Abstract: This final environmental impact statement (FEIS) documents the analysis of five alternatives to manage motorized vehicle travel on the Black Hills National Forest (the Forest). This FEIS was prepared following extensive public comment including collaboration with the National Forest Advisory Board, scoping, several open houses, public meetings and workshops, and comments on the draft EIS. Alternative A, no action, proposes a continuation of the current condition. Alternative B, the modified proposed action, would develop a motorized recreational system, while considering effects to natural and cultural resources. It would allow public motorized vehicle travel on 4,129 miles of routes, and limited motorized cross-country travel for game retrieval and dispersed camping on 179,000 acres. Alternative C would maximize motorized road and trail use. It would allow motor vehicle travel on 4,353 miles of routes, and limited motorized cross-country travel for game retrieval and dispersed camping on 485,500 acres. Alternative D would provide a smaller motorized transportation system with fewer motorized trails. It would allow public motorized vehicle travel on 3,197 miles of routes and prohibit motorized cross-country travel. Alternative E represents the minimum action required to designate a motorized travel system and comply with the Travel Management Rule (Federal Register, Vol. 70 No. 216). It would allow motorized vehicle travel on 3,776 miles of routes and prohibit motorized cross-country travel. At this time, the Forest Service has not identified a preferred alternative. This environmental impact statement, maps, and all associated documents are available from the Black Hills National Forest Supervisor’s Office or online at: http://www.fs.usda.gov/blackhills.
Commonly Used Acronyms and Abbreviations

ACHP - Advisory Council on Historic Preservation
ATV – All-Terrain Vehicle
BMP – Best Management Practice
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
CWA – Clean Water Act
DBH – Diameter at Breast Height
DEIS – Draft Environmental Impact Statement
EIS – Environmental Impact Statement
EPA – Environmental Protection Agency
FEIS – Final Environmental Impact Statement
FS – Forest Service
FSH – Forest Service Handbook
FSM – Forest Service Manual
GIS – Geographic Information System
HRV – Historic Range of Variability
ID Team – Interdisciplinary Team
LRMP – Land and Resource Management Plan (Forest Plan)
MIS – Management Indicator Species
MTS – Motorized Trail System
MVUM – Motor Vehicle Use Map
NEPA – National Environmental Policy Act
NFAB – National Forest Advisory Board
NFMA – National Forest Management Act
NFS – National Forest System
NHPA – National Historic Preservation Act
NRCS – Natural Resource Conservation Service
NRHP – National Register of Historic Places
NVUM – National Visitor Use Monitoring
NWI – National Wetlands Inventory
ORV – Off-road Vehicle
OHV – Off-highway Vehicle
R2 – Region 2 (Rocky Mountain Region) of the Forest Service
RMBO – Rocky Mountain Bird Observatory
ROS – Recreation Opportunity Spectrum
SHPO – State Historic Preservation Office
SIO – Scenic Integrity Objectives
SOLC – Species of Local Concern
USC – United States Code
USDA – United States Department of Agriculture
USDI – United States Department of the Interior
UTV – Utility-Terrain Vehicle
WCPH – Watershed Conservation Practices Handbook
WIZ – Water Influence Zone
Summary

In November 2005, the Forest Service issued the final Travel Management Rule (the rule; Federal Register, Vol. 70 No. 216). This rule specifically requires that any roads, trails, and areas that are to be open to motor vehicle use on a National Forest be officially designated. The rule also directs that designations be made by class of vehicle and by season of use, where appropriate and necessary. Motor vehicle use would be prohibited on routes and areas not designated open to use.

To comply with the rule, the Forest Service proposes to designate certain roads and trails open to motorized travel on the Black Hills National Forest. Class of vehicle and season would be assigned to the designated roads or trails. Motorized travel, as allowed on designated routes and areas, would be depicted on a motor vehicle use map. The motor vehicle use map would be the primary tool used to determine compliance and enforcement of motorized vehicle use on the ground. Existing Forest Service system routes and other routes not designated on the motor vehicle use map would be legally closed to motorized travel.

The designated route system would reflect current and anticipated travel needs, offer a variety of recreational opportunities, and provide for administrative access, while balancing the physical, biological, and social attributes of the Forest. The area affected by the proposal includes roughly 1.2 million acres of National Forest System (NFS) lands managed by the Black Hills National Forest, within the proclaimed Forest boundary. The decisions on motorized travel would not include snowmobiles or existing winter-use recreation or South Dakota snowmobile trails.

This action is needed to:

- identify an official travel system and update the Forest travel map;
- develop a transportation system to meet the increasing demand for recreational travel opportunities and to provide a range of quality experiences for a wide variety of Forest users;
- reduce adverse impacts caused by unmanaged cross-country and road and trail usage in order to maintain and conserve the condition of ecosystems and watersheds;
- specify roads, trails and areas open to motorized use; and,
- closely align travel and recreation opportunities offered to the public with the Forest’s management capability.

Based upon the analysis of the effects of the alternatives as disclosed in the final EIS and in the project record, the Forest Supervisor as the responsible official would make the following decisions.

- Whether to designate certain routes, trailheads and other facilities as open to the public for motorized use.
- Whether to authorize improvements to certain routes to allow their use, and if so, the nature of those improvements.
- Whether to allow motorized game retrieval and motorized dispersed camping or off-road parking.
- The season or types of public motorized use allowed for those routes open to motorized travel.
- Whether to amend existing Forest Plan direction to allow implementation of the selected travel management alternative.

To develop this proposal, the Forest worked closely with the National Forest Advisory Board (NFAB), which developed a number of recommendations for a motorized travel system. The Forest also consulted
many user groups and individuals via public meetings and workshops, and questionnaires. During the
scoping process, the Forest received comments on the proposed action from the public, Indian tribes and
State and Federal agencies. The Forest evaluated these comments and developed four issue statements to
guide development of alternatives to the proposed action. The significant issues used to develop
alternatives and analyze effects are:

1) effects on natural and cultural resource effects;
2) effects on recreational opportunities;
3) effects of transportation system design on management capabilities; and
4) social and economic concerns.

These issues led the agency to develop the following range of alternatives.

**Alternative A - No Action.** Alternative A would continue the current situation. Current management
plans would continue to guide project area management. Cross-country motorized use would continue on
864,000 acres in an unregulated manner. The official motorized trail system would consist of the existing
36 miles of trails. No motor vehicle use map would be issued. User compliance and law enforcement
would continue to be difficult without an approved motor vehicle use map. It is expected that motorized
cross-country travel and route proliferation would continue to occur in areas of the Forest. Resource
damage and conflicts with nonmotorized recreationists would continue to take place, and motorized users
would not enjoy a planned travel system designed to meet their needs.

**Action Alternatives.** Alternatives B, C, D, and E would comply with the Travel Management Rule and
meet the purpose and need to designate selected roads and trails open to motorized vehicle travel on lands
administered by the Forest. Designations would be made by class of vehicle and by season. A motor
vehicle use map would be published depicting designated roads and trails. All of these alternatives would
amend the Forest Plan to allow motorized use levels and to specify that motorized use must be conducted
in compliance with the motor vehicle use map.

A major consideration in this analysis is motorized-mixed use, or the use of both highway-legal and non-
highway-legal motor vehicles on National Forest System roads. Alternatives B, C and D would pre-empt
(not be in accord with) South Dakota State law, which currently requires that only highway-legal motor
vehicles may use public roads. Alternatives B, C and D would comply with Wyoming State law by
enrolling all designated roads in the Wyoming Off-Road Recreational Vehicle program. All alternatives
would be consistent with laws in both states requiring licensing of vehicle operators.

**Alternative B – Modified Proposed Action.** Alternative B represents the original proposed action. It
has been modified to correct data errors, but the intent of this alternative is the same as the original
proposed action on which the public was asked to comment. This alternative would meet most NFAB
recommendations to provide an active (designed) travel system while protecting resources and
reducing conflicts with other users. It would provide 3,466 miles of roads including 2,226 miles of
motorized-mixed-use roads; boost motorized trails to 663 miles; and limit cross-country motorized
use to 179,000 acres only for the purposes of game retrieval (elk only) or dispersed camping. The
motor vehicle use map would make user compliance and law enforcement easier. Resource damage
and conflicts with nonmotorized recreationists would be reduced, and motorized users would find a
planned travel system designed to meet their needs.

**Alternative C.** Alternative C would provide the largest motorized travel system. It would provide
3,582 miles of roads including 2,878 miles of motorized-mixed-use roads; boost motorized trails to
771 miles; and limit cross-country motorized use to 485,500 acres only for the purposes of game
retrieval (elk and deer) or dispersed camping. The motor vehicle use map would make user
compliance and law enforcement easier. Higher user numbers could bring more business to adjacent communities, and motorized users would find a planned travel system designed to meet their needs.

**Alternative D.** Alternative D would provide the smallest motorized travel system. It would reduce impacts of motorized travel on natural and cultural resources, reduce conflicts with nonmotorized recreationists, and would promote a safer environment for motorized users. It would provide 2,877 miles of roads including 580 miles of motorized-mixed-use roads; and 320 miles of motorized trails, and prohibit motorized cross-country use for any reason, with exceptions. The motor vehicle use map would make user compliance and law enforcement easier. Resource damage, conflicts with nonmotorized recreationists and system maintenance costs would be reduced, and motorized users would find a planned travel system designed to meet their needs.

**Alternative E.** Alternative E would take the minimum actions necessary to comply with the Travel Management Rule. It would provide a motor vehicle use map designating the existing travel system. Alternative E would provide 3,740 miles of roads including 160 miles of motorized-mixed-use roads; and 36 miles of motorized trails. It would prohibit motorized cross-country use for any purpose, with exceptions. The motor vehicle use map would make user compliance and law enforcement easier. Resource damage, conflicts with nonmotorized recreationists and maintenance costs would be reduced. Motorized users would find a minimal planned travel system designed to meet their needs.

The Forest Service solicited comments on the draft environmental impact statement (DEIS). Public comments were extensive and reflected a broad spectrum of interests. In response to public comments the Forest Service modified the analysis to show the effects of use of utility terrain vehicles 65 inches in width and less in South Dakota; expanded the area in which game retrieval would be allowed in Alternative C; made extensive changes to several resource analysis sections including the Engineering and Transportation, Socio-economics and Cultural Resources sections; and added a section addressing climate change. A number of other changes were also made in response to comment. No alternatives were added to the range shown in the DEIS.

**Major Conclusions of the EIS**

Concerning effects of the alternatives on natural and cultural resources (Issue 1), all action alternatives would reduce current levels of effects from motorized use. All action alternatives would reduce the miles of motorized routes in several important habitats and across the Forest, would limit or prohibit motorized cross-country use, and would reduce the number of points at which motorized routes cross streams and wetlands. These reductions would improve habitat conditions for a variety of species of plants and wildlife. Alternatives D and E would generally present the most improvements in habitat conditions, followed by Alternatives B and C.

