properties
7. New construction, reroutes, and realignments

The designations in items 2 and 3 are representative of the alternatives addressed in this environmental assessment.

Section V.E.1 - 4 of the programmatic agreement outlines the Region 3 protocol for consultation:

- **No effect:** When the agreed-upon level of inventory is completed and no properties are present in the area of potential effect, the Forest Service shall document a finding of “no historic properties affected”. Except as specified in Stipulations V.E.6 and E.7, the undertaking may proceed following approval of the inventory report by the forest archaeologist or other authorized Forest Service professional cultural resource specialist and approval of the undertaking by the forest supervisor.

- **Properties present, but not affected:** When the agreed-upon level of inventory is completed and eligible or unevaluated properties are present in the area of potential effect, and the Forest Service determines that the undertaking will not have an effect on any such properties, the Forest Service shall document a finding of “no historic properties affected”.

- **No adverse effect:** When the Forest Service determines that one or more historic properties may be affected by an undertaking it will apply the criteria of adverse effect from the Council’s regulations (36 CFR 800.5(a)) to determine if the effect will be adverse. If the effect will not be adverse, the Forest Service shall provide the inventory documentation and propose a “no adverse effect” finding to the State Historic Preservation Officer and other consulting parties. The State Historic Preservation Officer shall have 30 days from receipt to review the finding. If the State Historic Preservation Officer agrees with the finding, the Forest Service may proceed with the undertaking in accordance with the proposed conditions or treatment measures.
Adverse effect: If the Forest Service finds, in consultation with the State Historic Preservation Officer, that the undertaking will have an “adverse effect” on historic properties, the Forest Service shall notify the Advisory Council on Historic Preservation as specified in section VII and shall resolve adverse effects following the procedures in 36 CFR 800.6 or any applicable standard treatment or standard consultation protocol developed pursuant to stipulations IV.A.4 or IV.A.5 of this agreement.

Affected Environment

Cultural resources on the Sierra Vista Ranger District include a variety of archaeological and historical sites created during the long course of human occupation and the use of the Huachuca and Whetstone Mountains. These include past habitations, artifact scatters, rock art sites, buildings, and other properties that bear evidence of human activity and use, and have scientific, historic, and cultural importance. Prior to European contact (pre-contact), extensive Native American occupation occurred in the nearby Gila River Valley, Santa Cruz, and San Pedro valleys. While long-term habitations were concentrated in these valleys, the high-elevation areas contain specialized activity and sacred sites used at various times over the centuries.

Forest archaeologists completed Heritage Resources Report #2015-05-030, which documents the results of surveys conducted to identify historic properties within the area of potential effect, determine eligibility for the National Register of Historic Places, and assess the potential effects from the proposed road addition to the system, decommissioning of roads, and restriction on off-road motorized travel. This report states:

1. Three cultural resource sites were found on segments of unauthorized routes to be added to the system.
2. Three cultural resource sites were found on segments of unauthorized routes to be added to the system with restricted access.
3. One cultural resource site was found near a proposed new road; however, the exact alignment has not yet been determined.

Provided the recommendations outlined in the report are followed, the forest archaeologist determined there would be “no adverse effect” by any components of the two alternatives. On December 21, 2015, the final heritage report for travel management on all 5 districts of the Coronado (#2015-05-030) was signed by the forest supervisor and submitted to the State Historic Preservation Office. This report disclosed that the forest archaeologist determined the modified proposed action would have “no adverse effect” on cultural resources, as long as the mitigation measures in the report were adopted. These measures include consulting with the forest archaeologist before initiating any ground-disturbing activities and reporting newly discovered cultural resources. The State Historic Preservation Officer concurred with this determination on January 5, 2016.

Traditional and Contemporary Tribal Uses

In part because the Sierra Vista Ranger District is relatively remote from present-day Native American communities, tribal uses of district resources are more limited than on lands closer to homes. No traditional cultural properties have been formally identified on the district, but White Mountain Apaches still make annual visits to Fort Huachuca and the surrounding forest to collect acorns (or ‘bellotas’) from large Emory oaks. This activity likely became established during the years when White Mountain Apaches were employed as Indian Scouts by the U.S. Army at the fort. The last company of Indian scouts and their families were part of the Fort Huachuca
community from 1922 until 1947, when the last three members retired (Vanderpot and Majewski 1998). Western Apaches also recall trips to the Huachucas and Patagonias to harvest agave as well as collect acorns. Contemporary O’odham basketmakers visit the Sonoita area to pick yucca beargrass leaves for basket materials. In recent years, a number of tribal members have visited the Harshaw area.

**Environmental Effects**

**Direct and Indirect Effects**

Cultural resources such as archaeological remains are susceptible to impacts from road construction, use, maintenance and from camping and motorized vehicle use adjacent to roads. Initial road construction can remove or disturb archaeological features and deposits. Road maintenance activities can cause further physical damage to archaeological materials in the road prism. Vehicles can crush or displace artifacts and features, impacting the physical integrity of the site and destroying or impairing its scientific value. Repeated camping or parking in an area can remove vegetation cover and increased potential for erosion. Removal of ground cover also increases the visibility of artifacts and features, making them more susceptible to collection or vandalism. These effects are direct and generally irreversible.

Motorized vehicle roads can indirectly affect cultural resources by allowing easier access to remote areas, which facilitates greater public visitation. Some studies in the western U.S. have shown that the closer a site is to a motorized route, the higher the probability artifacts have been collected or the site has been vandalized. On the Sierra Vista Ranger District, and throughout most of the Coronado, looting has been much less prevalent than in many other parts of the Southwest. Relative scarcity of whole ceramic vessels prized by collectors makes the district’s sites less appealing to looters. In addition, looting at local sites appears to be less common than 3 or 4 decades ago. Increased public awareness of the value of historic preservation and the illegality of unauthorized excavation and collection, as well as public involvement programs such as the Arizona Site Steward program, have led to a reduction in the amount of looting activity.

Archaeological survey identified 5 sites with potential for direct impacts from camping, vehicle access, and erosion. Changing the designation of two roads from open authorized to open authorized restricted will reduce these direct impacts to these sites. Decommissioning 6 roads will reduce direct impacts to 3 cultural resource sites.

Recent surveys of the areas surrounding roads proposed for designation identified 3 cultural sites. The 2 newly recorded sites and 1 previously recorded site will not be adversely affected by alternative 2 due to the closure of 6 roads. The forest archaeologist recommended the withdrawal of six roads from alternative 2. The remaining roads are not expected to result in indirect impacts to cultural sites.

**Alternative 1- No Action**

This alternative would result in no changes to National Forest System road designations. Use of user-created and non-system routes would continue. No new road construction would be authorized, and decommissioning and recommendations for limited access to certain areas for resource concerns would not be addressed. Potential adverse effects to heritage resources would continue to exist unless addressed on a site-specific basis.

Under the no-action alternative, no user-created roads would be added to the national forest road system, and the roads would nominally be prohibited for public motorized use. No National
Chapter 3. Environmental Effects

Forest System roads would be proposed for decommissioning. At least 6 cultural resource sites that are intersected by user-created roads would remain subject to those impacts. There would be no effects to traditional and contemporary uses.

**Alternative 2- Modified Proposed Action**

Alternative 2 would not adversely affect cultural resources. The majority of system roads and their previously designated 300-foot corridor would continue. Restrictions on off-road motor-vehicle travel on certain district roads would not affect cultural resource sites. Adding user-created roads to the national forest road system has the potential to affect cultural resource sites in, and adjacent to, those roads. In the majority of these cases, the roads have been in existence and in use for many years, and sites along them have been subject to impacts from that use. Archaeological surveys identified 7 cultural sites crossed by, or adjacent to, these roads. In 3 of these cases, the proposed addition of 6 roads has been dropped. In 3 cases, the road would be designated as open authorized restricted; that is, with no access to the general public. Changing the designation of these roads from open authorized to open authorized restricted (by fencing or gating) would reduce these direct impacts to cultural resource sites. In the last case, the alignment for National Forest System Road 208-4014 has not yet been determined. If the decision is to construct a new road, a separate heritage resources report will be completed under separate National Environmental Policy Act documentation. The proposed construction would likely result in no adverse effects to historic properties.

Closing non-system roads would result in decreased access to a number of cultural resource sites, and a decrease in the direct and indirect impacts associated with vehicle access. In 27 cases, the proposed closure of a non-system road would halt vehicle access to the sites. Minimum-impact closure methods described in the report would be implemented; in the event that other ground-disturbing activities are proposed, additional consultation with the forest archaeologist would be required.

**Cumulative Effects**

Reasonably foreseeable actions that could potentially affect cultural resources include a host of land-use practices discussed elsewhere in this report. Although these activities could affect cultural resources and their contexts in a variety of direct and indirect ways, those actions must comply with section 106 of National Historic Preservation Act and are planned and managed whenever possible to minimize their effects through the use of design measures that mitigate potential disturbance. Application of the standards and protection measures included in the protocol would reduce the amount of land subject to ground disturbance by vehicle use. Selection of either alternative 1 or alternative 2 is not expected to result in any significant increase in cumulative effects associated with cultural resources on the district. Illegal activities such as vandalism and looting by pothunters clearly affect cultural resources. No indication of vandalism or pot hunting was documented in the 7 sites located near proposed roads. However, these activities are illegal and cannot be predicted. Overall, the cumulative effects to cultural resources from either alternative are not considered to be adverse, and there would be no effects to traditional or contemporary uses.
Chapter 3. Environmental Effects

Socio-Economic Resources

Affected Environment
Sierra Vista Ranger District personnel manage National Forest System lands in Cochise, Pima, and Santa Cruz Counties. These 3 counties form the study area for the affected environment assessment. The environmental effects analysis employs an 11-county region in Arizona and New Mexico in order to capture the flow of workers and goods across counties. The larger study area provides for a more accurate assessment of economic effects.

Demographic Characteristics
In 2010, Cochise County had a population of 131,346, Pima County had a population of 980,263, and Santa Cruz County had a population of 47,420 (U.S. Census Bureau 2010). Santa Cruz County is the fastest growing county in the study area, growing more 50 percent between 1990 and 2010 (U.S. Census Bureau 1990). However, all study area counties grew more slowly than the State. Rapid population growth may indicate expanding economic opportunities and the presence of desirable natural and cultural amenities. National Forest System lands and other protected areas offer social and economic opportunities that may make an area attractive to new residents.

While rapid population growth often signals desirable community attributes, it can also impose costs on those communities. In particular, rapid growth can strain infrastructure, natural resources, and community cohesion. Increasing population size places pressure on forest resources and may spur demand for recreation opportunities.

Cochise and Pima Counties have higher shares of individuals with disabilities and individuals aged 65 years or older than the State and Nation (U.S. Census Bureau 2012a and U.S. Census Bureau 2012b). While disability and advanced age do not necessarily indicate mobility impairments, these classifications provide a useful proxy for individuals who may be affected disproportionately by restrictions on motorized use.

Hiking and walking are the most popular main activities by a large margin, with more than half of Coronado National Forest visitors citing it as the purpose of their visit. The most common motorized activity is driving for pleasure, which approximately one-quarter of forest visitors do during their trip and 6 percent identified it as their main activity (USDA Forest Service 2012).

Economic Characteristics
All 3 study area counties have per capita income below the State and national figures; however, per capita income in Pima County is not meaningfully different from per capita income in the State. Santa Cruz County has the lowest per capita income and median earnings among the considered geographies (U.S. Census Bureau 2010). These data indicate a higher share of economic vulnerability in the study area relative to the State and Nation. Economically vulnerable areas are less able to adapt to change. Changes to employment and income in the study area should be considered in this context.

Environmental Justice
The racial and ethnic composition of Cochise and Pima Counties is similar to the racial and ethnic composition of Arizona as a whole (U.S. Census Bureau 2010). However, Santa Cruz County has a much higher share of Hispanic/Latino residents (82.8 percent) than Arizona (29.6 percent). Santa Cruz County also has the highest poverty rate (25.2 percent) among the study area counties,
Arizona, and the United States. This finding is consistent with the income and earnings data, presented above. Pima and Cochise Counties also have poverty rates above the State and national rates (U.S. Census Bureau 2010). Public lands provide affordable recreation opportunities to many Americans. In the study area, the proximity of Coronado National Forest land makes the cost of visitation relatively low. Low-income individuals will have fewer resources for engaging in substitute behavior (for example, participating in another activity or visiting another site). Therefore, adaptation to changes in motorized recreation opportunities may be more difficult for low-income individuals.

**Environmental Effects**

A categorization of national visitor use monitoring program data revealed motorized use accounts for 14 to 24 percent of visitor activities and non-motorized use accounts for 77 to 87 percent of visitor activities. Since national visitor use monitoring data is only available at the forest level, the economic effects analysis is conducted for the Coronado National Forest as a whole. All miles of roads and trails across the Coronado are treated equally for the purposes of the economic analysis. In other words, the reduction of one mile of road open for public motorized use on the Santa Catalina Ranger District is assumed to have the same effect as a one mile reduction on the Safford Ranger District.

**Direct and Indirect Effects**

**Alternative 1- No Action**

The no-action alternative would continue current management of motorized recreation on the Sierra Vista Ranger District. This alternative would keep 704.25 miles of road and trail open to public motorized use, which accounts for approximately 33 percent of the mileage across the entire forest (2,174 miles). The no-action alternative would continue to support approximately 91 jobs and $3.1 million in labor income associated with motorized recreation on the Coronado National Forest. The majority of recreation-related employment (approximately 400 jobs) would continue to be supported by non-motorized recreation on the Coronado. No disproportionate effects to low-income individuals or minority groups would result from the no-action alternative.

**Alternative 2- Modified Proposed Action**

The modified proposed action would reduce roads open to the public on the Sierra Vista Ranger District by approximately 173.06 miles. The modified proposed action is estimated to support between three and six fewer jobs and $114,000 to $196,000 less in labor income in the local economy. These changes are based on an assumption that fewer motorized opportunities will lead to less use on the district. However, substitute behavior is likely to minimize the potential economic effects.

The reduction in motorized opportunities may disproportionately affect individuals with mobility limitations. Individuals who rely on motorized transportation to visit their favorite sites on the Sierra Vista Ranger District may have a lower quality of life under the modified proposed action. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. Generally, granting an exemption from designations for people with disabilities would not be consistent with the resource protection and other management objectives of designation decisions and would fundamentally alter the nature of the Forest Service's travel management program (29 U.S.C. 794; 7 CFR 15e.103).
A reduction in motorized opportunities can increase the cost of visitation, for instance, if individuals must travel farther to access roads or trailheads. Low-income individuals may have fewer options for substitute behavior, particularly where alternative activities are more costly. Therefore, low-income individuals may be disproportionately affected by changes under the modified proposed action.

**Cumulative Effects**

The geographic scope for the cumulative effects includes both public and private lands in the 11 Arizona and New Mexico counties that form the study area for the environmental effects analysis. The temporal scope includes reasonably foreseeable future actions, which extends approximately 10 years.

The no-action alternative would not result in cumulative social and economic effects.

Travel management planning on Bureau of Land Management and other National Forest System lands throughout the region has generally reduced motorized recreation opportunities. In particular, the implementation of travel management planning on the Bureau of Land Management’s Gila District affects the availability of motorized recreation opportunities in the vicinity of the Sierra Vista Ranger District. The modified proposed action, in concert with other motorized recreation limitations in the region, may reduce the potential for substitute motorized recreation opportunities. Fewer substitute opportunities could make motorized recreation more costly (for example, increased time and fuel costs of traveling to another site) and less accessible to individuals with fewer resources.

**Air Quality**

**Affected Environment**

Degradation of the purity of the air we breathe is an important public health issue. Particles of dust, smoke, and soot in the air from many sources, including wildland fire, vehicle emissions, and fugitive dust, can cause acute health effects. The purity of the air also affects regional haze and visibility. This haze is caused by many sources of both natural and manmade air pollution.

The primary purpose of the Clean Air Act is to protect humans against negative health or welfare effects from air pollution. The Clean Air Act defined national ambient air quality standards as the amount of pollutant above which detrimental effects to public health or welfare may result.

The 1986 Forest Plan standards and guidelines, applicable to all areas of the Coronado National Forest, include: “All management practices will be planned so that air quality will meet local, State, and Federal standards” (page 45-1).

The Miller Peak Wilderness is a Class II airshed. Currently, the air quality in the project area is within the standards and guidelines of the 1986 Forest Plan. There are no non-attainment areas for air quality in the vicinity of any of the Sierra Vista Ranger District ecosystem management areas.

**Sources of Air Pollutants**

Roads affect air by providing access for various polluting agents and creating fugitive dust. However, National Forest System roads have not been specifically identified as causing unacceptable impacts to air quality. Roads may be having localized effects on air quality adjacent to them, but no data is available that measures this potential impact.
Environmental Effects

Direct and Indirect Effects

Alternative 1-No Action
The no-action alternative would allow for continued use of authorized system roads, and use of unauthorized routes would continue to be prohibited.

Alternative 2- Modified Proposed Action
No new roads would be constructed under this alternative; therefore, no new sources of air quality degradation would be added on the Sierra Vista Ranger District. Designating 58.87 miles of unauthorized routes and adding them the road system will have little or no quantifiable effect on air quality as these roads already have some motor vehicle traffic. Some dust from roads would be reduced by restricting use on 26.76 miles of road currently open to all vehicles, decommissioning 182.52 miles of National Forest System roads, and decommissioning 76.62 miles of unauthorized routes. Proposed changes would have little impact on fugitive dust. Changes proposed for National Forest System roads are not expected to result in a net increase in the amount of vehicle traffic on the Sierra Vista Ranger District, especially since most users would likely use an alternative route if certain roads are restricted or decommissioned. Therefore, there would be no measurable change in air quality related to vehicle emissions. There may be a slight initial reduction in windblown dust from decommissioning 259.14 miles of roads. Benefits would be localized near the decommissioned roads; however, this reduction would not be measurable across the Sierra Vista Ranger District.

Overall, the changes specified by modified proposed action are not expected to contribute significant effects to national ambient air quality standards.

Cumulative Effects Common to All Alternatives:
Neither alternative would result in significant changes to ambient air quality; thus, there would be no direct or indirect effects. For this reason, there can be no cumulative effects from implementation.

Climate Change

Affected Environment
The climate and predicted climate change trends on forests of the Southwest are described in Southwestern Region Climate Change Trends and Forest Planning (2010)(Seager et al. 2007, Gutzler and Robbins 2010). The climate of the southwestern United States is often characterized as dry and hot, but variation in topography, seasonal monsoons, and the strong influence of the El Niño southern oscillation and other global circulation patterns add complexity to this region (USDA 2010). The low deserts of the Southwest experience heat and drying winds in the early summer, and forested mountain areas and plateaus may experience cold and drifting snow during the winter. Precipitation patterns are characterized by two peaks each year. Winter precipitation is produced primarily from large frontal systems moving over the region. Summer precipitation results largely from thunderstorms in the North American monsoon circulation. The Southwest also experiences periods of short- and long-term drought, often linked to anomalies of the El Niño southern oscillation.
The effects from climate change are hard to predict due to the highly variable climate of the Southwest and the unpredictability of the variables that influence climate over time at subregional scales. USDA (2010) described expected effects from climate change for forests of the Southwest. They include increasing temperatures, longer-lasting summer heat waves, warmer winters, later monsoonal season, reduced precipitation, and an increase in extreme floods. However, most global climate change models are not yet precise enough to apply to land management at the ecoregional or national forest scale. Consequently, it is not possible to analyze effects to climate change at the district or project level with existing models.

The desired conditions described for southwestern national forests include ecosystems that retain their function under changing and uncertain future environmental conditions; ecological conditions for habitat quality, distribution, and abundance contribute to self-sustaining populations of animal and plant species; and a forest that continues to provide for human services including recreation, grazing, forest products, and water resources (USDA 2010).

Environmental Effects

Direct and Indirect Effects

Alternative 1- No Action
Vehicle exhaust contributes to greenhouse gases and climate forcing, and fugitive dust from roads contributes to particulate matter in the air that influences insolation and precipitation and thus could impact climate change. No measurable change in the amount of vehicle use is expected under this alternative. Continued use of unneeded roads could result in more fugitive dust compared to the modified proposed action, but the difference is not significant.

Alternative 2- Modified Proposed Action
Changes in National Forest System roads are not expected to change the amount of vehicle traffic on the Sierra Vista Ranger District, as users would most likely drive on an alternative route. There may be slight reductions in fugitive dust from closing or decommissioning some roads. However, this reduction would be difficult to measure and is expected to be negligible compared to background levels.

Cumulative Effects
Neither alternative would result in a measurable difference in climate change; therefore, they would not contribute to cumulative effects when considered in combination with the effects of any of the actions listed in table 4.

Special Status Species

Affected Environment
The affected environment for wildlife, fish, and rare plants consists of a spatial and temporal component. Temporally, it consists of the current status of these biological resources and the components that shape their habitats and predictions of how these populations and other resource areas may change over time. For wildlife, fish, and rare plants, trend data was used, if available, to predict future distributions of populations and individuals. If this data was lacking, suitable habitat was used to estimate future distributions of species.
Spatially, the affected environment used in the analysis was the entire Sierra Vista Ranger District. The affected environment for species was focused based on occurrence data, suitable habitat present, and a combination of those two elements. The distribution of several species is relatively well known. For example, Mexican spotted owl breeding pairs on the Sierra Vista Ranger District have been monitored annually since 2012; therefore, it was possible to overlay their locations with both alternatives and estimate the effects of either action. For most species (threatened and endangered, candidate, Forest Service sensitive, and management indicator), precise distributions are not well known or they are relatively common and widely distributed across the Sierra Vista Ranger District. For those species, historical data and potentially suitable habitat present was used to focus the analysis, if possible. For widely distributed species that could occur in multiple habitat types (jaguar, for example), the entire Sierra Vista Ranger District was used as its potential affected environment.

For the cumulative effects analysis, the affected environment differs depending on the legal status of the species. For threatened and endangered species, cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the modified proposed action are not considered for threatened and endangered species because they require separate consultation pursuant to section 7 of the Endangered Species Act (50 CFR section 402.02).

### Threatened and Endangered Species

Consultation with the U.S. Fish and Wildlife Service regarding this modified proposed action is ongoing. Prior to decision, a biological opinion will be issued that is anticipated to be consistent with the analysis presented in this environmental assessment.