Concerning recreation opportunity (Issue 2), route miles available to drivers of highway-legal machines on trails and mixed-use roads would be greatest under Alternative C, followed by Alternatives B and D. Alternatives A and E would offer much less route mileage for drivers of both highway-legal and non-highway-legal machines. Mileage available to unlicensed drivers (on trails only) would be greatest under Alternative C, followed by Alternatives B, D, and E. Motorized cross-country use for any purpose would be available only under Alternative A. Limited motorized cross-country use for game retrieval or dispersed camping would be offered under Alternatives B and C; such use would be prohibited under Alternatives D and E.

Regarding effects on management capabilities (Issue 3), motorized travel use would be more easily enforced under any of the action alternatives than under Alternative A because a motor vehicle use map would be issued. Users not in compliance with the motor vehicle use map could be cited. Considering the
total miles of trails, number of trailheads and other deferred maintenance costs (including construction and reconstruction where needed), Alternative C would be the most costly to implement, followed by Alternatives B and D. Alternatives A and E would be equal and least costly to implement. Alternative C would have the highest annual maintenance costs, followed by Alternatives B and D. Alternatives A and E again would be equal and least costly.

Regarding social and economic concerns (Issue 4), Alternatives B and C would offer the highest number of trailheads within 3 miles of communities, which could induce more user-related business in those communities. Alternative D would have the lowest potential for disturbance from noise and dust from motorized use near private lands. The population in the Black Hills region would continue to grow under all alternatives, as would recreational use of the Forest. Forest visitors will continue to expect diverse recreational opportunities. The reduction or loss of opportunity for motorized cross-country use would be partially offset by the enhanced OHV trail system opportunities under Alternatives C, B, and D, in that order. Private recreational opportunities could be developed to provide other opportunities, but none of the alternatives would be expected to create any measurable social or economic effects in the Black Hills region.
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Chapter 1. Purpose and Need for Action

Document Structure

The Forest Service has prepared this final environmental impact statement (FEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This FEIS discloses the direct, indirect, and cumulative environmental effects that would result from the proposed action and alternatives. The document is organized as follows:

- **Chapter 1. Purpose and Need for Action:** The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency’s proposal for achieving the purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

- **Chapter 2. Alternatives, including the Proposed Action:** This chapter provides a more detailed description of the agency’s proposed action as well as alternatives designed to resolve issues and achieve the stated purpose. These alternatives were developed based on significant issues raised internally, by the public and by other agencies. This discussion also includes design criteria. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the expected environmental effects of implementing the proposed action and alternatives. This analysis is organized by resource area (such as wildlife and soils).

- **Chapter 4. Consultation and Coordination:** This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.

- **Appendices:** The appendices provide more detailed information to support the analyses presented in the environmental impact statement.

- **Index:** The index provides page numbers by document topic.

Additional documentation, including completed specialist reports, scientific and other sources underlying the analysis, and other planning documents, may be found in the project planning record located at the Forest Supervisor’s Office in Custer, South Dakota.

Location

The project area consists of Federal lands managed by the Black Hills National Forest (also referred to as the “Forest”), comprising approximately 1.2 million acres in western South Dakota and eastern Wyoming (Figure 1). The bulk of the Forest is located in a contiguous block in western South Dakota, with parcels in eastern Wyoming, including the Bear Lodge Mountains. The gross area within the administrative boundary of the Forest depicted in Figure 1 is 1.5 million acres. Approximately 300,000 acres of lands of other ownerships lie within the Black Hills, and are seen in Figure 1 as white inclusions in the gray background. A small amount of this is in Federal ownership (just under 2,600 acres comprise Jewel Cave and Mount Rushmore National Monuments, and the Bureau of Land Management manages lands around Lead and Deadwood), but most is in State or private ownership. Most of the lands on the periphery of the Forest are also non-Federal land and privately owned. Much of the private land on the periphery of the Forest and within the Forest is prized for private subdivision development, private recreational ranches, and land speculation whose end purpose is generally residential development. Wildland-urban interface (WUI) issues played a prominent role in developing current Forest Plan direction and are a prime consideration in management of the Forest.
Figure 1. Black Hills National Forest planning area (Source: USDA Forest Service 2004)
Background

The Black Hills National Forest is part of the 191 million acres managed for multiple uses within the National Forest System (NFS). Motorized vehicles are used on National Forest System lands for a variety of purposes, including access to private property, harvesting timber and herding cattle, accessing recreational opportunities such as hunting, fishing, and camping, for sport and simply driving for pleasure. Nearly everyone who uses National Forest System lands – even those seeking nonmotorized pursuits – uses motorized vehicles in some fashion.

There are many types of motorized vehicles operating on National Forest System lands. These include highway-legal sedans, four-wheel-drive vehicles (4x4s), and pickup truck off-highway vehicles (OHVs) including all-terrain vehicles (ATVs), side-by-side utility-terrain vehicles (UTVs), "dirt bike" motorcycles, and specialized vehicles such as rock crawlers. OHV use has become particularly popular in the last few decades. Nationally, OHV owners and users have increased in numbers from about 5 million in 1972 to 51 million in 2004. OHV users account for 11 million visitors annually to the National Forests and Grasslands (USDA Forest Service 2004b). The West (including Wyoming) and the Midwest (including South Dakota) as regions rank first and second, respectively, in percentage of residents participating in OHV activities. The states of Wyoming and South Dakota rank second- and seventh-highest in the nation, respectively, in percentage of residents participating in OHV recreation (USDA Forest Service 2005c).

Management of OHV and other motorized uses currently varies throughout the National Forests and Grasslands nationwide. Many Forests and Grasslands restrict motorized vehicle use to designated routes and areas. This approach has been referred to as "closed unless designated open". Conversely, some Forests allow for unrestricted cross-country use and travel on routes that are not part of the regular transportation system. This approach has been referred to as "open unless designated closed". Roads and trails that are not part of the official transportation system are often referred to as nonsystem or unauthorized routes. This varying regulatory approach for motorized vehicle use across the many National Forests and Grasslands has lead to confusion among users, especially in areas where different Forests border one another. What is legal on one side of the boundary may be illegal on the other side.

The use of motorized vehicles on National Forests and Grasslands provides users with much enjoyment and varied recreational opportunities. There are issues, however, associated with motorized use. Unmanaged motor vehicle use can negatively affect riparian areas, wildlife habitat, soils, vegetation, cultural resources, and historic sites, and can contribute to the spread of invasive weed species. Such use can also bring about conflicts with other users of the National Forests and Grasslands, and adjacent private landowners, and can generate costs associated with route maintenance and law enforcement. In response to these issues, the Chief of the Forest Service in 2004 identified unmanaged recreation (including unmanaged motorized vehicle use) as one of four threats to the health of the nation’s forests and grasslands (USDA Forest Service 2004b).

Travel Management Rule

Heightened concern with the effects of unmanaged recreation was followed in November 2005 by the issuance of a new Travel Management Rule (the rule; Federal Register, Vol. 70 No. 216, incorporated here by reference). The final Rule amended regulations at 36 CFR 212, 251 and 261, and removed obsolete direction at 36 CFR 295. This rule specifically requires the
designations of any roads, trails, and areas that are to be open to motor vehicle use on a National Forest. The rule also directs that designations be made by class of vehicle and by season of use, where appropriate and necessary. Motor vehicle use would be prohibited on routes and areas not designated open to use. The rule was revised in December 2008 with respect to limited cross-country motorized travel for the purposes of dispersed camping or big game retrieval (73FR74612, incorporated here by reference).

Presently, most (864,000 acres) of the Black Hills National Forest (the Forest) is open to cross-country motorized travel, and has been for many years. There are over 10,000 miles of authorized roads and trails, unauthorized routes, and other-jurisdiction routes on the Forest. The authorized roads are referred to as system roads. They have been constructed and are maintained to provide administrative and public access to the Forest. System roads are considered necessary for the proper management of the Forest. Some of these system roads are high-speed gravel or paved routes, but most are lower-standard “dirt” roads with native surface material. Many are open on a year-round basis; others are restricted seasonally, typically being closed in the winter and early spring to provide undisturbed wildlife winter habitat and to protect the roadbeds during wet periods.

There are over 4,000 miles of unauthorized routes on the Forest, including both roads and trails. Some were either constructed or used for forest management activities on a temporary basis. Users adopted these routes over time and have used them, in some cases, for decades. Other routes are user-created. These routes were developed by repeated driving cross-country on the same path winding through the trees or across openings. User-created routes have not been designed by engineers and are sometimes situated in poor locations on the landscape, often resulting in adverse impacts to soil, water, riparian and other wildlife habitat, cultural and other resources. The widespread resource impacts from motorized cross-country travel and use of unauthorized routes; social change manifested by increasing use of off-road motorized vehicles; and the requirement of the 2005 rule to designate routes and areas open to motorized travel are primary reasons why an environmental impact statement is now being prepared.

This environmental impact statement (EIS) addresses roads, trails, and areas under jurisdiction of the Black Hills National Forest. This document does not address the management of routes by other jurisdictions, and it does not address travel by over-the-snow machines. This EIS responds to the Travel Management Rule and discloses the effects of five alternative approaches to managing motorized vehicles on the Forest. These alternatives were developed after significant public involvement. The EIS considers which routes should be designated as open to motorized use, what types (class) of vehicles should be used on various routes, which routes should be open

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**Definitions (36 CFR 212.1)**

**Road** – A motor vehicle route over 50 inches wide, unless identified and managed as a trail.

**Trail** – A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

**Forest road or trail** – A road or trail wholly or partially within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources

**Unauthorized Route** – A route that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.
yearlong and which ones seasonally, and whether limited cross-country motorized travel should be allowed for purposes of retrieving harvested game and/or dispersed camping.

**Legal Framework**

The Forest Service must comply with numerous laws, regulations, and policies in managing National Forest System lands. Some of the more important of these relating to travel management planning and implementation are as follows.

**Multiple Use-Sustained Yield Act of 1960 (16 U.S.C. 528)** – This law states that it is the policy of Congress that the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and authorizes and directs the Secretary of Agriculture “to develop and administer the renewable surface resources of the National Forests for the multiple use and sustained yield of the products and services obtained therefrom.”

**National Forest Management Act of 1976 (NFMA; 16 U.S.C. 1600)** – The National Forest Management Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests. This law primarily guides the development of Forest Plans, but requires also that project decisions made under this Forest Travel Management Plan EIS must be consistent with direction in the Revised Forest Plan for the Black Hills National Forest, as amended.

**National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321)** – This law directs all Federal agencies to consider and report the potential environmental impacts of proposed federal actions, and established the Council on Environmental Quality (CEQ). The CEQ regulations implementing NEPA are located at 40 CFR 1500-1508.

**36 CFR 212, 251, 261** – Regulations at Part 212 establish requirements for the administration of the Forest transportation system, including roads, trails, and airfields, and provisions for acquisition of rights-of-way. These regulations describe a minimum road system and require a science-based roads analysis to plan the road system and to set funding priorities. Regulations at Part 261 establish prohibitions on National Forest System roads that are enforceable by the Forest Service and other Federal law enforcement official(s). Collectively, regulations at these three parts govern motorized travel management, land uses, and prohibitions. These were recently revised under the final travel management rule. The rule requires consideration of the effects of designating roads, trails and areas on specific resources and components of travel management (36 CFR 212.55(a)). The rule also contains specific criteria related to designating trails and roads (36 CFR 212.55(b, c)). This document is being prepared in direct response to the direction in this rule.