Thirteen species listed under the Endangered Species Act are known to occur in the Sierra Vista Ranger District. A description of their natural histories, including a complete list of their threats, can be located at the U.S. Fish and Wildlife Service website:  
http://www.fws.gov/southwest/es/arizona/Docs_Species.html

**Canelo Hills ladies’-tresses (Spiranthes delitescens):** This plant occurs in cienegas and slow-moving waters in saturated, finely-grained, organic soils at elevations below 5,000 feet. Associated plants include sedges, tall grasses, and a few small herbs (USFWS 1997). Plants may remain dormant, with no vegetation present above ground, for more than one consecutive year. Canelo Hills ladies’-tresses are known to occur at three sites on the Sierra Vista Ranger District: Turkey Creek, O’Donnell Canyon, and one location in the San Rafael Valley. All three locations are on private lands (HDMS 2015).

**Pima pineapple cactus (Coryphantha scheeri var. robustispina):** The Pima pineapple cactus is found at elevations below 4,000 feet in the desert scrubland or the ecotone between desert scrubland and desert grassland, on relatively flat areas (less than 10 percent slope). It is geographically restricted to southeast Arizona, specifically the valley floors between the Baboquivari Mountains on the west and the Santa Rita Mountains to the east, and in low densities, in the northern areas of Sonora, Mexico. Most of the Sierra Vista Ranger District contains unsuitable habitat for Pima pineapple cactus, and known locations of the cacti are restricted to the extreme southwest corner of the Huachuca Ecosystem Management Area, roughly south and west of Providencia and Italian Canyons.
Huachuca water-umbel (*Lilaeopsis schaffneriana var. recurva*): There are 30 naturally occurring locations of the Huachuca water-umbel in the United States and 21 in Sonora, Mexico that currently support or have historically supported populations. Most occur along the San Pedro River, along Cienega Creek in the San Pedro River and Santa Cruz River watersheds, and in perennial water in the Huachuca Mountains. Within the Sierra Vista Ranger District, there are populations of Huachuca water-umbel in four 6th-code watersheds: Bodie Canyon, Cave Canyon, Parker Canyon, and Turkey Creek (HDMS 2015).

Critical habitat for Huachuca water-umbel was designated in 1999. Three of the 7 complexes of critical habitat occur on the Sierra Vista Ranger District in Scotia, Sunnyside, Bear, and Lone Mountain Canyons, totaling approximately 8.4 miles of drainages within the Sierra Vista Ranger District.

Gila chub (*Gila intermedia*): Gila chub commonly inhabit pools in smaller streams, springs, and cienegas and can survive in small artificial impoundments such as man-made ponds. There three locations of Gila chub on the Sierra Vista Ranger District: O’Donnell Creek, Post Canyon, and Turkey Creek. All three are part of one population estimated at fewer than 500 adults (USFWS 2015). Two segments of Gila chub critical habitat are on the Sierra Vista Ranger District totaling approximately 10 miles and 693 acres in O’Donnell and Turkey Creek.

Gila topminnow (*Poeciliopsis occidentalis*): Gila topminnows can tolerate a wide array of aquatic habitats but prefer shallow, warm, waters. Historically Gila topminnow has been documented throughout Redrock Canyon since 1978 (USFWS 2008). The status of the Redrock Canyon population has declined recently and the species has not been documented since 2005 (USFWS 2008). Although range and riparian conditions have largely improved, the area has been in drought since 1995, and the resulting reductions in habitat as stream channels have dried and perennial habitat has been reduced in extent, along with increases in nonnative species, primarily mosquitofish, have apparently extirpated the Gila topminnow from the drainage (USFWS 2008). In the fall of 2015, a new occurrence of Gila topminnow was discovered in lower Parker Canyon, roughly 4 miles below Parker Canyon Lake. Genetic analysis is being conducted on individuals recovered from the site to determine the source population.

Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*): The Sonoran tiger salamander is known from 71 localities, 90 percent of which falls in lands managed by the Sierra Vista Ranger District. During surveys by the Arizona Game and Fish Department from 2001-2006, STS were found at 37 of 139 stock tanks, which were sampled from 1 to 7 times each. At 23 of 29 tanks where salamanders were found, and which were sampled more than once, salamanders were not found on at least one visit. All sites where Sonoran tiger salamanders have been found in Arizona are located in the Santa Cruz and San Pedro river drainages, including sites in the San Rafael Valley and adjacent portions of the Patagonia and Huachuca mountains in Santa Cruz and Cochise counties. All confirmed historical and extant aquatic populations are found in cattle tanks or impounded cienegas within 19 miles of Lochiel, Arizona.

On the Sierra Vista Ranger District, the distribution of the Sonoran tiger salamander is almost completely encompassed by the Santa Cruz River and the Las Nutrias headwaters of the 5th hydrologic unit code watershed. Although there are some occurrences that fall outside these watershed boundaries, using these watersheds should capture the effects of the modified proposed action.
Chiricahua leopard frog (*Lithobates chiricahuensis*): The Chiricahua leopard frog is found in mountain regions of central and southeastern Arizona, southwestern New Mexico, and south into Mexico from 3,200 to 8,900. Historically, it occurred in springs, creeks, rivers, cienegas, perennial plunge pools and tinajas in intermittent drainages, but currently most often found in earthen stock tanks and above-ground stock drinkers. It is a highly aquatic species requiring perennial to near-perennial water sources to complete its life cycle.

Within the Sierra Vista Ranger District, known populations of Chiricahua leopard frog occur in Brown Canyon, Miller Canyon, Sycamore Canyon, Scotia Canyon, and Alamo Canyon. Critical habitat for the Chiricahua leopard frog on the Sierra Vista Ranger District occurs in Brown Canyon, Scotia Canyon, and in Carr Canyon.

Northern Mexican gartersnake (*Thamnophis eques megalops*): In Arizona, its distribution has been reduced to less than 10 percent of its former range along large mainstem rivers. The Northern Mexican gartersnake is considered to occur throughout the Sierra Vista Ranger District but at very low densities. The most robust populations occur adjacent to the Sierra Vista Ranger District in the Upper Santa Cruz River in the San Rafael Valley.

An important component to suitable Mexican gartersnake habitat is a stable native prey base consisting of fishes and adult and larval ranid frogs. Adult Mexican gartersnakes will also prey on juvenile nonnative bullfrogs, bullfrog tadpoles, or both where they co-occur.

The Sierra Vista Ranger District contains some of the largest segments of the proposed Northern Mexican gartersnake critical habitat, occupying O’Donnell Canyon, Post Canyon, Turkey Creek, Redrock Canyon, Bear Creek, and the Upper Santa Cruz River subbasin.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*): Yellow-billed cuckoos are neotropical migrants that winter in South America and spend the summer months within an area stretching from northern Mexico to southern Canada. In Arizona, yellow-billed cuckoos arrive on the breeding grounds in late May to early June. Peak nesting activity occurs from early July through mid-August and the onset of nesting is often correlated with spikes in local abundance of large insect prey (Hughes 1999). Most western yellow-billed cuckoos begin their fall migration in late August through mid-September.

Cuckoos typically breed in large blocks of riparian woodland (more than 50 acres) at elevations below 7,000 feet (Halterman et al. 2013) and in cottonwood-willow-tamarisk vegetation associations that often possess a mesquite component. However, on the Coronado National Forest, yellow-billed cuckoos have been found in a variety of habitats and are not always associated with water or deciduous riparian forest (Forest Service unpublished data). On the Sierra Vista Ranger District, yellow-billed cuckoos have been found throughout the district, in almost every canyon or drainage sampled. Currently, there is no proposed yellow-billed cuckoo critical habitat on the Sierra Vista Ranger District.

Mexican spotted owl (*Strix occidentalis lucida*): There are 19 established Mexican spotted owl protected activity centers on the Sierra Vista Ranger District. There are 15 protected activity centers in the Huachuca Mountains, three in the Patagonia Mountains, and one in the Whetstone Mountains. Protected activity centers on the Sierra Vista Ranger District have been monitored sporadically since 1989, but since 2013, all on the Sierra Vista Ranger District have been surveyed. Mexican spotted owl critical habitat was designated in 2004, and 126,424 acres occur on the Sierra Vista Ranger District.
Lesser long-nosed bat (Leptonycteris curasoae verbabuenae): The lesser long-nosed bat is a seasonal migrant on the Coronado National Forest. The species occurs in Arizona generally from May to September, but significant numbers of bats are found on the Coronado National Forest only after leaving low-elevation maternity colonies. Occurrence on the Coronado National Forest coincides with the blooming of paniculate agaves between July and September. Several post-maternity roosts, which house from thousands to only a few individuals, are known from various locations on or near the Coronado National Forest. Only four are monitored on a priority basis during the simultaneous roost surveys: Patagonia Bat Cave, Lone Star Mine, New Catalina Cave, and Papago Cave. The Patagonia Bat Cave and the Papago Cave are on the Sierra Vista Ranger District.

The number of bats at all roost sites can fluctuate substantially each year and among years, which is likely due in part to roost-switching behavior (USFWS 2007). Therefore, it is difficult, and perhaps inappropriate, to determine population trends based on the number of bats detected at select roosts from year to year. However, it does appear that known roosts are still being used, and new roosts and newly discovered roosts continue to be documented on and around the Coronado National Forest.

Ocelot (Leopardus pardalis): Ocelots are found in many habitat types but have been described as habitat specialists associated with dense thornscrub (Harveson et al. 2004). However, most of this data came from ocelots in Texas. Animals in the Arizona/Sonora Management Unit tend to prefer subtropical thornscrub to tropical deciduous forest (USFWS 2010) but habitat use data is lacking for animals in Arizona. Since 2009, detections of ocelots in southeast Arizona have increased (USFWS 2010; personal communication, Erin Fernandez, FWS, 2014), with most of the detections coming from three males occupying the Huachuca and Santa Rita mountain ranges (personal communication, Erin Fernandez, FWS, 2014). In 2013, one of the individuals regularly photographed in the Huachuca Mountains was also photographed in the Patagonia Mountains (personal communication, Erin Fernandez, FWS, 2014) which are separated by approximately 15 to 20 miles of grasslands, Interior Chaparral, Madrean Pine-Oak Woodland, and Madrean Encinal Woodland. The U.S. Fish and Wildlife Service considers all Madrean evergreen woodland south of Interstate 10 to be occupied by ocelots (personal communication, Erin Fernandez, FWS, 2014). The draft revised recovery plan for the ocelot focuses on two cross-border management units, the Texas/Tamaulipas Management Unit and the Arizona/Sonora Management Unit which includes the Sierra Vista Ranger District. Little is known about ocelot habitat use in Arizona and Sonora; however, researchers found that 27 of the 36 records (75 percent) of ocelots in Sonora were associated with tropical or subtropical habitat, namely subtropical thorn scrub, tropical deciduous forest, and tropical thornscrub. Only males (11.1 percent of the total records) were recorded in temperate oak and pine-oak woodland. Ocelots most often occur in dense brushy thickets and in riparian bottomland; they also prefer rocky areas.

Jaguar (Panthera onca): In Arizona, New Mexico and northern Mexico, jaguars use open, dry habitat, including desertscrub, thornscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities (USFWS 2012). Rabinowitz (1999) characterized the dry, open habitat of the southwest U.S. as marginal in terms of cover, water availability, and prey density. Habitat use data for jaguars in Arizona is very limited but they have been documented in open, arid landscapes (McCain and Childs 2008).