**Executive Order 11644 as Amended by E.O. 11989** – Executive Order (E.O.) 11644 requires Federal land management agencies to establish policies and procedures for managing motorized vehicles on public lands to protect resources, promote safety of users, and minimize conflicts among users. E.O. 11989 amended E.O. 11644 with additional guidance to protect resources when establishing policies related to motorized travel on public lands. The 2005 Final Travel Management Rule is the agency’s method of implementing these executive orders.
Executive Order 13443 – This Order requires Federal land management agencies to consider the effects of agency actions on hunting, hunter participation, and wildlife habitat; to work cooperatively with state and tribal entities on wildlife management; and to consider programs and recommendations of comprehensive wildlife planning efforts. Chapter 3 discloses the effects of the alternatives on hunting, hunting participation, and wildlife habitat, and on compliance with applicable species specific and other wildlife management plans.

Revised Statute (R.S.) 2477 Rights-of-Way – The 2005 Travel Management Rule exemption for legally documented rights-of-way held by State, county or other local public road authorities covers rights-of-way under R.S. 2477 that have been adjudicated through the Federal court system or otherwise formally established. However, Congress has placed a moratorium on rulemaking concerning recognition of any unresolved R.S. 2477 rights-of-way claims. Identification of unresolved R.S.2477 rights-of-way in this document would be contrary to the Congressional moratorium and will not be further discussed here.

Forest Highways Act of 1958 (23 U.S.C. Chapter 200) – Requires that funds available for forest development roads and trails be used by the Secretary of Agriculture to pay for the costs of construction and maintenance thereof, including roads and trails on experimental and other areas under Forest Service administration, or for adjacent vehicular parking areas and sanitary, water, and fire control facilities. Authorizes the Secretary of Agriculture to enter into contracts with a State or civil subdivision thereof, and issue such regulations as he deems desirable.

National Highway Safety Act of 1966 (23 U.S.C. 402) – Authorizes State and local governments and participating Federal agencies to design, construct, and maintain roads in accordance with safety standards; to apply sound traffic control principles and standards; and to promote pedestrian safety. Pursuant to a Memorandum of Understanding (MOU) between the Forest Service and the Federal Highways Administration (FHWA), maintenance level 3, 4, and 5 roads are subject to “open to public travel” regulations.

This EIS is tiered to the Final EIS for the Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 1996a); and the Final Environmental Impact Statement for the Phase II Amendment to the 1997 Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 2005a). This analysis incorporates by reference the 1997 Revised Land and Resource Management Plan (Forest Plan) for the Black Hills National Forest, as amended by the Phase II Amendment (USDA Forest Service 2006a), and the associated project record; the Final Environmental Assessment for the Jasper and Elk Mountain Complex Fire Areas Travel Management Strategy, April 2004, (developed by the Hell Canyon Ranger District) and associated project record; and, the entire record for this current project.

Consistency between Federal Management and State Law

The Forest Service generally defers to state laws regarding the operation of motor vehicles on roads. The rule allows designations on Forest roads that pre-empt, or vary from state law (36 CFR 212.5(a)(1, 2)). It is the intent of the Forest Service to comply with state laws while providing for a reasonable and safe range of travel and recreation options. However, in case it is desirable to allow a road designation that varies from state designation, a road-use analysis has been

Motorized Mixed Use – The use of both highway-legal and non-highway-legal vehicles on a NFS road.
completed as part of this analysis to inform the decisionmaker of the safety implications.

A potential point of conflict between state law and any decision on this project could involve motorized mixed use on public roads. Motorized mixed use is defined for purposes of this analysis as the designation of a National Forest System road for use by both highway-legal and non-highway-legal motor vehicles (USDA Forest Service 2005d). The concept of motorized mixed use pertains entirely to the licensing and registration of vehicles under state law. The concept is independent of the licensing of vehicle operators. This FEIS does not consider alternatives to current state law regarding operator licensing.

South Dakota State laws related to roads fall under South Dakota Codified Laws Title 32, Motor Vehicles (SDCL 32-20). South Dakota law requires that motor vehicles operated on public roads within the state be highway-legal. This means the vehicle must be properly equipped and must be registered with a valid license plate. The State of South Dakota has interpreted this requirement to apply to all Forest Service maintenance level 2, 3, 4, and 5 roads. The law also requires that the operator possess a valid state driver’s license.

Wyoming State law allows the mixed use of properly outfitted, licensed, highway-legal multipurpose vehicles (MPVs) with non-highway-legal vehicles on public highways under the State ORV (off-road vehicle) Program. Roads designated under this program are referred to as “enrolled roads”. The law also requires that motor vehicle operators possess a valid state driver’s license while operating on roads.

Maintenance level – This concept defines system roads by the level of service they provide and the maintenance they require.

Maintenance level 1 (ML1) – Roads closed to vehicular traffic; may be open and suitable for nonmotorized uses.

Maintenance level 2 (ML2) – Roads open for use by high-clearance vehicles but not passenger cars. Typically involve low traffic volume and low speed.

Maintenance level 3 (ML3) – Roads open for travel by prudent drivers in a standard passenger car. User comfort and convenience are low priorities. Typically single-lane, low-speed routes.

Maintenance level 4 (ML4) – Roads providing a moderate degree of user comfort and convenience. Typically double-lane and aggregate-surfaced, with moderate traffic volume and speed.

Maintenance level 5 (ML5) – Roads providing a high degree of user comfort and convenience. Typically double-lane, paved, with the highest traffic volume and speeds.

A motorized-mixed-use analysis is a systematic process that determines the safety and liability when allowing both licensed and unlicensed vehicle use on the same public road at the same time. Because the Forest Service is a public road management agency, allowing the use of unlicensed vehicles on Forest Service roads open to the public must be analyzed. The decision to allow motorized mixed use must be documented and approved by a Forest Service decisionmaker. A motorized mixed-use analysis has been completed as part of this analysis, and will be considered when deciding what network of roads will be open to OHV use.

Purpose and Need for Action

The purpose of this action is to improve management of motorized vehicle use on National Forest System lands within the Black Hills National Forest in accordance with regulations at 36 CFR Parts 212, 251, 261, and 295, and as described in Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule (Federal Register, Vol. 70 No. 216). This action is needed to:
• **Identify an official travel system and update the Forest travel map.** The National direction requires Forests to clearly designate their motorized transportation system by class of vehicle and season of use. Current Forest travel maps do not meet this direction. Updated travel maps are required to communicate the required direction to the public.

• **Develop a transportation system to meet the increasing demand for recreational travel opportunities and to provide a range of quality experiences for a wide variety of Forest users.** Recreational use, including motorized travel, on the Forest has increased since the 1997 Forest Plan was published. The rapid increase of recreational activity on the Forest is partially in response to population growth, private land development, events such as the Sturgis Motorcycle Rally, and attractions including Mt. Rushmore National Memorial, Custer State Park, and Wind Cave National Park. Individuals drawn to these events and destinations often enjoy recreational opportunities on the Forest, including hiking, camping, fishing, hunting and motorized travel (USDA Forest Service 2005). Increased recreational use on the Forest has also contributed to the overuse of recreational facilities, resource impacts, and increased conflicts between owners of private property and Forest recreational users. In response to Forest Plan Goal 4, the Forest strives to provide a range of quality recreation experiences to the public within the capability of the Forest’s resources. It is timely to review the Forest’s capability to provide a variety of recreational opportunities given the change in demand.

• **Reduce adverse impacts caused by unmanaged cross-country and road and trail usage in order to maintain and conserve the condition of ecosystems and watersheds.** Effects to resources have increased as travel on the Forest has increased. Legal and stewardship mandates require the Forest Service to maintain and restore ecosystems and watersheds. Forest managers and the public have expressed concern about the capability to maintain an increasingly large network of roads and trails. Roads and trails in disrepair can prevent the Forest from meeting resource protection goals. There are also concerns about maintenance and resource damage on roads and trails that are no longer needed to meet public or agency needs. Legally, road and trail funding on National Forests can only be used for authorized routes. Currently, there is no way to pay for maintenance or corrective measures such as road and trail structures on unauthorized routes.

• **Specify roads, trails, and areas open to motorized use.** The Travel Management Rule requires the Forest to designate roads, trails, and areas open to motorized use and to specify the type of vehicle and season of use for each (Federal Register 2005:70FR68264). Current Forest travel maps display roads, trails, and areas that are open or closed to motorized use, but do not officially designate routes and areas open to motorized use. Under the authority of the rule, these maps do not create a legal basis for law enforcement.

• **Closely align travel and recreation opportunities offered to the public with the Forest’s management capability.** Unmanaged recreation has been identified by the Forest Service as one of the Four Threats to the Health of the Nation’s Forests and Grasslands (USDA Forest Service 2004). The Code of Federal Regulations (36 CFR 212.55) requires the responsible official to consider the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated and the resources for that maintenance and administration are available. Proactively designating and actively managing system roads, trails, and areas could help reduce management cost and focus limited resources.
Decision Framework

Given the purpose and need, the Forest Supervisor will review the proposed action and alternatives, significant issues, the environmental consequences of each alternative, and public comments, and will make the following decisions concerning the management of motorized travel on the lands in the project area:

- Whether to designate certain routes, trailheads and other facilities as open to the public for motorized use.
- Whether to authorize improvements to certain routes to allow their use, and if so, the nature of those improvements.
- Whether to allow motorized game retrieval and motorized dispersed camping or off-road parking.
- The season or types of public motorized use allowed for those routes open to motorized travel.
- Whether to amend existing Forest Plan direction to allow implementation of the selected travel management alternative.

Site-specific analysis is incorporated into this document to support the authorization of construction and reconstruction of trails. However, interdisciplinary (ID) team specialists did not evaluate the effects of physically decommissioning roads or trails, thus no decision to physically close and decommission roads or trails will be made based on the analysis in this document. These actions would be evaluated and decided in subsequent project analyses.

Proposed Action

Early development of the proposed action involved extensive consultation with many individuals and groups. Some of this work was conducted by the National Forest Advisory Board. Other efforts were conducted by the Forest Service. The following section summarizes these efforts.

National Forest Advisory Board Efforts

The Forest conducted preliminary public involvement from April 2003 to November 2007 through the work of the Black Hills National Forest Advisory Board (NFAB). This board was chartered under the Federal Advisory Committee Act (FACA) in 2003. In March 2005, the Board established the Travel Management Subcommittee (the Subcommittee) to develop recommendations to the larger NFAB for travel management on the Forest. It was intended that advice provided by the NFAB would be used by the Forest Service to develop a proposed action or alternatives to be considered in the EIS. Members appointed to the Subcommittee represented a wide variety of interests, including both motorized and nonmotorized recreationists.

To assist their efforts in evaluating the potential for establishing a designated OHV trail system on the Forest, the Subcommittee distributed a User Needs Questionnaire to solicit input from both OHV and non-OHV users. By December 2005, some 559 responses had been received. To supplement the information received from this effort, the Subcommittee also conducted four public meetings in South Dakota and Wyoming in which they listened to ideas, suggestions and concerns from off-highway vehicle users, outdoor recreationists, interested stakeholders and community members.

NFAB Recommendations - Based on public input solicited and received, the Subcommittee issued a report on June 8, 2006 (Blair et al. 2006). The report contained eleven core
recommendations regarding design and management of a designated system of roads, trails, and areas. The report made it clear that these recommendations “are intended to be general in nature.” The eleven recommendations offered by the Travel Subcommittee to the NFAB are incorporated by reference in this analysis, and are summarized as follows:

1. **Our Setting/Niche** – “The Subcommittee recognizes that motorized vehicle use including OHVs is an important part of the recreation experience on the Black Hills. The Subcommittee recommends that an OHV trail system be developed, within the context of overall motorized uses, which provides for a variety of opportunities but does not dominate or unreasonably interfere with other multiple uses on the Forest.”

2. **Active or a Passive System?** “The Subcommittee recommends an ‘active’ system versus a passive one. A **passive system** is similar to what we have today—routes and areas are designated as open or closed, and people use these routes/areas as desired. An **active system** is one that is specifically designed, maintained, and enforced to provide for specific uses. The Subcommittee recognizes that funding would play a large role in the size and nature of the system.” (Emphasis added.)

3. **What are the economic and funding issues?** “The Subcommittee recognizes that the size and nature of an OHV system will depend substantially on the funding sources available. The Subcommittee supports pursuing all possible funding options.”

4. **What would be the role of the States and local communities in developing and managing an OHV trail system?** “The Subcommittee recommends that OHV management on the Black Hills National Forest be a cooperative effort between the Forest Service, the States of South Dakota and Wyoming, and local counties. The Forest Service would have primary responsibility for an OHV trail system (as well as other transportation systems) on National Forest System lands.”

5. **What should the system look like/consist of?** “The group likes the concept of “Gateway Communities” or of at least connecting/tying in communities in some fashion. In general, the system should consist of a main arterial system extending throughout the Black Hills and a network of routes branching off the main system. The focus would be on multiple scale loops as opposed to dead-end spurs. Many of the routes would be shared by multiple users… The group recognizes that, for the most part, there are already an adequate number of routes on the Forest that could be developed into a system [and that] some current, nonsystem routes may need to be included in the system.” The Subcommittee stated that they did not envision that a large number of new routes would be developed, and that the development of new connections or “limited new routes…should be off-set by the removal of other existing routes. In the end, there should be less ‘tracks on the ground’ than currently exists.”

6. **How do we address populated areas?** “General consensus was that it is important to limit the amount of noise and potential conflicts adjacent to communities/subdivisions, and that an OHV trail system should focus more on areas away from populated areas.” The Subcommittee recognized that concentrating motorized use near populated areas “can be a nuisance for some and cause conflicts” and that efforts should be made to reduce this nuisance and conflicts. The Subcommittee noted that providing motorized access from these areas while reducing conflicts could be “the most difficult aspect of the entire process.”
7. **Game Retrieval** – “The Subcommittee recommends that allowances be made for game retrieval as part of the motorized use designation process.” The Subcommittee recommended further that the program on the Forest should be consistent with other Federal and State agencies, notably Custer State Park, and that “No unacceptable resource damage, as defined by the Forest Service, will occur as part of retrieval operations.”

8. **Firewood Collecting** – The Subcommittee recognized that many residents collect firewood on the Forest to heat their homes, and recommended “that motorized use to collect firewood:

   a. Require a firewood permit.

   b. Be limited to areas designated by the Forest Service which can be modified as needed.”

9. **Dispersed Camping** – “The Subcommittee recommends that dispersed camping using motorized vehicles off designated routes be allowed, but motorized vehicles be restricted to within 300 feet of an open, designated route using the most direct route to the camp site.”

10. **Cross-Country Motorized OHV Use** – “The Subcommittee recommends that cross-country motorized OHV travel be allowed only within designated areas. Exceptions to this would be for administrative and permitted uses, public safety, fire suppression, and search and rescue.” The Subcommittee offered no recommendation as to the size and nature of these designated areas.

11. **Mud-Bogging** – “The Subcommittee recommends that no mud-bogging be allowed on National Forest System lands,” noting the resource damage that accompanies such use.

**Forest Service Efforts**

The Forest Service also conducted work outside the framework of the NFAB. During this preliminary public involvement stage, Forest leadership met with Indian tribal leadership to consider the travel planning process. The Forest Service also sponsored and conducted workshops. The Forest, in cooperation with the National Off-Highway Vehicle Conservation Council (NOHVCC) conducted an OHV Route Designation Workshop in October 2006 for agency personnel and the public. The purpose of this workshop was to acquaint agency personnel and the public with the Travel Management Rule and its implementation. In November 2006, the Forest conducted four “Travelways” workshops. The purpose of these workshops was to gather public input and ideas for developing a proposed action. Individuals attending these workshops identified routes they felt should remain open for public use on Forest lands, and suggested changes or additions to the travel system. Participants at these workshops contributed site-specific information that was used to develop the proposed action.

The Forest then convened decisionmakers and resource specialists from the Supervisor’s Office and all four Ranger Districts, to design and display a motorized travel system that would follow the NFAB recommendations and meet public desires expressed up to that time. The aim was to develop a system that would also reduce or minimize potential resource damage, and be practical to implement.
Proposed Action

To meet the purpose and need, the Forest Service proposes to designate certain roads and trails open to motorized-vehicle travel on lands administered by the Forest. The agency believes it is appropriate and necessary to assign a class of vehicle and season of use to these designated roads or trails. The agency also believes that the proposed, consciously designed, or “active” motorized travel system would improve on the current “passive” unmanaged system, which has evolved in an unplanned manner over time. An active system would meet a variety of motorized and nonmotorized recreation needs and desires while reducing effects of motorized recreation on natural resources and neighbors.

Motor vehicle use map (MVUM): A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the NFS (36 CFR 212.1).

Specifically, the action proposed by the Forest Service would greatly increase the miles of motorized trails from the current 36 miles to 663 miles. This would provide over 400 miles of trails for vehicles 65 inches or less in width in South Dakota (50 inches or less in Wyoming), and 76 miles of motorcycle trails. This proposal would further designate 2,226 miles of road to fill out the system for motorized mixed use by both highway-legal and non-highway-legal vehicles. An additional 1,242 miles of road would be open to highway-legal vehicles only. These routes open to public use would be officially designated on a Forest motor vehicle use map. Routes not shown would not be available for motorized use. Map display would make it easier for recreationists to comply with the system, and for the agency to enforce it. Finally, cross-country travel would be allowed on 177,000 acres of National Forest System land for the purposes of retrieving harvested game and dispersed camping. This would reduce cross-country travel from the current 864,000 acres with the intent to improve natural resource conditions. This proposal is further described in Chapter 2, Alternatives, under Alternative B.

By implementing this proposal, the Forest would comply with requirements of the 2005 Travel Management Rule (36 CFR Part 212) as revised (hereafter referred to simply as, the rule). As a result of these travel management decisions, the Forest would produce a motor vehicle use map depicting those routes and areas on the Forest that would be open to motorized travel. The motor vehicle use map would be the primary tool used to determine compliance and enforcement with motorized travel designations on the ground. All other routes, including existing Forest routes and user-created routes not designated open on the motor vehicle use map, would not be available for motorized travel by the public. This would represent a major change from the current situation in which routes and areas are generally considered open to motorized travel unless specifically closed.

Public Involvement

This section of the EIS describes public involvement efforts that occurred in the formal analysis process. Public involvement occurring prior to that point was described in the Proposed Action section.

Scoping

Initial contact with the public at the beginning of the formal analysis process is referred to as scoping. The intent of scoping is to better define the bounds of the proposal and to identify concerns the public may have with it. The Notice of Intent (NOI) initiating the scoping process was published in the Federal Register on September 11, 2007 (72FR51772). The NOI requested public comment over a 60-day period ending November 13, 2007. As part of the scoping process
in September 2007, the Forest hosted four public meetings in Wyoming and South Dakota. These meetings were attended by over 700 people. The purpose of the public meetings was to introduce the Travel Management Plan process and solicit additional comments. Open houses were also held in October 2007 at the four Forest ranger district locations, at which the district rangers were present. The public provided additional site-specific route input at these open houses. Several of the comments obtained at the open houses provided specific information concerning the current inventory of nonsystem (unauthorized) roads, trails, and areas. Information pertaining to the current inventory of nonsystem roads, trails, and areas was used to update the computerized inventory base layers.

The Forest received more than 700 emails and letters during the public scoping period. The interdisciplinary team analyzed over 2,000 comments derived from these emails and letters using an established analytical process known as content analysis. Comments were sorted and categorized in a database, and individually evaluated. The interdisciplinary team used the comments from the public and other agencies to develop a list of issues that would be addressed in the Travel Management Plan. The issues are introduced below and are discussed in detail in Chapter 3 of this document.

**Issues**

During the public involvement process, the Forest identified public concerns that should be analyzed in detail in the EIS (40 CFR 1501.7). These concerns are summarized below as issues. Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and to compare trade-offs for the decisionmaker and public to understand.

These issues were separated into two groups: significant and nonsignificant issues. Issues were determined to be significant if an effect or conflict would result from implementing the proposed action. The significant issues become the focus of the analysis and guide alternative development. On the other hand, issues were determined to be nonsignificant if they were found to be: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. All public scoping comments were considered by the interdisciplinary team and the responsible official, and are documented in the project record. Comments and their disposition are summarized in Appendix D.

**Significant Issues and Indicator Measures**

After reviewing and analyzing agency and public responses, the following significant issues were identified. The Forest focused on articulating the significant issues identified by the public that guided the development of a range of alternatives to the proposed action. These issues are analyzed in detail in Chapter 3. Indicators were developed for each issue to help define the issue, and to evaluate the effects of the proposed action and the alternatives. The issues and their associated indicators are described below.

**Issue 1: Effects on natural and cultural resources**

The alternatives considered in this FEIS may have effects on natural and cultural resources. Natural resources of most concern include certain plant and wildlife species, soil and water, and the threat of invasive species. Effects to these resources will vary between alternatives and are mostly dependent on the miles of roads and trails open to motorized use. Restricting motorized use to a managed system of designated roads and trails, identifying specific seasons of use, and
identifying authorized types of vehicle use, would improve protection for these natural and cultural resources. Effects to natural and cultural resources between alternatives are identified in detail in the effects analysis in Chapter 3. The following are the primary indicators used to measure the effects to natural and cultural resources. Additional indicators are addressed in the individual resource discussions in Chapter 3.