Jaguars have probably never been common in Arizona, but they were consistently documented in the state from the late 19th to the mid-20th century (Hoffmeister 1986). Since the mid-1900s, jaguar sightings in Arizona have declined, but that may have been the result of exogenous factors.
and not actually a reduction in their numbers (McCain and Childs 2008). The most recent observations within the project area have been of a male jaguar in the Huachuca Mountains in the spring of 2017.

There are currently no known breeding populations in the U.S., and jaguars in Arizona are likely part of a population, or populations, that occur in Mexico. The northernmost known breeding population is in east-central Sonora, approximately 130 miles south of the U.S. border (Brown and Lopez-Gonzalez 2001). Jaguar critical habitat was designated in 2013.

**Forest Service Sensitive Species**

To determine which Forest Service sensitive species may occur on the Sierra Vista Ranger District, primarily two sources of plant and animal occurrence data were used: Heritage Data Management System (HDMS) and SEINet. HDMS data was analyzed by putting a 2.5-mile buffer around the Sierra Vista Ranger District and then clipping the HDMS data to that polygon. The resultant species list was cross referenced with the FSSS list. A 2.5-mile buffer was used because this covered most of Fort Huachuca, San Rafael Valley, and barely touched the Santa Rita Ecosystem Management Area of the Nogales Ranger District. The animal list was also cross referenced with Ebird, Hoffmiester (1986), and the Audubon Research Ranch species list. For plants, only HDMS and SEINet were used. A total of 33 plants and 41 animals that may occur on the Sierra Vista Ranger District (table 13 through table 18) were used for the analysis of the alternatives.

Similar species were grouped for the discussion of the effects analysis. Groupings were made based on similar life histories, threats, or effects from the alternatives. None of the effects from either alternative are expected to be detrimental and substantial and likely to result in a trend to federal listing or loss of viability.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pima Indian mallow</td>
<td>Abutilon parishii</td>
</tr>
<tr>
<td>trelease agave</td>
<td>Agave schottii var. treleasei</td>
</tr>
<tr>
<td>Goodding’s onion</td>
<td>Allium gooddingii</td>
</tr>
<tr>
<td>large-flowered blue star</td>
<td>Amsonia grandiflora</td>
</tr>
<tr>
<td>Chiricahua rock cress</td>
<td>Arabis tricornuta</td>
</tr>
<tr>
<td>Lemmon milkweed</td>
<td>Asclepias lemonnii</td>
</tr>
<tr>
<td>Greene milkweed</td>
<td>Asclepias uncialis ssp. Uncialis</td>
</tr>
<tr>
<td>Huachuca milkvetch</td>
<td>Astragalus hypoxylus</td>
</tr>
<tr>
<td>bush violet</td>
<td>Browallia eludens</td>
</tr>
<tr>
<td>Chihuahuan sedge</td>
<td>Carex chihuahuensis</td>
</tr>
<tr>
<td>Cochise sedge</td>
<td>Carex ultra (=C.spissa var. ultra)</td>
</tr>
<tr>
<td>smooth babybonnets</td>
<td>Coursetia glabella</td>
</tr>
<tr>
<td>Metcalf’s tick-trefoil</td>
<td>Desmodium metcalfei</td>
</tr>
<tr>
<td>arid throne fleabane</td>
<td>Erigeron arisolius</td>
</tr>
<tr>
<td>Chiricahua fleabane</td>
<td>Erigeron kuschei</td>
</tr>
<tr>
<td>Bartram stonecrop</td>
<td>Graptophyllum bartramii</td>
</tr>
<tr>
<td>Rutter’s false goldenaster</td>
<td>Heterotheca rutteri</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Arizona coralroot</td>
<td><em>Hexalectris spicata var. arizonica</em></td>
</tr>
<tr>
<td>Texas purple-spike</td>
<td><em>Hexalectris warnockii</em></td>
</tr>
<tr>
<td>Rusby hawkweed</td>
<td><em>Hieracium abscissum (= H. rusbyi)</em></td>
</tr>
<tr>
<td>lemon lily</td>
<td><em>Lilium parryi</em></td>
</tr>
<tr>
<td>Huachuca Mountains lupine</td>
<td><em>Lupinus huachucanus</em></td>
</tr>
<tr>
<td>supine bean</td>
<td><em>Macroptilium supinum</em></td>
</tr>
<tr>
<td>Wiggins milkweed vine</td>
<td><em>Metastelma mexicanum (=Cynanchum wigginsii)</em></td>
</tr>
<tr>
<td>southwestern muhly</td>
<td><em>Muhlenbergia palmeri (=M. dubioides)</em></td>
</tr>
<tr>
<td>toumey groundsel</td>
<td><em>Packera neomexicana var. toumeyi (=Senecio n. var. t.)</em></td>
</tr>
<tr>
<td>virlet paspalum</td>
<td><em>Paspalum virletii</em></td>
</tr>
<tr>
<td>beardless chinchweed</td>
<td><em>Pectis imberbis</em></td>
</tr>
<tr>
<td>Huachuca cinquefoil</td>
<td><em>Potentilla rhyolitica var. rhyolitica</em></td>
</tr>
<tr>
<td>Mexican tansy aster</td>
<td><em>Psilactis gentryi (=machaeranthera mexicana)</em></td>
</tr>
<tr>
<td>Blumer's dock</td>
<td><em>Rumex orthoneurus</em></td>
</tr>
<tr>
<td>Chiricahua Mountain brookweed</td>
<td><em>Samolus vagans</em></td>
</tr>
<tr>
<td>Huachuca groundsel</td>
<td><em>Senecio multitentatus var. huachucanus (=s. huachucanus)</em></td>
</tr>
<tr>
<td>Lemmon's stevia</td>
<td><em>Stevia lemmonii</em></td>
</tr>
<tr>
<td>tepic flame flower</td>
<td><em>Talinum marginatum</em></td>
</tr>
<tr>
<td>Sonoran noseburn</td>
<td><em>Tragia laciniata</em></td>
</tr>
<tr>
<td>shade violet</td>
<td><em>Viola umbraticola</em></td>
</tr>
</tbody>
</table>

Table 14. Summary of Forest Service sensitive invertebrate species for Region 3 that may occur on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huachuca giant skipper</td>
<td><em>Agathymus evansi</em></td>
</tr>
<tr>
<td>Huachuca springsnail</td>
<td><em>Pyrgulopsis thompsoni</em></td>
</tr>
</tbody>
</table>

Table 15. Summary of Forest Service sensitive fish species for Region 3 that may occur on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>desert sucker</td>
<td><em>Catostomus clarkii</em></td>
</tr>
<tr>
<td>Sonora sucker</td>
<td><em>Catostomus insignis</em></td>
</tr>
</tbody>
</table>

Table 16. Summary of Forest Service sensitive reptiles and amphibians for Region 3 that may occur on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>twin-spotted rattlesnake</td>
<td><em>Crotalus pricei</em></td>
</tr>
<tr>
<td>Arizona ridgenose rattlesnake</td>
<td><em>Crotalus willardi willardi</em></td>
</tr>
<tr>
<td>giant spotted whiptail</td>
<td><em>Aspidoscelis stictogramma</em></td>
</tr>
<tr>
<td>twin-spotted rattlesnake</td>
<td><em>Crotalus pricei</em></td>
</tr>
<tr>
<td>Arizona ridgenose rattlesnake</td>
<td><em>Crotalus willardi willardi</em></td>
</tr>
<tr>
<td>western barking frog</td>
<td><em>Eleutherodactylus augusti cactorum</em></td>
</tr>
</tbody>
</table>
### Common Name | Scientific Name
--- | ---
thornscrub hook-nosed snake | Gyalopion quadrangulare
Canelo Hills Arizona treefrog | Hyla wrightorum
brown vinesnake | Oxybelis aeneus
Slevin’s bunchgrass lizard | Sceloporus slevini
green ratsnake | Senticolis triaspis
Chihuahaun black-headed snake | Tantilla wilcoxi

#### Table 17. Summary of Forest Service sensitive bird species for Region 3 that may occur on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
</table>
northern goshawk | Accipiter gentilis
violet-crowned hummingbird | Amazilia violiceps
Baird’s sparrow | Ammodramus bairdii
Arizona grasshopper sparrow | Ammodramus savannarum ammolegus
lucifer hummingbird | Calothorax lucifer
northern beardless-tyrannulet | Camptostoma imberbe
western yellow-billed cuckoo | Coccyzus americanus occidentalis
broad-billed hummingbird | Cynanthus latirostris
buff-breasted flycatcher | Empidonax fulvifrons
eared quetzal | Euptilotis neoxenus
American peregrine falcon | Falco peregrinus anatum
bald eagle | Haliaeetus leucocephalus
whiskered screech owl | Megascops trichopsis
Gould’s wild turkey | Meleagris gallopavo mexicana
Abert’s towhee | Melozone aberti
sulphur-bellied flycatcher | Myiodynastes luteiventris
rose-throated becard | Pachyramphus aglaiae
varied bunting | Passerina versicolor
Arizona woodpecker | Picoides arizonae
elegant trogon | Trogon elegans
thick-billed kingbird | Tyrannus crassirostris

The mammals listed in table 18 occur throughout the Sierra Vista Ranger District and in a variety of habitats. Most are permanent residents but the Mexican long-tongued and the western red bats migrate to southern latitudes during the winter months. All are primarily threatened by habitat loss and most of these species share an association with riparian areas (northern pygmy mouse, western red bat, hooded skunk, Arizona shrew). The Mexican long-tongued bat and the pale Townsend’s big-eared bat are both vulnerable to impacts associated to their maternity roosts while the pale Townsend’s big-eared bat is also vulnerable to disturbances to hibernacula.
Table 18. Summary of Forest Service sensitive mammal species for Region 3 that may occur on the Sierra Vista Ranger District

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>northern pygmy mouse</td>
<td>Baiomys taylori ater</td>
</tr>
<tr>
<td>Mexican long-tongued bat</td>
<td>Choeronycteris mexicana</td>
</tr>
<tr>
<td>pale Townsend’s big-eared bat</td>
<td>Corynorhinus townsendii pallescens</td>
</tr>
<tr>
<td>western red bat</td>
<td>Lasiurus blossevillii</td>
</tr>
<tr>
<td>hooded skunk</td>
<td>Mephitis macroura milleri</td>
</tr>
<tr>
<td>Arizona shrew</td>
<td>Sorex arizonae</td>
</tr>
</tbody>
</table>

Management Indicator Species

The management indicator species analysis examines the effects of project impacts on forestwide habitat and population trends and only considers management indicator species that occur in the project area (table 19). Project impacts that can only be related to a management indicator species’ habitat quality, quantity, or population trend, were considered. Forestwide population and habitat trends were taken from USDA (2011). Habitat data within the project area were taken from the Vegetation Specialist Report. Population and habitat trends are forestwide.