**Indicators**

**Botanical indicators**
- Miles of motorized routes, including through suitable plant habitat
- Acres open to motorized cross-country travel
- Routes intersecting known occurrences of certain plant species, habitat types or botanical areas
- Miles of new proposed routes
- Number of proposed trailheads

**Wildlife**
- Miles of motorized routes
- Acres open to cross-country use
- Acres open to game retrieval
- Acres open to dispersed camping
- Miles of routes in certain habitat components
- Miles of routes in species-specific habitat or use areas
- Routes identified with relative risk to American dipper
- Winter open route density in Management Areas 5.4 and 5.43.

**Fisheries and Hydrology**
- Number of route crossings on perennial streams
- Miles of routes within 30 feet of a perennial stream (floodplain)
- Miles of routes within 119 feet of a perennial stream (WIZ)

**Soils**
- Acres open to unlimited cross-country travel
- Acres open to motorized game retrieval and dispersed camping

**Cultural Resources**
- Number of historic properties within unauthorized routes at risk from ongoing use
- Degree to which the integrity of historic property values are diminished

**Range and Noxious Weeds**
- Miles of motorized routes
- Acres of the Forest with unrestricted access
Issue 2: Effects on recreational opportunities

The alternatives considered in this FEIS may have effects on the amount of available recreational opportunities provided on the Forest, including motorized use on roads and trails, motorized-mixed-use roads, dispersed camping, big game retrieval, motorized trailheads and nonmotorized opportunities. Effects to the recreational opportunities by alternative are identified in detail in the effects analysis in Chapter 3. The following indicators were used to measure the effects on recreational opportunities. While most describe components of a motorized system, lesser numbers or mileages could indicate increased nonmotorized opportunity.

**Indicators**

- Miles of road open to all vehicles (motorized mixed use)
- Miles of road open to highway-legal vehicles only
- Miles of trail open to all vehicles (includes vehicles wider than 65 inches in South Dakota, 50 inches in Wyoming)
- Miles of trail open to vehicles 65 inches wide or less in South Dakota, 50 inches or less in Wyoming
- Miles of motorcycle trail
- Beginner practice areas (cross-country travel areas) less than 5 acres
- Acres open to game retrieval and/or dispersed camping
- Number of motorized trailheads
- Miles of roads converted to trail
- Miles of designated motorized routes within 300 feet of lands of other ownerships
- Number of trailheads within 3 miles of a potential gateway community

Issue 3: Effects of transportation system design on management capabilities

The alternatives considered in this FEIS may have effects on the Forest’s ability to proactively designate and manage system roads and trails, while also optimizing recreation experiences. The alternatives considered will have different effects on how the transportation system is able to address management concerns (such as law enforcement, user education, signing, and maintenance) while reducing management costs and focusing limited resources. Addressing many of the management concerns will be dependent on available funding sources, which will most likely be limited. The transportation system design can also affect public safety depending on the miles of motorized-mixed-use roads. Roads identified for motorized mixed use have been reviewed in a Mixed Use Roads Analysis that includes mitigation to make reasonable accommodations for the public’s safety. The following are the indicators used to analyze this issue.

**Indicators**

- Miles of road open to all vehicles
- Miles of road open to highway legal vehicles only
- Miles of trail open to all vehicles
- Miles of trail open to vehicles 65 inches wide or less in South Dakota, 50 inches or less in Wyoming
- Miles of motorcycle trail
- Number of trailheads
• Number of perennial stream crossings
• Miles of open roads to be closed
• Miles of closed roads to be reopened
• Miles of road converted to trails
• Miles of new routes to be converted from unauthorized.
• Number of dead-end spurs
• Miles of motorized-mixed-use roads open yearlong
• Miles of motorized-mixed-use roads open seasonally
• Total miles of motorized-mixed-use roads
• Miles of roads at maintenance levels 3, 4 and 5

Issue 4: Social and economic concerns
The alternatives considered in this FEIS may affect the economic sustainability of local businesses and communities. Effects may be related to sound level (noise), dust (air quality), trespass and access to private property, distance from motorized routes to private land, traffic levels, and miles of routes open to motorized use. The following are the indicators used to analyze this issue.

Indicators
• Miles of motorized routes within 0.5 miles of a nonmotorized trail
• Miles of National Forest System motorized routes through or within 300 feet of lands of other ownerships
• Number of motorized trailheads within 3 miles of a potential gateway community
• Miles of motorized routes

Public Review and Comment on the DEIS
The draft environmental impact statement was issued for public comment during a 45-day comment period that began March 20, 2009. By public request, it was extended another 14 days, to May 18, 2009. In addition to the broader public comment period, the Forest Supervisor provided another 30 days to local communities and counties to comment on their intentions to connect to any designated motorized system. This action was in line with the NFAB recommendations with respect to gateway communities and in an effort to give these entities further voice in the development of a system that could be mutually beneficial.

Public comment came in the form of distinct letters, form letters, and e-mails. Over 1,250 individual responses were received, each containing comments ranging in number from one to several hundred. These individual comments were identified, uniquely numbered, and, based on their content, grouped into larger public concern statements, which captured similar concerns in different comments. A summary of some of the main points under each of these categories, and the general agency response to these, is available in Appendix I. Individual comments and responses to all public concerns are available electronically on the Forest website at http://www.fs.usda.gov/blackhills. All comments, analysis, and responses are incorporated by reference in this analysis.

The Forest Service responded to each public concern in one of several ways. Some warranted a change in one or more alternatives. Others pointed out a need for correction in the DEIS.
analysis. Still others pointed out concerns that had already been addressed in the DEIS. Though these may not have been cause to make a change in this Final EIS, they, along with all comments, will be considered by the Forest Supervisor in arriving at the final decision on this project.

**Changes between the Draft and Final EIS**

Specifically, the Forest Service made the following changes based on comments on the DEIS:

- Added design criteria for the Engineering/Transportation section
- In response to public questions, the Forest clarified the concept of gateway communities. The Forest’s intention is that, as communities determine appropriate ways to tie into the motorized travel system in the future, they could then be referred to as gateway communities. This would be more appropriate since such communities would at that point actually provide entrance points onto the motorized travel system.
- Numerous comments pointed out that manufacturers have been increasing the width of some OHV models to meet multiple purposes, and requested the Forest Service consider allowing wider OHVs on the motorized travel system. The Forest reviewed data on a number of wider OHVs currently available, and included use of OHVs as wide as 65 inches on roads and trails, and for the purpose of limited game retrieval and dispersed camping. The effects analysis has been modified accordingly.
- The Forest Service has added 12,000 acres that would be open to game retrieval in Alternative C only, consistent with the conditions of that alternative. The added area follows major roads and highways, and is contained largely in two areas in the South Dakota portion of the northern and central Black Hills. This was done in response to internal (Forest Service) review comments. The Forest expects that, if this alternative were selected, these additions would make it easier for the public to identify and stay within the area in which game retrieval is allowed, and would make it easier for the agency to enforce the provision.
- The Forest received comments indicating the public was confused by the term, CMUA, in the DEIS. Some felt it implied motorized cross-country use. In the FEIS, the Forest Service has kept the original concept of areas with high densities of motorized roads and trails, but has changed the name to “motorized trail system” (MTS). These individual areas will be uniquely identified on the FEIS maps.
- The Forest Service has added additional material to the analysis of social and economic effects, and it was determined that a rewritten section would best incorporate this material. The cultural resources section was also rewritten to better portray that analysis.
- The Forest has added a short section addressing climate change.
- The Forest Service identified several routes on the Mystic and Hell Canyon Ranger Districts that were either shown incorrectly on DEIS maps, or not at all. These routes have been shown in the FEIS maps as open trails, and included in the analysis.
- Immediately upon release of the DEIS it was discovered that a short trail segment had been inadvertently omitted from the map and description of Alternative C. An erratum to the DEIS was issued for public comment. This route has been added to the map and description of Alternative C in the FEIS.
- The Forest Service identified several roads and trails which, though not proposed for use in this analysis, may be proposed for public use in the near future. These routes, on the Bearlodge, Northern Hills, and Mystic Ranger Districts, have been included in the FEIS analysis as reasonably foreseeable actions.
• The Forest has identified opportunity for rock crawler use under “miles of trail open to all vehicles.”
• The Forest Service has revised the list of issue indicators shown in Chapters 1 and 2 to be consistent with those actually used by resource specialists in the analysis in the FEIS.
• Based partly on public comment and partly on further internal review, specialists made minor changes including corrections to the resource sections in Chapter 3, and added some citations to the list of literature cited in Appendix C.
Chapter 2. Alternatives, Including the Proposed Action

Introduction
This chapter describes the alternatives considered for the Forest Travel Management Plan. The maps for each alternative considered are included in Appendix I, the map packet. This chapter also presents the alternatives in comparative form, defines the differences between each alternative, and provides a clear basis for choice among options by the decisionmaker and the public. Some of the information used to compare the alternatives is based on the design of the alternative and some of the information is based upon the expected environmental, social, and economic effects that could be expected from implementing each alternative. These effects are discussed in detail in Chapter 3 of this document.

Alternative Development
To support alternative development, information provided by the public and Forest personnel was used to develop a comprehensive inventory map of roads, trails, and areas across the Forest. Public comments on the proposed action, public preferences concerning travel management expressed at meetings, and the knowledge of agency personnel were used to develop the alternative themes. The topics considered in developing the alternative themes include:

- Motorized cross-country use in the form of big game retrieval and dispersed camping
- Looped OHV trail opportunities
- Access points (trailheads)
- Noise
- Conflicts with other uses of the National Forest including nonmotorized recreation
- Effects on cultural resources
- Effects on natural resources including plants, wildlife and watersheds
- Spread of noxious weeds
- Education and law enforcement
- Economic feasibility
- Administrative access

After the alternative themes were established, the alternatives were developed by examining each road, trail (whether system or nonsystem), and area. The ID team and District staff used site-specific comments and knowledge of specific site conditions to develop a strategy for the management of roads, trails, and areas based on the alternative theme. Alternatives were then checked for consistency with the Forest Plan.

Relationship of Alternatives to Forest Plan Direction
The Forest Plan defines a set of goals, objectives, standards, and guidelines that provide direction for managing the Forest and its resources. The law requires that individual project decisions be consistent with Forest Plan direction. If a project proposal is not consistent with that direction, the project may be modified to make it consistent; it may be dropped; or, the Plan may be amended to allow implementation of the project. The alternatives presented in this document
would manage motorized travel in different ways. Several changes to Forest Plan direction are proposed to update Plan direction and allow implementation of each action alternative.

Forest goals are broad statements that describe overall conditions managers would strive to achieve. They are not directly measurable and there are no timeframes for achieving them. Goals describe the ends to be achieved rather than the means to these ends; they serve as vision statements. Objectives provide means in the form of measurable steps required to accomplish goals. Objectives generally are achieved by implementing projects or activities. However, objectives are not targets, which are a measure of annual outputs dependent on budgets.

A standard is a course of action that must be followed, or a limit to actions that may be taken when implementing individual projects. Adherence to standards is mandatory. Consistency with the Forest Plan is defined as compliance with standards. Deviations from standards must be analyzed and documented in a Forest Plan amendment with appropriate public involvement.