Table 19. Management indicator species known to occur in the area affected by proposed changes to the motorized travel system on the Sierra Vista Ranger District, Coronado National Forest

<table>
<thead>
<tr>
<th>MIS Species</th>
<th>Population Trend</th>
<th>Habitat Trend</th>
<th>Habitat within Project Area (ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elegant trogon</td>
<td>stable/increasing</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Sulphur-bellied flycatcher</td>
<td>stable</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Gray hawk</td>
<td>stable/increasing</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Blue-throated hummingbird</td>
<td>stable</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Rose-throated becard</td>
<td>stable</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Thick-billed kingbird</td>
<td>stable/increasing</td>
<td>stable</td>
<td>1,308</td>
</tr>
<tr>
<td>Buff-breasted flycatcher</td>
<td>stable</td>
<td>increasing</td>
<td>31,656</td>
</tr>
<tr>
<td>Baird’s sparrow</td>
<td>decreasing</td>
<td>stable/decreasing</td>
<td>22,762</td>
</tr>
<tr>
<td>Mearn’s quail</td>
<td>stable</td>
<td>stable</td>
<td>212,691</td>
</tr>
<tr>
<td>Merriam’s turkey</td>
<td>stable/increasing</td>
<td>stable</td>
<td>170,219</td>
</tr>
<tr>
<td>Other primary and secondary cavity nesters*</td>
<td>stable</td>
<td>stable</td>
<td>196,556</td>
</tr>
<tr>
<td>Pronghorn antelope</td>
<td>stable/increasing</td>
<td>stable</td>
<td>58,170</td>
</tr>
<tr>
<td>White-tailed deer</td>
<td>stable</td>
<td>stable</td>
<td>163,592</td>
</tr>
<tr>
<td>Black bear</td>
<td>stable</td>
<td>stable</td>
<td>250,310</td>
</tr>
</tbody>
</table>

*Primary cavity nesters: ladder-backed woodpecker, Arizona woodpecker, northern flicker, Gila woodpecker, acorn woodpecker, hairy woodpecker

*Secondary cavity nesters: American kestrel, elf owl, flammulated owl, whiskered screech owl, western screech owl, Northern pygmy-owl, Mexican spotted owl, elegant trogon, eared trogon, sulphur-bellied flycatcher, brown-crested flycatcher, ash-throated flycatcher, dusky capped flycatcher, Cordilleran flycatcher, violet green swallow, juniper titmouse, bridled titmouse, brown creeper, white-breasted nuthatch, red-breasted nuthatch, pygmy nuthatch, house wren, Bewick’s wren, eastern bluebird, European starling, Lucy’s warbler.
Environmental Effects

Direct and Indirect Effects

Summary for Threatened and Endangered Species

Summaries of the analyses and determinations for the 13 threatened and endangered species are outlined below (table 20). Habitat was only deemed critical if it occurred on the Sierra Vista Ranger District. Determinations for species and their critical habitat are the same unless stated otherwise.

Abbreviations in the table are as follows: N = no, Y = yes, P = yes, but proposed rather than designated. Determinations are NE = no effect, MANLAA = may affect, not likely to adversely affect, MALAA = may affect, likely to adversely affect.

Table 20. Threatened and endangered species considered in this analysis and summary determination of effects

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Critical Habitat</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canelo Hills ladies’-tresses</td>
<td>Spiranthes delitescens</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Pima pineapple cactus</td>
<td>Coryphantha scheeri var. robustispina</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Huachuca water-umbel</td>
<td>Lilaeopsis schaffneriana var. recurva</td>
<td>Y</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Gila chub</td>
<td>Gila intermedia</td>
<td>Y</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Gila topminnow</td>
<td>Poeciliopsis occidentalis</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Sonoran tiger salamander</td>
<td>Ambystoma tigrinum stebbinsi</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Chiricahua leopard frog</td>
<td>Lithobates chiricahuensis</td>
<td>Y</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Northern Mexican gartersnake</td>
<td>Thamnophis eques megalops</td>
<td>P</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Western yellow-billed cuckoo</td>
<td>Coccyzus americanus occidentalis</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Mexican spotted owl</td>
<td>Strix occidentalis lucida</td>
<td>Y</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Lesser long-nosed bat</td>
<td>Leptonycteris curasoae yerbabuenae</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Ocelot</td>
<td>Lepardus pardalis</td>
<td>N</td>
<td>MANLAA</td>
</tr>
<tr>
<td>Jaguar</td>
<td>Panther onca</td>
<td>Y</td>
<td>MANLAA</td>
</tr>
</tbody>
</table>

Alternative 1 – No Action

Canelo Hills ladies’-tresses (Spiranthes delitescens): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Canelo Hills ladies’-tresses. In the Huachuca Ecosystem Management Area, approximately 6.7 miles of maintenance level 2, 9.3 miles of maintenance level 3, and 1.0 miles of maintenance level 5 are within one mile of where Canelo Hills ladies’-tresses might occur. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

Pima pineapple cactus (Coryphantha scheeri var. robustispina): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Pima pineapple cactus. In the Huachuca Ecosystem Management Area, roughly about 38 miles of these roads (maintenance level 2 and 3) are in areas where the cactus might occur. All of these
Chapter 3. Environmental Effects

roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Huachuca water-umbel (Lilaeopsis schaffneriana var. recurva):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Huachuca water-umbel. In the Huachuca Ecosystem Management Area, approximately 4.3 miles of maintenance level 2 roads are within 300 feet of Huachuca water-umbel locations and 0.2 miles of road that are maintenance level 3. All of these roads have received some maintenance consistent with their assigned maintenance level over the last three decades.

**Gila chub (Gila intermedia):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Gila chub and its critical habitat. In the Huachuca Ecosystem Management Area, approximately 900 feet of maintenance level 2 roads and 1,500 feet of road maintenance level 3 roads are within 300 feet of Gila chub critical habitat. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Gila topminnow (Poeciliopsis occidentalis):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Gila topminnow. In the Huachuca Ecosystem Management Area, there are approximately 4.8 miles of maintenance level 2 roads and 0.3 miles of maintenance level 3 roads that fall within topminnow habitat on the district. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Sonoran tiger salamander (Ambystoma tigrinum stebbinsi):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the STS. In the Huachuca Ecosystem Management Area, there are approximately 244.2 miles of maintenance level 2 roads, 73.4 miles of maintenance level 3 roads, and 1 mile of maintenance level 1 roads that fall within Santa Cruz River and the Las Nutrias watersheds. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Chiricahua leopard frog (CLF) (Lithobates chiricahuensis):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Chiricahua leopard frog and its critical habitat. For all populations of Chiricahua leopard frog on the Sierra Vista Ranger District, there are roads leading to the occupied sites. All of which are maintenance level 2 roads, with the exception of the road in Miller Canyon, which is a maintenance level 3. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Northern Mexican gartersnake (Thamnophis eques megalops):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Northern Mexican gartersnake and its critical habitat. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Western yellow-billed cuckoo (Coccyzus americanus occidentalis):** Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the yellow-billed cuckoo. All of these roads have received some maintenance consistent with their assigned maintenance level over the last three decades. Because road maintenance may disturb breeding yellow-billed cuckoos, maintenance on all National Forest System roads will occur during the non-breeding season (1 October through May 31). If maintenance needs to occur
within the breeding season, the site will be evaluated by a Forest Service biologist to determine if Section 7 consultation is necessary.

**Mexican spotted owl** (*Strix occidentalis lucida*): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the Mexican spotted owl. Within 0.25 miles of Mexican spotted owl protected activity centers on the Sierra Vista Ranger District, 19.5 miles of road are maintenance level 2, 7.9 are maintenance level 3, and 420 feet are maintenance level 1. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

Because road maintenance may disturb Mexican spotted owl breeding, maintenance on all National Forest System roads within 0.25 miles of a protected activity center will occur during the non-breeding season (1 September through April 30). If maintenance needs to occur within the breeding season, the site will be evaluated by a Forest Service biologist to determine if Section 7 consultation is necessary.

**Lesser long-nosed bat** (*Leptonycteris curasoae yerbabuenae*): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for lesser long-nosed bats. Within one mile of known lesser long-nosed bat roost sites on the Sierra Vista Ranger District, 4.4 miles are maintenance level 2 roads. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Ocelot** (*Lepardus pardalis*): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the ocelot. Within the Madrean evergreen woodland on the Sierra Vista Ranger District, 328.2 miles of roads are maintenance level 2, 90.4 are maintenance level 3, 2.1 are maintenance level 1, and 2.1 are maintenance level 5. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Jaguar** (*Panthera onca*): Currently open, authorized roads (for which no change is proposed) are part of the environmental baseline of effects for the jaguar and its critical habitat. Within jaguar critical habitat on the Sierra Vista Ranger District, 244.0 mi of roads are maintenance level 2, 59.8 mi are maintenance level 3, 2.5 mi are maintenance level 5, and 2.0 mi are maintenance level 1. All of these roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades.

**Sensitive plants**: Because the National Forest System roads have received some maintenance consistent with their assigned maintenance level over the last 3 decades, maintenance of existing National Forest System roads will not likely result in the destruction of individual plants. Habitat modification may occur through the use of roads by aiding in the spread of invasive species, off-road travel along the 300-foot corridor, dispersed camping, and the creation or use of unauthorized routes and trails. Although one, or combinations of these actions, could result in the destruction of individuals of these species, it is not anticipated that they occur, or will occur, at a level to impact populations of sensitive plants that would cause a loss in population viability or a trend toward federal listing.

**Sensitive invertebrates - Huachuca giant skipper and Huachuca springsnail**: The Huachuca giant skipper is closely tied to its larval host plant, Parry agave (*Agave parryi*). The no-action alternative will not reduce the amount of Parry agave throughout the Sierra Vista Ranger District or local patches that may be important to the skipper. Any construction of new road or maintenance of existing road will avoid existing stands of agaves whenever possible. The
Huachuca springsnail is associated with several springs on the Sierra Vista Ranger District. Because the no-action alternative will not impact springs, it will not impact the Huachuca springsnail.

**Sensitive fish - desert sucker and Sonora sucker:** Sonora sucker has been found in two locations in Canelo Hills and last records are from 2001. Within the Sierra Vista Ranger District, the desert sucker is known from only O’Donnell Creek. Because both of these species do not have substantial populations in the Sierra Vista Ranger District, it is not likely that any action that occurs on the Sierra Vista Ranger District will cause a decline in population viability or a trend toward Federal listing, including the no-action alternative.

**Sensitive reptiles and amphibians (aquatic) - western barking frog and Canelo Hills Arizona treefrog:** The barking frog is known from rocky outcrops in the Santa Rita, Patagonia, Huachuca, Pajarito, and Quinlan mountains of Arizona and are found in outcrops or caves on rocky slopes in often scrubby oak or pine-oak woodlands at elevations of about 4,200 to 6,200 feet. Habitats are characterized by outcrops of limestone, rhyolite, granite, and perhaps other rock types with deep fissures, holes, and caverns where barking frogs can escape climatic extremes. Because they are strongly associated with microhabitats that are not good areas to build roads, they are largely protected by the effects of the no-action alternative.

This isolated population of Arizona treefrog is found throughout the Huachuca Mountains and Canelo Hills where they usually breed in temporary waters such as streams, wet meadows, ciénegas, roadside ditches, and livestock tanks. Their main threats are from habitat loss and introduced predators. Because the no-action alternative will not affect the quantity or quality of surface water, or impact the distribution of introduced predators, it will not cause a decline in population viability or a trend towards federal listing.

**Sensitive reptiles and amphibians (terrestrial) - twin-spotted rattlesnake, Arizona ridgenose rattlesnake, giant spotted whiptail, twin-spotted rattlesnake, Arizona ridgenose rattlesnake, thornscrub hook-nosed snake, brown vinesnake, Slevin’s bunchgrass lizard, green ratsnake, Chihuahuan black-headed snake:** These species occur throughout the Sierra Vista Ranger District and in many different habitat types. All are primarily threatened by habitat loss, but illegal collection can also contribute to population declines. The indirect effects of traffic and recreational activities, common to both alternatives, may impact individuals through collisions with vehicles, but this would not cause a decline in population viability or a trend towards federal listing.

**Sensitive birds:** The species listed in table 17 occur throughout the Sierra Vista Ranger District and in a variety of habitats. Some are seasonal migrants while others are permanent residents. Both of the alternatives will not contribute to habitat loss for these species. Both alternatives have the potential to impact individuals of these species, however. Road maintenance could disturb breeding behavior by causing avoidance and/or nest abandonment. The conservation measures for the yellow-billed cuckoo and Mexican spotted owl stipulate that road maintenance will not occur in occupied habitats during the breeding season. The breeding seasons of virtually all of these species overlap with both of these periods and the occupied areas for the cuckoo and spotted owl (riparian areas and woodland and forest communities) often overlap with habitats for the Forest Service sensitive species. Therefore, both alternatives may impact individuals but would not cause a decline in population viability or a trend towards federal listing.

**Sensitive mammals:** The no-action alternative consists of existing roads that occur in these species habitats or near important features like caves. Maintenance of and traffic along these
National Forest System roads may impact some individuals of these species but is not assumed to occur at levels that would threaten population viability. Habitat modification may occur through the use of roads by aiding in the spread of invasive species, off-road travel along the 300-foot corridor, dispersed camping, and the creation or use of unauthorized routes and trails. Although one, or combinations of these actions, could degrade important habitats, it is not anticipated that they occur, or will occur, at a level to impact populations of sensitive mammals that would cause a loss in population viability or a trend toward federal listing.

Management indicator species: Overall, the no-action alternative will have no measurable effect on the population, habitat trends, or both for management indicator species on the Coronado National Forest. Impacts that could possibly derive from both alternatives largely involve the 300-foot corridor that allows for off-road travel for dispersed camping purposes. These actions are scattered throughout the Sierra Vista Ranger District on both authorized and currently unauthorized routes. Some dispersed camping areas on the Sierra Vista Ranger District get repeated use which can result in patches of bare ground and compacted soil. These repeatedly used areas are not numerous, very large in size (less than 3 acres) and therefore do not contribute to a large amount of habitat degradation on the forest that would affect the forest-wide habitat and population trends of management indicator species. Off-road travel for fuelwood collection and other recreational uses of the 300-foot corridor are opportunistic and difficult to identify. These actions are typically short in duration, do not get repeated use, and do not result in substantial amounts of vegetation disturbance. Although these other uses of the 300-foot corridor may occur more frequently than dispersed camping areas, because they result in relatively little resource damage, they have no effect to current forest-wide habitat and population trends of management indicator species.

Alternative 2 – Modified Proposed Action

Canelo Hills ladies’-tresses (*Spiranthes delitescens*): The modified proposed action is not anticipated to result in any destruction of any occupied or potential Canelo Hills ladies’-tresses habitat. There would be an overall net decline to the Sierra Vista Ranger District road system within a 1-mile buffer of both known Canelo Hills ladies’-tresses locations, and the modified proposed action is not expected to result in any modification to the hydrologic function of occupied watersheds (see the “Water Resources” section), and it should not result in any increase in erosion or sedimentation of these drainages. The modified proposed action may affect, but is not likely to adversely affect the Canelo Hills ladies’-tresses.

Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*): Approximately 12.6 miles of roads within the habitat suitable for Pima pineapple cactus on the Sierra Vista Ranger District will be decommissioned as a result of the modified proposed action. Approximately 0.4 miles of unauthorized routes will be converted to National Forest System roads and approximately 0.8 miles of authorized road will be converted to open authorized restricted (maintenance level 2 through maintenance level 5). There is a net decline of approximately 11.4 miles of road within suitable habitat for Pima pineapple cactus as a result of the modified proposed action.

These three actions would help reduce possible impacts to Pima pineapple cactus in areas where it may occur by disallowing use of the associated 300-foot zone (829.1 acres). However, not all impacts would necessarily be eliminated. The chances of an undetected cactus plant or one that might become established at a later date are considered insignificant and discountable. As such, implementation of the modified proposed action may affect but is not likely to adversely affect the Pima pineapple cactus.
Huachuca water-umbel (*Lilaeopsis schaffneriana var. recurva*): Within 300 feet of all known Huachuca water-umbel locations on the Sierra Vista Ranger District, 0.8 miles of road will be decommissioned, approximately 200 feet of open road will be for restricted use only, and 1.3 miles of road will be converted to an off-highway vehicle trail. Decommissioning and limiting roads to restricted use near occupied Huachuca water-umbel habitat and designated critical habitat will help reduce the likelihood of habitat destruction by activities associated with National Forest System roads such as maintenance and recreational use.

Converting 1.3 miles of National Forest System roads to a motorized trail would not likely reduce impacts to Huachuca water-umbel or its critical habitat, although these roads have existed since the species was listed in 1997 and their effects were therefore considered as part of the species baseline. Off-road vehicles are still allowed to use that road and may cause habitat destruction and degradation by soil disturbance and compaction. They may also spread nonnative invasive species that could lead to further habitat degradation.

Adaptive management would help mitigate adverse effects to Huachuca water-umbel and its critical habitat. The specific section of road that is being converted to a motorized trail is located in Scotia Canyon and this segment of the Huachuca water-umbel population is monitored every two years by Coronado National Forest personnel. If that particular population starts to decline, or if unacceptable resource damage is being observed, Coronado National Forest personnel would be able to take further action to help reduce adverse effects. The modified proposed action *may affect, and is likely to adversely affect* the Huachuca water-umbel.

Gila chub (*Gila intermedia*): Because its designated critical habitat encompasses the known population of Gila chub on the Sierra Vista Ranger District, it was used to focus the analysis of the modified proposed action. The critical habitat polygon is approximately a 290-foot buffer around the stream segments mentioned above and is in their watersheds.

Overall, very little of the modified proposed action occurs in Gila chub critical habitat. Only 105 feet of road will be decommissioned and about 1,100 feet of road will be converted to restricted use only. It is anticipated that these actions would not contribute to the likelihood of recreationist dispersing harmful nonnative species. Because restricted use roads get very little traffic and require very little maintenance, erosion and sedimentation are not anticipated to exceed baseline levels and are therefore considered insignificant. The modified proposed action *may affect, but is not likely to adversely affect* Gila chub or its critical habitat.

Gila topminnow (*Poeciliopsis occidentalis*): To analyze the effects of the modified proposed action, a 300-foot buffer was placed around sections of drainages where Gila topminnow are known to occur (Redrock Canyon, O’Donnell Canyon, and Parker Canyon; HDMS 2015). Because the occurrence in lower Parker Canyon is new and not yet in the Heritage Data Management System, the segment of Parker Canyon starting at the confluence with Jones Canyon to the Coronado National Forest boundary was also used (approximately 4.5 miles).

There is a net decrease in the road density within the 300-foot buffer around known occurrences on the Sierra Vista Ranger District. Within the buffer, 2.2 miles of road will be decommissioned, 0.2 miles converted to restricted use, 420 feet converted to maintenance level 1, and 370 feet converted to open authorized. It is anticipated that these actions will not contribute to the likelihood of recreationist dispersing harmful nonnative species. Because restricted use roads get very little traffic and require very little maintenance, if any, erosion, sedimentation, are not anticipated to exceed baseline levels and are therefore considered insignificant. The modified proposed action *may affect, but is not likely to adversely affect* Gila topminnow.
Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*): Within the Santa Cruz River and the Las Nutrias watersheds, the modified proposed action will result in 122.7 miles of roads decommissioned, 24.3 miles converted to open authorized, 10.4 converted to restricted use, 1.9 converted to motorized trails, 0.9 miles of new roads, and 0.4 miles being converted to maintenance level 1 roads.

The modified proposed action will not affect the distribution of invasive vertebrate species that could outcompete, predate, or genetically overwhelm Sonoran tiger salamander populations. The overall decrease in the amount of roads surrounding some specific Sonoran tiger salamander sites may lessen the spread of diseases by limiting access to specific stocktanks, but because overall recreation levels are not anticipated to change, this effect would be very localized and is not expected to result in a wide-spread reduction in the threat from disease. The modified proposed action may affect, but is not likely to adversely affect Sonoran tiger salamander.

Chiricahua leopard frog (*Lithobates chiricahuensis*): Because Chiricahua leopard frog occurrences and critical habitat on the Sierra Vista Ranger District are localized, the analysis of the modified proposed action is fairly straight-forward. The modified proposed action in Miller Canyon, Sycamore Canyon, Scotia Canyon, and Alamo Canyon consists only of decommissioning roads near sites occupied by Chiricahua leopard frogs. The proposed motorized trail in Scotia is over 1.5 mi away from the Chiricahua leopard frog site. The site in Brown Canyon has almost 0.5 miles of road being converted to open authorized. This road has existed since 2011 and since that time, traffic, recreation, and regular maintenance have not impacted the Chiricahua leopard frog populations there. There are 2.2 miles of non-motorized trail being designated in Brown Canyon. These are popular trails used by recreationists and have not contributed any affects to the Chiricahua leopard frog populations either. The modified proposed action may affect, but is not likely to adversely affect Chiricahua leopard frog or its critical habitat.

Northern Mexican gartersnake (*Thamnophis eques megalops*): Because there will be a decrease in the road density on the Sierra Vista Ranger District, we anticipate that reduction will also reduce the probability of collisions with vehicles or road maintenance equipment. Currently, road mortalities likely occur at extremely low rates and are considered discountable. The modified proposed action should not contribute to habitat fragmentation because it does not include any dams or diversions of streams or water channels. As mentioned in the chub, topminnow, Chiricahua leopard frog, and Sonoran tiger salamander sections, the modified proposed action is not expected to impact populations of its native prey base or contribute to the spread of aquatic invasive species. The modified proposed action may affect, but is not likely to adversely affect the northern Mexican gartersnake or its proposed critical habitat.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*): The modified proposed action will not result in any long-term habitat destruction or modification. The modified proposed action is not anticipated to inhibit the hydrologic function of any watersheds on the Sierra Vista Ranger District, nor should it affect surface or groundwater quantity or quality or any riparian vegetation that it supports. The modified proposed action results in a reduction of roads in riparian communities which will cause a decrease in habitat destruction and degradation from traffic, recreation, and road maintenance.

Because road maintenance may disturb breeding yellow-billed cuckoos, maintenance on all National Forest System roads in yellow-billed cuckoo breeding habitat will occur during the non-breeding season (1 October through May 31). If maintenance needs to occur in breeding habitat within the breeding season, the site will be evaluated by a Forest Service biologist to determine if
Section 7 consultation is necessary. The modified proposed action may affect, but is not likely to adversely affect yellow-billed cuckoos.