A guideline is a preferred or advisable course of action, or a recommended limit to actions when implementing projects. Deviation from guidelines is allowed with clear and acceptable rationale.

A Forest Plan also establishes additional direction for individual management areas, each with a different management emphasis. Management area direction includes a desired condition statement and then defines which management activities may be carried out, with additional standards and guidelines as needed to manage or protect specific resources within the boundaries of those areas. Wilderness and developed recreation sites are two examples of management areas with very different management emphasis.

Forest Plan Goals and Objectives
The Travel Management Plan would meet goals and objectives established in the Forest Plan, although the relative emphasis varies by alternative. Some of the relevant goals found in the Forest Plan include:

- (Goal 1) Protect basic soil, air, water, and cave resources.
- (Goal 2) Provide for a variety of life through management of biologically diverse ecosystems.
- (Goal 4) Provide for scenic quality, a range of recreational opportunities and protection of cultural resources in response to the needs of the Forest visitors and local communities.
- (Goal 6) Improve financial efficiency for all programs and projects.
- (Goal 7) Emphasize cooperation with individuals, organizations and other agencies while coordinating planning and project implementation.
- (Goal 8) Promote rural development opportunities.

Relevant Forest Plan standards and guidelines are cited in individual resource sections in Chapter 3, and can be reviewed in the Forest Plan.
Features Shared by All Alternatives

Any selected alternative would provide for the following:

**Emergency** - Search and rescue and other emergency operations, and the use of any fire, military, or law enforcement vehicle for emergency purposes would be exempted from travel management prohibitions.

**Emergency Closure** - Emergency closure would be implemented by the responsible official as warranted to protect resources, health and safety, etc. Federal land managers are directed to ensure that the use of motorized vehicles and off-road vehicles are managed to protect the resources of those lands, to promote the safety of users, to minimize conflicts among the diverse uses of the Federal lands, and to provide for public use of routes designated as open. (Executive Order 11644, 26 CFR 212 and 43 CFR 8342.1.)

**Future Changes** - The final rule recognizes that the designations of roads, trails, and areas for motorized vehicle use are not permanent and that environmental impacts, administrative needs, changes in demand, route construction, and monitoring conducted under the final rule may lead land managers to consider revising designations. (36 CFR 212.54, 212.57.) Nothing in this plan precludes future project-specific environmental analysis from proposing construction of new system roads and trails, or annual changes to roads and trails and areas as conditions warrant.

**Administrative Access** - The Forest Service would retain administrative access authority sufficient to carry out official business including but not limited to conducting resource surveys, administering contracts and permits, suppressing wildfires or addressing other such emergencies, maintaining roads and other facilities, etc.

Access would also be allowed to contractors and permit holders operating within the terms and scope of their contract or permit, to conduct Government-related business. This specifically would include, but not be limited to commercial traffic such as timber sale purchasers, road contractors, and those holding special use and livestock grazing permits.

Reasonable administrative access would be allowed as appropriate for other local, State and Federal agencies to manage their adjacent or isolated parcels. If a National Forest System road or a specially designated OHV trail is needed for timber or fuels management or fire suppression, all OHV use, both highway-legal and non-highway-legal, would be temporarily suspended or could even be permanently discontinued. Substitute routes may, or may not, be designated.

Special seasons of use and other restrictions on operations of all OHVs, both highway-legal and non-highway-legal, would not necessarily pertain to timber, fire, and fuels management activities unless they are applied in a decision to implement those projects.

Language in existing permits or contracts would not be interpreted to allow OHV use where it is otherwise prohibited. For example, a firewood permit that allows the permittee to collect firewood from areas where motorized game retrieval is prohibited would not be construed to allow motorized game retrieval under the guise of collecting firewood.

**Permitted Access** – Those currently holding legally documented easements or rights-of-way allowing for motorized use under law or pursuant to reserved or outstanding rights would not be subject to prohibitions on motor vehicle use as it is allowed to them (36 CFR 261.13(h)). Activities authorized by a permit would continue to be governed by the terms of that permit, and motor vehicle use specifically allowed under such permits would not be affected by the
restrictions proposed here (36 CFR 212.51(a)(8)). Individuals could continue to seek Forest Service authorization for motorized use for access to private property, or in association with other authorized uses of National Forest System lands. Examples of situations in which motorized uses would be exempt from prohibitions include:

- The owner of property within the boundaries of the National Forest requires use of motorized vehicles for reasonable use and enjoyment of the property and obtains a permit or easement from the Forest Service.
- The holder of a grazing permit requires use of motorized vehicles for maintenance of water systems, repair of fencing, or other livestock management activities and obtains authorization from the Forest Service under the grazing permit.
- An individual requires motorized access to a mining claim or mineral lease and obtains Forest Service authorization under a plan of operations or surface use plan.

**Description of the Alternatives**

The alternatives, including no action and proposed action, are designed to provide a range of options from which the responsible official can make an informed choice. The alternatives, which were developed by an interdisciplinary team of specialists, differ by the relative emphasis given to individual issues and public concerns. After reviewing the issues and grouping them in different combinations, several possible alternative themes emerged. Each represented a potential travel plan that met the project objectives (purpose and need) and addressed the issues in different ways.

Alternatives considered in detail are described below in terms of their theme and the relationship to the issues. The theme focuses on a particular issue or a group of compatible issues (for example, limiting effects of motorized use to natural resources and reducing conflicts with nonmotorized users). The relationship to issues further explains how specific elements of the issues are addressed by the alternative.

**Alternatives Considered in Detail**

In addition to no action and the proposed action, the Forest Service developed three other alternatives in response to issues raised by the public. These alternatives are presented after the no action and proposed action alternatives.

**Alternative A – No Action**

NEPA regulations at 40 CFR 1502.14 require that “agencies shall…include the alternative of no action.” This is intended to provide a baseline against which the effects of other alternatives can be measured.

Under this alternative, there would be no change from present management. Current management plans would continue to guide motorized travel in the project area. Current travel patterns, modes of use and enforcement actions would be expected to continue.
There are presently 10,280 miles of existing routes on National Forest System lands, including some 4,109 miles of known unauthorized routes. There are about 820 miles of other public roads on National Forest System lands, which would not be affected by the decision on this project. This alternative would continue the current “passive” travel system, meaning a travel system that was not designed to accommodate recreational motorized use of various types. Continuation of use on the current system would not meet the recommendation of the NFAB Travel Subcommittee to establish an “active” motorized travel system. The sheer size of the existing system would continue to present the Forest Service with many maintenance challenges.

No motor vehicle use map would be issued, so no roads, trails, or areas would be officially designated open to motorized-vehicle travel on lands administered by the Forest. As a result, if this alternative were selected the Forest Service would not comply with the 2005 travel rule. Future project decisions could consider designating unauthorized routes as part of the travel system; however, no unauthorized routes would be officially designated part of the Forest system by selecting this alternative.

**Vehicles** - South Dakota State law requires that motor vehicles using public roads be registered and bear a vehicle license (highway-legal). Wyoming State law allows use of both highway-legal and non-highway-legal motor vehicles on certain enrolled roads.

**Vehicle Operators** - Current State law in both South Dakota and Wyoming requires that motor vehicles on public roads be operated only by licensed drivers.

**Cross-country Use** - About 864,000 acres of the Forest currently open to motorized cross-country use would remain open. Motorized cross-country travel presently is undertaken for a variety of purposes including retrieval of big game harvested by hunters, dispersed camping, and general OHV recreational traffic.

Currently, no roads or trails are officially designated open to motorized vehicle use as contemplated in the Final Travel Management Rule. Motorized use occurring on roads, trails, and in areas where such use is not specifically prohibited has generally been legal within Federal regulation if it is not damaging natural resources. Such motorized use has also generally been legal within the bounds of state law if the vehicle is highway-legal and the operator is licensed. Attempts by Forest Service law enforcement personnel to successfully prosecute citations for resource damage in courts of law have been made difficult by the need to witness the accused in the act of damaging resources. Since law enforcement officers do not witness most such instances, many cases have not been prosecuted fully. If Alternative A were selected, it is expected that these enforcement difficulties would continue. It is expected that the use of unauthorized routes, and the proliferation of new unauthorized routes, would also continue. Motorized recreation opportunities under Alternative A are characterized in Table 1.

Please refer to Table 7 for parameters further describing this alternative, and to compare this alternative to others.
Table 1. Indicators of motorized recreation opportunities in Alternative A (no action)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Alternative A (current condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles <em>(motorized-mixed-use roads)</em></td>
<td>160</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only <em>(non-highway-legal vehicles prohibited)</em></td>
<td>3,580</td>
</tr>
<tr>
<td>Total miles of roads</td>
<td>3,740</td>
</tr>
<tr>
<td>Trails</td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width</td>
<td>36</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>0</td>
</tr>
<tr>
<td>Miles of special designations</td>
<td>0</td>
</tr>
<tr>
<td>Total miles of trails</td>
<td>36</td>
</tr>
<tr>
<td>Total miles of proposed motorized routes</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>7</td>
</tr>
<tr>
<td>Area open to Motorized Cross-country Use</td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping <em>(motorized)</em></td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to game retrieval <em>(motorized)</em></td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to cross-country travel <em>(nongame retrieval)</em></td>
<td>864,000</td>
</tr>
<tr>
<td>Total area open to motorized cross-country travel <em>(Note: not additive)</em></td>
<td>864,000</td>
</tr>
</tbody>
</table>

Action Alternatives – Alternatives B through E

Alternatives B through E are referred to in this document as the action alternatives, to distinguish them from Alternative A, the no action alternative. The action alternatives include Alternative B, the modified proposed action, and Alternatives C, D and E, which were developed to address concerns expressed by the public about the proposed action.

Features Common to Action Alternatives

The following features would be incorporated in each action alternative unless stated otherwise.

Compliance with the 2005 Travel Management Rule

Each action alternative would designate selected roads and trails open to motorized-vehicle travel on lands administered by the Forest, and set specific seasons and types of use for designated roads, trails and areas. Coupled with publication of the Forest motor vehicle use map (see below), the Forest Service would comply with the requirements of the 2005 Travel Management Rule (36 CFR Parts 212, 251 and 261).

Motor Vehicle Use Map

For any action alternative selected, a motor vehicle use map would be produced depicting those routes and areas that would be open to motorized travel. The motor vehicle use map would be the primary tool used to determine compliance with and to enforce motorized travel designations. Routes not designated open on the motor vehicle use map would be legally closed to motorized travel except for administrative access. User responsibilities and law enforcement would focus on compliance with the motor vehicle use map, pursuant to regulations at 36 CFR 261, Subpart A. The Forest Service believes this would tend to improve user understanding of acceptable behavior and use of the motorized system, and to facilitate enforcement and prosecution of violations.
Sound - A stationary sound limit of 96 decibels (dB(A)) is proposed for OHVs including motorcycles operating on designated routes and areas administered by the Black Hills National Forest. The stationary sound test procedure provided by the Society of American Engineers (SAE J1287) would be the standard used to determine compliance with this sound limit. Enforcement would be based on measurement conducted by Forest trail rangers and law enforcement personnel, but measurement for educational purposes could also be performed by dealers, clubs, and other groups. A Forest order may be needed to implement this feature.

New Construction Efforts Associated With Action Alternatives B, C, and D - Alternatives B, C, and D involve designating between 181 and 460 miles of routes as trails 65 inches or less in width in South Dakota, 50 inches or less in Wyoming (year-round and seasonal), between 21 and 134 miles of motorcycle trails, and between 23 and 34 trailheads. Many of the trails proposed to be designated are roads currently closed (maintenance level (ML) 1), low-standard roads (ML 2), unauthorized routes that were old roads, routes that were pioneered by cross-country travel, or trails that are proposed but currently have no physical form on the ground. Routes to be added that were identified by citizens, and routes defined by ranger districts to complete loops or otherwise complement the motorized system, are those most likely to require reconstruction or some limited new construction to support recreation in an environmentally sustainable manner. Construction efforts that would be needed to provide an environmentally sustainable trail system from these beginnings would include several different tasks: reconstructing some existing ML 1 roads and some old roadbeds to support and endure concentrated ATV or motorcycle traffic, constructing new engineered trails where only tracks now exist, constructing stream crossings (bridges, culverts, etc.) where needed, and constructing new trailheads. The construction methods would vary depending on the level of effort needed, and could involve use of equipment ranging from a small trail dozer to a road grader to rework existing roadbeds or create a parking lot for a trailhead. A State stormwater permit would have to be secured prior to new construction of any facilities over a certain size (generally one acre) in either Wyoming or South Dakota. Such a permit would be required if the facility did not qualify for a silvicultural exemption, such as a road needed primarily for a timber sale.

Game Retrieval and Dispersed Camping in Action Alternatives B and C - Limited motorized cross-country use would be allowed in Alternatives B and C for the purposes of retrieving legally harvested game and for dispersed camping. Motorized game retrieval and dispersed camping would be allowed where shown on the alternative maps, and as generally described in the alternative descriptions. For game retrieval, there would be no restriction on time of day. Only one vehicle would be allowed off-road to retrieve each harvested animal, but more than one pass of this single vehicle would be allowed as needed. Persons retrieving a game animal would be required to use the most direct route to and from the nearest designated open route, possess a valid hunting license, and keep weapons cased during game retrieval.

For both game retrieval and dispersed camping, resource damage would not be allowed as a result of the activity (for example, cutting live vegetation or leaving wheel ruts on the ground). Crossing streams would not be allowed if water is present (except on designated routes), and crossing wetlands would not be allowed.

Alternative B – Modified Proposed Action

Alternative B represents the action proposed by the Forest Service to the public during scoping. It has been modified since that time to correct data errors, and some routes or areas have been added or deleted. However, the intent of this alternative is the same as the original proposed action on which the public was asked to comment at scoping. Alternative B incorporates, to a
Alternative B would meet most NFAB recommendations to provide an active travel system while protecting resources and reducing conflicts with other users. It would provide 2,226 miles of mixed-use roads and boost motorized trails to 663 miles, and limit cross-country motorized use to 179,000 acres for game retrieval and dispersed camping only. The MVUM would make user compliance and law enforcement easier. Resource damage and conflicts with nonmotorized recreationists would be reduced, and motorized users would find a planned travel system designed to meet their needs.

The intent of this proposal is to provide for diverse motorized recreation opportunities on an active (consciously designed) motorized travel system of designated roads and trails. The system would limit effects to natural resources, as well as conflicts with nonmotorized recreationists. This alternative would limit cross-country motorized travel to specified distances from certain roads for the sole purposes of game retrieval and dispersed camping, with certain exceptions provided by law. This would represent a major reduction from the current situation in terms of the total area on which motorized cross-country travel would be allowed, and the types of use allowed on that area. This alternative would designate almost as many miles of motorized routes near adjacent private lands as in Alternatives A, C and E.

Alternative B would increase the number of miles of motorized Forest trails from 36 to 663 (a 627-mile increase), and increase the miles of Forest roads where motorized mixed use is allowed from 160 to 2,226 (a 2,066-mile increase; see Table 2). This would include 210 miles of routes identified by citizens or defined by ranger districts. The number of motorized-use trailheads would increase from 7 to 31. Motorized cross-country use for the sole purposes of game retrieval or dispersed camping would be reduced from 864,000 to 179,000 acres (a 685,000-acre decrease). Total National Forest System route mileage used would decrease by over 4,000 miles to 4,950 miles, and the number of motorized road and trail crossings on perennial streams would decrease by more than 1,200 to 547. Please refer to Table 7 for parameters further describing this alternative, and to compare this alternative to others.

Permits would need to be secured prior to any in-water construction work on six proposed new perennial stream crossings, pursuant to Section 404 of the Clean Water Act (see Appendix B, design criteria for fisheries and hydrology). Stormwater permits under Section 402 would be required for construction exceeding one acre in size on trailheads or other facilities.

This alternative would provide for motorized mixed use (meaning use by both highway-legal and non-highway-legal motor vehicles) on a designated system of roads (primarily Level 2 with some Level 3, 4 and 5 roads). In response to recommendations from the NFAB, and scoping comments, this system would feature travel loops within motorized trail systems (MTSs), and routes connecting motorized trail systems.

Motorized Trail System (MTS) – a defined area featuring smaller-scale loop routes and other motorized travel opportunities.
Table 2. Motorized recreation opportunities in Alternative B, the proposed action

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Alt. B</th>
<th>Current condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles (motorized-mixed-use roads)</td>
<td>2,226</td>
<td>160</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only (non-highway-legal vehicles prohibited)</td>
<td>1,240</td>
<td>3,580</td>
</tr>
<tr>
<td><strong>Total miles of roads</strong></td>
<td>3,466</td>
<td>3,740</td>
</tr>
<tr>
<td><strong>Trails</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>147</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width in South Dakota, and 50 inches or less in Wyoming</td>
<td>414</td>
<td>36</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>76</td>
<td>0</td>
</tr>
<tr>
<td>Miles of special designations</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total miles of trails</strong></td>
<td>663</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total miles of proposed motorized routes</strong></td>
<td>4,129</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td><strong>Area open to Motorized Cross-country Use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td>63,500</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td>179,000</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td><strong>Total area open to motorized cross-country travel (acres)</strong></td>
<td>179,000 (limited)</td>
<td>864,000</td>
</tr>
</tbody>
</table>

**Vehicles** - By providing for use by both highway-legal and non-highway-legal motor vehicles, this alternative, if selected, would on some routes pre-empt (not be in accord with) South Dakota State law in its current form, which requires that only highway-legal motor vehicles may use public roads. Wyoming State law provides for use of both highway-legal and non-highway-legal motor vehicles on certain roads officially recognized (enrolled) by the State. If this alternative were selected, the Forest Service would comply with Wyoming State law by enrolling all designated roads in the Wyoming program.

**Vehicle Operators** - It is important to understand that only users with a valid state driver’s license (from any state) would be legally allowed to operate motor vehicles on the roaded portion of the motorized travel system in this alternative. Unlicensed operators could legally operate a motor vehicle only on the trail portion of the system. This would comply with current State law in both South Dakota and Wyoming. Please refer to Table 6 for more information on vehicle and operator requirements, and motorized-mixed-use opportunities available under this alternative.

**Cross-country Use** - Unrestricted motorized cross-country use would not be allowed in this alternative. Instead, limited motorized cross-country use would be allowed for retrieving harvested elk only (not deer) within 300 feet of certain designated roads; and, for dispersed camping within 100 feet of certain designated roads. Motorized cross-country travel would not be allowed for any other purpose or in any other location, with certain exceptions provided by law. Total area available to limited motorized cross-country use in this alternative would be 179,000 acres.
A Forest Plan amendment would be required to implement this alternative. Changes to existing Forest Plan direction would take two general forms. First, where existing objectives provide quantities for road and trail mileage and cross-country area, these would be updated to conform to the quantities provided by this alternative. Second, certain standards and guidelines would be updated to conform to the final rule and amended regulations, to provide that motorized vehicle use would be allowed on roads, trails, and areas only as shown on the motor vehicle use map or as contained in a Forest Travel Order. Refer to Appendix F for specific changes to existing Forest Plan direction proposed under this alternative. It is anticipated that these proposed changes would constitute a minor or nonsignificant Forest Plan amendment.

Alternative C
The intent of Alternative C is to create more motorized recreation opportunities than any other alternative on an active, designed system of looped roads and trails. This alternative would provide cross-country travel opportunity on a larger area than in Alternative B for the purposes of game retrieval or dispersed camping in specified areas. Allowing higher levels of motorized recreation use on the Forest and close to communities is intended to provide more economic opportunity for nearby communities and businesses. To a lesser degree, this alternative considers effects of use on natural resources, and the concerns of adjacent landowners, by allowing more miles of use near adjacent private lands.

Alternative C would increase the number of miles of motorized Forest trails from 36 to 771 miles; and increase the mileage of Forest roads where motorized mixed use is allowed from 160 to 2,878 miles (see Table 3). This would include 284 miles of routes identified by citizens or defined by ranger districts. The number of motorized-use trailheads would increase from 7 to 34. Three small beginner practice areas are proposed in this alternative. These three areas total 10 acres in size. Two would be located on the Bearlodge Ranger District (Bearlodge Pit on the north end, and Hain Spring Pit in the south); a third would be located on the Northern Hills Ranger District at the Spearfish Quarry near the City of Spearfish. These areas could serve as practice areas for novice riders. Other than these three areas, motorized cross-country use would be reduced from 864,000 acres to 485,500 acres, for the sole purposes of game retrieval or dispersed camping. Total National Forest System route mileage used would decrease from 8,971 to 5,173 miles, and the number of motorized road and trail crossings on perennial streams would decrease from over 1,700 to 536. Permits would need to be secured prior to any in-water construction work on five proposed new perennial stream crossings, pursuant to Section 404 of the Clean Water Act (see Appendix B, design criteria for fisheries and hydrology). Stormwater permits under Section 402 would be required for construction exceeding one acre in size on trailheads or other facilities.

This alternative would provide for motorized mixed use (meaning use by both highway-legal and non-highway-legal motor vehicles) on a designated system of roads (primarily Level 2 with some Level 3, 4 and 5 roads). In response to recommendations from the NFAB, and scoping...
comments, this system would feature travel loops within motorized trail systems, and routes connecting motorized trail systems.