**Mexican spotted owl (Strix occidentalis lucida):** Within 0.25 miles of Mexican spotted owl protected activity centers on the Sierra Vista Ranger District, the modified proposed action will result in 9.2 miles of decommissioned road, 2.0 miles converted to restricted use, 0.8 miles converted to non-motorized trail, and 0.2 miles converted to open authorized. All of these totals occur within the Huachuca Ecosystem Management Area because the modified proposed action will not occur within 0.25 miles of the protected activity center in the Whetstone Mountains. The overall reduction of road density within 0.25 miles of Mexican spotted owl protected activity centers should benefit the Mexican spotted owl by reducing negative effects from traffic and motorized recreation. The 1.0 mile of road being converted to non-motorized trail or open authorized may result in occasional disturbances to Mexican spotted owls by recreationists, but because of the level of recreation and traffic (see the “Recreation” section), these potential effects are considered insignificant. Because road maintenance may disturb Mexican spotted owl breeding, maintenance on all National Forest System roads within 0.25 miles of a protected activity center will occur during the non-breeding season (1 September through April 30). If maintenance needs to occur within the breeding season, the site will be evaluated by a Forest Service biologist to determine if Section 7 consultation is necessary.

Within Mexican spotted owl critical habitat, the modified proposed action will result in 72.7 miles of decommissioned road, 10.0 miles converted to restricted use, 8.1 converted to open authorized, 3.1 miles of proposed road, 3.1 converted to non-motorized trail, and 2.8 miles converted to motorized trail.

Decommissioning roads may positively affect primary constituent elements 1c, 2a, and 2c by eliminating traffic and maintenance. It is possible that decommissioned roads could allow for the growth of large trees (primary constituent elements 1a, 1b, and 2b), but these effects would take a substantial amount of time. The remaining roads of the modified proposed action where the maintenance level is being converted, may negatively affect primary constituent elements 1c, 2a, and 2c, but the 24 miles of these road conversions is deemed insignificant when compared to the total amount of Mexican spotted owl critical habitat present on the Sierra Vista Ranger District (126,424 acres). The 3.1 miles of proposed road occurs exclusively in the Whetstone Ecosystem Management Area and the specific locations of these roads occur in semi-desert grassland and no large trees, snags, or woody debris are expected to be removed or altered in their construction. The modified proposed action may affect, but is not likely to adversely affect, the Mexican spotted owl or its critical habitat.

**Lesser long-nosed bat (Leptonycteris curasoae verbabuenae):** Because the modified proposed action only includes 5.3 miles of proposed new road construction, destruction of any forage resources as a result of the modified proposed action is expected to be practically nonexistent and therefore insignificant.

Bat disturbance and roost damage by recreationists is identified as a major threat to the lesser long-nosed bat, and proximity of roost sites to roads offers an idea of how likely this may occur. How far individuals may travel from a road without a vehicle to an existing (known or unknown) or potential bat roost site would be contingent upon many factors, such as topography, slope, weather, terrain, etc. A typical distance for consideration might be a road within about one-half mile of a site (personal communication, Scott Richardson, FWS). In order to cover various contingencies, modified proposed action roads within one mile of known lesser long-nosed bat roosts were considered for this analysis.
Within one mile of the two known lesser long-nosed bat post-maternity roosts on the Sierra Vista Ranger District, 3.6 miles of road will be decommissioned and one mile of road will be converted to restricted use. The decrease in road density is expected to reduce the likelihood of roost disturbance by recreationists. The modified proposed action may affect, but is not likely to adversely affect, lesser long-nosed bats.

**Ocelot (Lepardus pardalis):** Although the modified proposed action will result in a net decline in the amount of roads on the Sierra Vista Ranger District (see the “Modified Proposed Action” section in chapter 2), to focus the analysis, all modified proposed actions within the Madrean evergreen woodland was summarized. Madrean evergreen woodland was used because U.S. Fish and Wildlife Service considers this the most important biotic community to ocelots in Arizona (personal communication, Erin Fernandez, FWS, 2014). Within the Sierra Vista Ranger District, there are 211,573 acres of Madrean evergreen woodland (186,599 acres in the Huachuca Ecosystem Management Area and 24,974 acres in the Whetstone Ecosystem Management Area). Within the Madrean evergreen woodland, the modified proposed action will result in 145.8 miles of decommissioned road, 24.6 miles converted to open authorized, 18.6 miles converted to restricted use, 8.3 miles converted to motorized trail, 4.1 converted to maintenance level 1, and 3.0 miles converted to non-motorized trail.

The overall reduction of 87.2 miles of road should have beneficial effects to the ocelot. While none of the roads on the Sierra Vista Ranger District are considered the type to likely produce road mortalities, collisions with vehicles are still possible. A reduction in the amount of roads should reduce this possibility even further. A reduction in road density should also lessen the effects from traffic and recreation. Areas with decommissioned roads, and roads that are being converted to a lesser impactful category, would have a reduction in the human presence in the area and could open up more habitat for ocelots. The modified proposed action may affect, but is not likely to adversely affect the ocelot.

**Jaguar (Panthera onca):** Because jaguars are wide-ranging, the boundaries of the jaguar critical habitat were used to focus the effects of the modified proposed action. Within the boundaries of their critical habitat, the modified proposed action will result in 113.2 miles of decommissioned, 19.4 miles converted to open authorized, 17.6 miles converted to restricted use, 11.2 converted to motorized trail, 3.8 converted to non-motorized trail, and 3.6 miles of proposed new road. The overall reduction in road density would help to reduce the potential for injury of jaguars by vehicles or changes in its behavior from the passing of vehicles or activities associated with the use of roads (for example, camping in the 300-foot zone). The overall reductions would not eliminate the potential for displacement, adverse physiological response, or injury of jaguars as a consequence of motorized vehicle use on the Sierra Vista Ranger District. However, given that jaguars are secretive and occur at low densities within the Sierra Vista Ranger District, these potential effects are considered insignificant and discountable.

The modified proposed action would have no effect on the amount of surface water (primary constituent element 3), canopy cover (primary constituent element 4), the ruggedness of terrain (primary constituent element 5), elevation (primary constituent element 6), and because of the net reduction in the amount of roads, should improve the characteristics of primary constituent elements 2 and 7. Because the specific routes jaguars use to travel between Mexico and the U.S., it is difficult to say with any precision how the modified proposed action will affect their connectivity to Mexico (primary constituent element 1), but it is assumed the overall net reduction of roads within jaguar critical habitat will not impair their movement capabilities. The
modified proposed action **may affect, but is not likely to adversely affect** the jaguar or its critical habitat.

**Sensitive plants:** The net decrease in road density is expected to have a positive impact to watersheds and vegetation communities (“Water Resources” and “Vegetation” sections, Environmental Effects). These effects are very general and may not have an impact across the entire district; however, the modified proposed action may have local effects that may be important to several of the Forest Service sensitive plant species found on the Sierra Vista Ranger District. Decommissioned roads that are no longer maintained are expected to revegetate which could result in potential habitat for some species. And although access, traffic, and recreation levels are not expected to change across the Sierra Vista Ranger District as a result of the modified proposed action (chapter 2, “Modified Proposed Action” section), the modified proposed action will likely change these levels in specific locations. Decommissioned roads should reduce traffic, off-road travel along the 300-foot corridor, dispersed camping, and the creation of new unauthorized routes and trails where they occur. If populations of Forest Service sensitive plant species occur in these areas, the modified proposed action should reduce the threat of habitat destruction and the destruction of individuals by these actions. These local changes in traffic and recreation may also reduce the spread of invasive plant species which could further degrade habitat for Forest Service sensitive plant species, but although individuals may be impacted as a result of the modified proposed action, it would not cause a loss in population viability or a trend in population toward Federal listing.

**Sensitive invertebrates - Huachuca giant skipper and Huachuca springsnail:** The Huachuca giant skipper is closely tied to its larval host plant, Parry agave (*Agave parryi*). The modified proposed action will not reduce the amount of Parry agave throughout the Sierra Vista Ranger District or local patches that may be important to the skipper. Any construction of new road or maintenance of existing road will avoid existing stands of agaves whenever possible. The Huachuca springsnail is associated with several springs on the Sierra Vista Ranger District. Because the modified proposed action will not impact springs, it will not impact the Huachuca springsnail.

**Sensitive fish – desert sucker and Sonora sucker:** Sonora sucker has been found in two locations in Canelo Hills and last records are from 2001. Within the Sierra Vista Ranger District, the desert sucker is known from only O’Donnell Creek. Because both of these species do not have substantial populations in the Sierra Vista Ranger District, it is not likely that any action that occurs on the Sierra Vista Ranger District will cause a decline in population viability or a trend toward federal listing, including the modified proposed action.

**Sensitive reptiles and amphibians (aquatic) - western barking frog and Canelo Hills Arizona treefrog:** The barking frog is known from rocky outcrops in the Santa Rita, Patagonia, Huachuca, Pajarito, and Quinlan mountains of Arizona and are found in outcrops or caves on rocky slopes in often scrubby oak or pine-oak woodlands at elevations of about 4,200 to 6,200 feet. Habitats are characterized by outcrops of limestone, rhyolite, granite, and perhaps other rock types with deep fissures, holes, and caverns where barking frogs can escape climatic extremes. Because they are strongly associated with microhabitats that are not good areas to build roads, they are largely protected by the effects of the modified proposed action.

This isolated population of Arizona treefrog is found throughout the Huachuca Mountains and Canelo Hills where they usually breed in temporary waters such as streams, wet meadows, ciénegas, roadside ditches, and livestock tanks. Their main threats are from habitat loss and introduced predators. Because the modified proposed action will not affect the quantity or quality
of surface water, or impact the distribution of introduced predators, it will not cause a decline in population viability or a trend towards Federal listing.

**Sensitive reptiles and amphibians (terrestrial)** - twin-spotted rattlesnake, Arizona ridgenose rattlesnake, giant spotted whiptail, twin-spotted rattlesnake, Arizona ridgenose rattlesnake, thornscrub hook-nosed snake, brown vinesnake, Slevin's bunchgrass lizard, green ratsnake, Chihuahuan black-headed snake: These species occur throughout the Sierra Vista Ranger District and in many different habitat types. All are primarily threatened by habitat loss but illegal collection can also contribute to population declines. The indirect effects of traffic and recreational activities, common to both alternatives, may impact individuals through collisions with vehicles, but this would not cause a decline in population viability or a trend towards Federal listing.

**Sensitive birds:** The species listed in table 17 occur throughout the district and in a variety of habitats. Some are seasonal migrants while others are permanent residents. Both of the alternatives will not contribute to habitat loss for these species. Both alternatives have the potential to impact individuals of these species, however. Road maintenance could disturb breeding behavior by causing avoidance, nest abandonment, or both. The conservation measures for the yellow-billed cuckoo and Mexican spotted owl stipulate that road maintenance will not occur in occupied habitats during the breeding season. The breeding seasons of virtually all of these species overlap with both of these periods and the occupied areas for the cuckoo and spotted owl (riparian areas and woodland and forest communities) often overlap with habitats for the Forest Service sensitive species. Therefore, both alternatives may impact individuals but would not cause a decline in population viability or a trend towards Federal listing.

**Sensitive mammals:** The net decrease in road density is expected to have a positive impact to watersheds and vegetation communities (“Water Resources” and “Vegetation” sections, Environmental Effects). These effects are very general and may not have an impact across the entire district; however, the modified proposed action may have local effects that may be important to some of the Forest Service sensitive mammal species listed above. Although access, traffic, and recreation levels are not expected to change across the district as a result of the modified proposed action (chapter 2, “Modified Proposed Action” section), the modified proposed action will likely change these levels in specific locations. Decommissioned roads should reduce traffic, off-road travel along the 300-foot corridor, dispersed camping, and the creation of new unauthorized routes and trails where they occur. If populations of sensitive mammal species occur in these areas, the modified proposed action should reduce the threat of habitat destruction and the destruction of individuals by these actions. The modified proposed action does include the conversion of some unauthorized routes to National Forest System roads. Maintenance of and traffic along these new National Forest System roads may impact some individuals of these species but is not assumed to occur at levels to cause a loss in population viability or a trend in population toward Federal listing.

**Management indicator species:** Overall, the modified proposed action will have no measurable effect on the population trends, habitat trends, or both for management indicator species on the Coronado National Forest. Impacts that could possibly derive from both alternatives largely involve the 300-foot corridor that allows for off-road travel to camp, park, and retrieve fuelwood. These actions are scattered throughout the district on both authorized and unauthorized routes. Some dispersed camping areas on the Sierra Vista Ranger District get repeated use which can result in patches of bare ground and compacted soil. These repeatedly used areas are not numerous, very large in size (less than 3 acres), and therefore do not contribute to a large amount
Chapter 3. Environmental Effects

of habitat degradation on the forest that would affect the forestwide habitat and population trends of management indicator species. Off-road travel for fuelwood collection and other recreational uses of the 300-foot corridor are opportunistic and difficult to identify. These actions are typically short duration, do not get repeated use, and do not result in substantial amounts of vegetation disturbance. Although these other uses of the 300-foot corridor may occur more frequently than dispersed camping areas, because they result in relatively little resource damage, they have no effect to current forestwide habitat and population trends of management indicator species.

Cumulative Effects

Threatened and Endangered Species

The Coronado National Forest manages the majority of lands that are important threatened and endangered species habitat on the Sierra Vista Ranger District. Thus most activities that could affect threatened and endangered species are federal activities subject to Section 7 consultation and therefore not considered in this cumulative effects analysis. Examples of these kinds of actions include management of Forest Service grazing permits, fuels reduction activities, and mineral activities.

Activities in the vicinity of the project area that are reasonably certain to occur in important threatened and endangered species habitat but are not subject to Section 7 analysis include illegal activities and actions on private lands. Examples of illegal activities that may affect threatened and endangered species include: inappropriate use of off-highway vehicles, illegal woodcutting, illegal transportation of live wildlife, and poaching. Illegal activities are difficult to predict and are assumed to occur indefinitely and uniformly throughout the vicinity of the Sierra Vista Ranger District and are not expected to contribute to the adverse impacts from the modified proposed action.

Activities occurring on private lands may include residential development, farming/ranching, road construction and maintenance, and mineral exploration. These activities could potentially affect threatened and endangered species through habitat destruction or degradation and harassment of individuals. Many of the private lands near or within the Sierra Vista Ranger District have already been developed and no new major developments of private lands are expected to occur; therefore, future activities on private lands are not expected to contribute to adverse impacts to threatened and endangered species or their critical habitat from the modified proposed action.

Forest Service Sensitive Species

A list of the past, present, and reasonably foreseeable actions considered in cumulative effects analysis can be found in table 4.

Cumulative effects on the Sierra Vista Ranger District that might impact sensitive species via disturbance or impacts to habitat include past, ongoing, and future recreation; livestock grazing; Huachuca Firescape; wildfires; and mining. Other impacting past and present Federal agency activities are associated with the international border (U.S. Customs and Border Protection, Immigration and Customs Enforcement, and Drug Enforcement Administration). State activities include maintenance of wildlife water systems. Private actions within the Sierra Vista Ranger District include residences, businesses, and ranches.

Most of these State or Federal actions are subject to some level of environmental regulation. Recreation, livestock grazing, Huachuca Firescape, Carr Barn Dip Site, Arizona National Scenic
Trail relocation projects, electronic proving ground, and other districts’ travel management decisions are ongoing activities managed by the Coronado National Forest. Currently, they are not contributing impacts to Forest Service sensitive species, and the contribution of the modified proposed action or the no-action alternative is not expected to contribute to any adverse impacts.

All of the mineral activities listed in table 4 are in various phases of planning, so it is difficult to estimate their effects with any precision because their actions, and therefore their impacts to Forest Service sensitive species, may change. It is anticipated that any adverse impacts that they will contribute will not be widespread and will be contained roughly within their project areas. Because the effects of the modified proposed action and the no-action alternative are anticipated to be very slight, they are not expected to contribute to any adverse impacts caused by the proposed mineral activities.
Chapter 4 - Consultation and Coordination

The Forest Service consulted individuals, Federal, State, and local agencies; tribes; and non-Forest Service persons during the development of this environmental assessment. The lists below are examples.

Local Government
Cochise County
City of Sierra Vista

State and Other Federal Agencies
Arizona Public Service
Arizona Game and Fish Department
U.S. Department of Interior – Bureau of Reclamation
U.S. Fish and Wildlife Service
Arizona Department of Environmental Quality

Tribes
Ak-Chin Indian Community
Ft. Sill Apache Tribe
Gila River Indian Community
Hopi Tribe
Mescalero Apache Tribe
Pascua Yaqui Tribe
Salt River Pima-Maricopa Indian Community
San Carlos Apache Tribe
Tohono O'odham Nation
White Mountain Apache Tribe
Yavapai-Apache Nation
Pueblo of Zuni

Others
Center for Biological Diversity
Sierra Club
Chapter 5. References


Code of Federal Regulations, Title 36 (§ 223.9 36 CFR Ch. II (7–1–13 Edition)).


Chapter 5. References


Chapter 5. References


http://apps.fs.fed.us/nrm/nvum/results/A03005.aspx/Round2


Western Regional Climate Center. (2013). Retrieved from WRCC:
http://www.wrcc.dri.edu/narratives/arizona/

Chapter 6 – List of Preparers

USDA Forest Service, Coronado National Forest, Supervisor’s Office
Lynette Miller, National Environmental Policy Act planner and interdisciplinary team leader
Debby Kriegel, landscape architect
Dave Mehalic, archaeologist
Walt Keyes, roads engineer
Carlos Tomas, transportation data engineer

USDA Forest Service, Coronado National Forest, Sierra Vista Ranger District
Zac Ribbing, recreation staff officer
John Kraft, district wildlife biologist
Steven Bluemer, rangeland management specialist
Appendix A. Abbreviations

ACHP: Advisory Council on Historic Preservation
ADEQ: Arizona Department of Environmental Quality
AGFD: Arizona Game and Fish Department
ATV: all-terrain vehicle
BA: biological assessment
BMP: best management practice
CAA: Clean Air Act
CAT: collaboration alternative team
CFR: Code of Federal Regulations
CO: carbon monoxide
DCH: designated critical habitat
EA: environmental assessment
EO: Executive Order
e.g.: for example
EPA: U.S. Environmental Protection Agency
FR: Federal Register
FSH: Forest Service Handbook
FSM: Forest Service Manual
FSSS: Forest Service sensitive species
ft.: foot or feet
FWS: (U.S.) Fish and Wildlife Service
GES: general ecosystem survey
GPS: Global Positioning System
HSA: Highway Safety Act
IBA: Important Birding Area
i.e.: that is
LLNB: lesser long-nosed bat
Appendix A. Abbreviations

LMP: limited maintenance plan
LN: legal notice
MA: Management Area
MIS: management indicator species
ML: maintenance level
MPA: modified proposed action
MSO: Mexican spotted owl
MVM: mid-scale vegetation map
MUTCD: Manual of Uniform Traffic Control Devices
MVUM: motor vehicle use map
NAAQS: national ambient air quality standards
NEPA: National Environmental Policy Act
NF: National Forest
NFMA: National Forest Management Act
NFS: National Forest System
NFSR: National Forest System Road
NHPA: National Historic Preservation Act
NO₂: nitrogen dioxide
NRHP: National Register of Historic Places
NVUM: national visitor use monitoring
O₃: ozone
OHV: off-highway vehicle
PAC: protected activity center
PAG: Pima Association of Governments
Pb: chemical symbol for lead
PCE: primary constituent element
PM: particulate matter
P. L.: Public Law
RNA: Research Natural Area
ROS: recreation opportunity spectrum
SHPO: State Historic Preservation Office
SMS: Scenery Management System
SO$_2$: sulfur dioxide
TAP: transportation analysis plan (or process)
TAPA: Tucson Air Planning Area
THPO: Tribal Historic Preservation Office
TMR: travel management rule
USDA: U.S. Department of Agriculture
USDI: U.S. Department of the Interior
USFS: U.S. Forest Service
VQO: visual quality objective
VRMS: Visual Resource Management System
WSR: Wild and Scenic River
Appendix B. Forest Road Maintenance Levels

Maintenance levels are defined by USDA Forest Service Handbook (FSH) 7709.58 (10) (12.3) as the level of service provided by, and maintenance required for, a specific road. Levels are designated to be consistent with road management objectives and maintenance criteria. The following factors are considered during designation:

1. Resource program needs, environmental and resource protection requirements, visual quality objectives, and recreation opportunity spectrum classes
2. Road investment protection requirements
3. Service life and current operational status
4. User safety
5. Volume, type, class, and composition of traffic
6. Surface type
7. Travel speed
8. User comfort and convenience
9. Functional classification
10. Traffic service level

Roads may be currently maintained at one level and planned to be maintained at a different level at some future date. The operational maintenance level is the maintenance level currently assigned to a road considering today’s needs, road condition, budget constraints, and environmental concerns; in other words, it defines the level to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns.

Road Maintenance Level 5: This level is assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is “encourage.” These roads have the following attributes:

- subject to the requirements of the Highway Safety Act and the Manual of Uniform Traffic Control Devices
- highest traffic volume and speeds
- typically connect to State and county roads
- culverts provide drainage
- usually arterial and collector
- may include some developed recreation roads
- usually paved or chip-sealed
Road Maintenance Level 4: This level is assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double-lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is “encourage.” However, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times. These roads have the following attributes:

- subject to the requirements of the Highway Safety Act and the Manual of Uniform Traffic Control Devices
- roads have moderate traffic volume and speeds
- may connect to county roads
- culverts provide drainage
- usually a collector
- may include some developed recreation roads

Road Maintenance Level 3: This level is assigned to roads open and maintained for travel by prudent drivers in standard passenger cars. User comfort and convenience are low priorities.

Roads in this maintenance level are typically low speed, single lane with turnouts, and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either “encourage” or “accept.” “Discourage” or “prohibit” strategies may be employed for certain classes of vehicles or users. These roads have the following attributes:

- subject to the requirements of the Highway Safety Act and the Manual of Uniform Traffic Control Devices
- roads have low- to moderate-traffic volume
- typically connect to arterial and collectors roads
- a combination of dips and culverts provide drainage
- may include some dispersed recreation roads
- potholing or wash-boarding may occur

Road Maintenance Level: This is the level assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minimal, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Hauling of logs may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles. These roads have the following attributes:

- roads have low traffic volume and low speed
- typically local roads
- typically connect collectors or other local roads
- dips are the preferred drainage treatment
- not subject to the requirements of the Highway Safety Act
• surface smoothness is not a consideration
• not suitable for passenger cars

Road Management Level 1: This is the level assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must equal or exceed one year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are “prohibit” and “eliminate.”

Roads receiving level 1 maintenance may be of any type, class or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses. These roads have the following attributes:

• vehicle traffic is eliminated, including administrative traffic
• physically blocked or entrance is disguised
• not subject to the requirements of the Highway Safety Act
• maintenance is done only to minimize resource impacts
• no maintenance other than a condition inventory