Table 3. Motorized recreation opportunities in Alternative C

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Alt. C</th>
<th>Current condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles (motorized mixed-use roads)</td>
<td>2,878</td>
<td>160</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only (non-highway-legal vehicles prohibited)</td>
<td>704</td>
<td>3,580</td>
</tr>
<tr>
<td>Total miles of roads</td>
<td>3,582</td>
<td>3,740</td>
</tr>
<tr>
<td><strong>Trails</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>154</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width in South Dakota, and 50 inches or less in Wyoming</td>
<td>460</td>
<td>36</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>134</td>
<td>0</td>
</tr>
<tr>
<td>Miles of special designations</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Total miles of trails</td>
<td>771</td>
<td>36</td>
</tr>
<tr>
<td>Total miles of proposed motorized routes</td>
<td>4,353</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td><strong>Area open to motorized cross-country use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td>184,000</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td>385,500</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to cross-country travel (non-game retrieval)</td>
<td>10</td>
<td>864,000</td>
</tr>
<tr>
<td>Total area open to motorized cross-country travel (acres) (Note: not additive)</td>
<td>485,500</td>
<td>(limited) 864,000</td>
</tr>
</tbody>
</table>

**Vehicles** - By providing for use by both highway-legal and non-highway-legal motor vehicles, this alternative, if selected, would on some routes pre-empt (not be in accord with) South Dakota State law in its current form, which requires that only highway-legal motor vehicles may use public roads. Wyoming State law provides for use of both highway-legal and non-highway-legal motor vehicles on certain roads officially recognized (enrolled) by the State. If this alternative were selected, the Forest Service would comply with Wyoming State law by enrolling all designated roads in the Wyoming program.

**Vehicle Operators** - It is important to understand that only users with a valid state driver’s license (from any state) would be legally allowed to operate motor vehicles on the roaded portion of the motorized travel system in this alternative. Unlicensed operators could legally operate a motor vehicle only on the trail portion of the system. This would comply with current state law in both South Dakota and Wyoming. Please refer to Table 6 for more information on vehicle and operator requirements, and motorized-mixed-use opportunities available under this alternative. Please refer to Table 7 for parameters further describing this alternative, and to compare this alternative to others.

**Cross-country Use** - Unrestricted motorized cross-country use would be allowed in three small beginner practice areas as described earlier. Other than this, limited motorized cross-country use would be allowed to retrieve harvested elk and deer in certain large designated areas; and, for motorized dispersed camping within 300 feet of certain designated roads. Motorized cross-country travel would not be allowed for any other purpose or in any other location, with certain
exceptions provided by law. Total area available to limited motorized cross-country use in this alternative would be 485,500 acres.

Many scoping comments, including those from the South Dakota Department of Game, Fish and Parks requested that hunters be allowed adequate access to much of the Forest to retrieve harvested game using motorized vehicles. The Forest Service plotted a one-mile distance off certain designated roads for such use, as proposed by the State of South Dakota, but found that this approach left slivers and small areas of land on which this use would not be allowed. The Forest Service felt this would pose problems for hunters attempting to stay within the allowed distances off of roads.

In an effort to respond to the States and others who commented, and to provide a range of alternatives for motorized game retrieval, the Forest Service chose instead to delineate areas within which motorized game retrieval would be allowed. These large areas do not include those management areas where motorized cross-country use is specifically prohibited, such as wilderness; or those areas with a year-round closure to motorized cross-country use. Although the Forest Service believes hunters would find it easier to comply with this approach, it is not technically consistent with the Travel Management Rule, which stipulates that any motorized game retrieval areas be designated by distance off of roads. For this reason, any decision to implement this alternative may require some modification to comply with the rule.

A Forest Plan amendment would be required to implement this alternative. Changes to existing Forest Plan direction would take two general forms. First, where existing objectives provide quantities for road and trail mileage and cross-country area, these would be updated to conform to the quantities provided by this alternative. Second, certain standards and guidelines would be updated to conform to the final rule and amended regulations, to provide that motorized vehicle use would be allowed on roads, trails, and areas only as shown on the motor vehicle use map or as contained in a Forest Travel Order. Refer to Appendix F for specific changes to existing Forest Plan direction proposed under this alternative. It is anticipated that these proposed changes would constitute a minor or nonsignificant Forest Plan amendment.

**Alternative D**

This alternative would provide a smaller active motorized transportation system than that provided by any other alternative. No cross-country motorized opportunity would be allowed under this alternative. The intent of this alternative is to limit the level and likelihood of effects on natural and cultural resources through a smaller motorized travel system. This alternative is intended to reduce conflicts with nonmotorized recreationists and could provide more area and solitude for these users. Alternative D would allow less motorized use near adjacent private landowners than any other alternative, and would provide fewer trailheads near adjacent communities and businesses.

**Alternative D** would provide the smallest motorized travel system, and would emphasize user safety. It would provide 580 miles of mixed-use roads and 320 miles of motorized trails, and prohibit motorized cross-country use for any reason, with exceptions. The motor vehicle use map would make user compliance and law enforcement easier. Resource damage, conflicts with nonmotorized recreationists and system maintenance costs would be reduced, and motorized users would find a planned travel system designed to meet their needs.
36 to 320 miles; and increase the mileage of Forest roads where motorized mixed use is allowed from 160 to 580 miles (see Table 4). This would include 70 miles of routes identified by citizens or defined by ranger districts. The number of motorized-use trailheads would increase from 7 to 23. No motorized cross-country use would be allowed for any purpose (with exceptions for emergency and administrative access as described above). Total National Forest System route mileage used would decrease from over 8,900 miles to 4,018 miles, and the number of motorized road and trail crossings on perennial streams would decrease from over 1,750 to 455. Permits would need to be secured prior to any in-water construction work on two proposed new perennial stream crossings, pursuant to Section 404 of the Clean Water Act (see Appendix B, design criteria for fisheries and hydrology). Stormwater permits under Section 402 would be required for construction exceeding one acre in size on trailheads or other facilities. Please refer to Table 7 for parameters further describing this alternative, and to compare this alternative to others.

Table 4. Motorized recreation opportunities in Alternative D

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Alt. D</th>
<th>Current condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles (motorized mixed-use roads)</td>
<td>580</td>
<td>160</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only (non-highway-legal vehicles prohibited)</td>
<td>2,297</td>
<td>3,580</td>
</tr>
<tr>
<td><strong>Total miles of roads</strong></td>
<td>2,877</td>
<td>3,740</td>
</tr>
<tr>
<td><strong>Trails</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>112</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width in South Dakota, and 50 inches or less in Wyoming</td>
<td>181</td>
<td>36</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>Miles of special designations</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total miles of trails</strong></td>
<td>320</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total miles of proposed motorized routes</strong></td>
<td>3,197</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td><strong>Area open to motorized cross-country use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td><strong>Total area open to motorized cross-country travel (acres)</strong> (Note: not additive)</td>
<td>0</td>
<td>864,000</td>
</tr>
</tbody>
</table>

This alternative would provide for a diversity of motorized uses similar to that in other alternatives. However, it would provide a lower total mileage of motorized-mixed-use roads in order to reduce the safety risk to users of non-highway-legal OHVs and motorcycles from larger vehicles on higher-speed roads. Motorized mixed use would be allowed only on Level 2 roads within motorized trail systems. No motorized mixed use would be allowed between motorized trail systems. This means that users of non-highway-legal vehicles transiting from one motorized trail system to another would need to transport their vehicles using highway-legal vehicles. No
motorized mixed use would be allowed on Level 3, 4 or 5 roads under this alternative in South Dakota, but such use would still be allowed on 118 miles of Level 3, 4 and 5 roads currently enrolled in the Wyoming ORV program.

**Vehicles** - By providing for use by both highway-legal and non-highway-legal motor vehicles, this alternative would on some routes pre-empt (not be in accord with) South Dakota State law in its current form, which requires that only highway-legal motor vehicles may use public roads. Wyoming State law provides for use of both highway-legal and non-highway-legal motor vehicles on certain roads officially recognized (enrolled) by the State. The Forest Service would comply with Wyoming State law by enrolling all designated roads in the Wyoming program.

**Vehicle Operators** - It is important to understand that only users with a valid state driver’s license (from any state) would be legally allowed to operate motor vehicles on the roaded portion of the motorized travel system in this alternative. Unlicensed operators could legally operate a motor vehicle only on the trail portion of the system. This would comply with applicable law in both South Dakota and Wyoming. Please refer to Table 6 for more information on vehicle and operator requirements, and motorized-mixed-use opportunities available under this alternative.

**Cross-country Use** - No cross-country motorized travel would be allowed in this alternative, with the exception of emergency and administrative use as described earlier.

A **Forest Plan amendment** would be required to implement this alternative. Changes to existing Forest Plan direction would take two general forms. First, where existing objectives provide quantities for road and trail mileage and cross-country area, these would be updated to conform to the quantities provided by this alternative. Second, certain standards and guidelines would be updated to conform to the final rule and amended regulations, to provide that motorized vehicle use would be allowed on roads, trails and areas only as shown on the motor vehicle use map or as contained in a Forest Travel Order. Refer to Appendix F for specific changes to existing Forest Plan direction proposed under this alternative. It is anticipated that these proposed changes would constitute a minor or nonsignificant Forest Plan amendment.

**Alternative E**

This alternative represents the minimum actions needed to comply with the Travel Management Rule. It would designate the entire existing system of open roads and motorized trails and amend the Forest Plan to accommodate this system. A motor vehicle use map would be issued, designating a minimally active motorized travel system to accommodate motorized recreation desires. This alternative would not allow any motorized cross-country travel.

The intent of this alternative is to reduce implementation costs and the impacts of motorized use to natural and cultural resources, and to maximize the effectiveness of limited management resources. To a lesser degree, this alternative addresses the issues of...
recreational user experience and socioeconomic effects. This alternative would allow the same level and miles of motorized uses on routes near adjacent private lands as Alternative A, but would allow no motorized use in areas off designated routes. No motorized trail systems would be provided in this alternative.

Alternative E would provide the same number of miles of motorized Forest trails (36), and the same mileage of Forest roads where motorized mixed use is allowed (160) as Alternative A (see Table 5). The number of motorized-use trailheads would remain at 7. No motorized cross-country use would be allowed for any purpose (with exceptions for emergency and administrative use as described above). Total National Forest System route mileage used would decrease from over 8,600 miles to 4,596 miles, and the number of motorized road and trail crossings on perennial streams would decrease from more than 1,700 to 547, as in Alternative B. No new stream crossings are proposed in this alternative. Please refer to Table 7 for parameters further describing this alternative, and to compare this alternative to others.

Table 5. Motorized recreation opportunities in Alternative E

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Alt. E</th>
<th>Current condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles (motorized mixed-use roads)</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only (non-highway-legal vehicles prohibited)</td>
<td>3,580</td>
<td>3,580</td>
</tr>
<tr>
<td><strong>Total miles of roads</strong></td>
<td>3,740</td>
<td>3,740</td>
</tr>
<tr>
<td><strong>Trails</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width in South Dakota, and 50 inches or less in Wyoming</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Miles of special designations</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total miles of trails</strong></td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total miles of proposed motorized routes</strong></td>
<td>3,776</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td><strong>Area open to motorized cross-country use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval)</td>
<td>0</td>
<td>864,000</td>
</tr>
<tr>
<td><strong>Total area open to motorized cross-country travel (acres)</strong> (Note: not additive)</td>
<td>0</td>
<td>864,000</td>
</tr>
</tbody>
</table>

**Vehicles** - This alternative would provide for motorized mixed use (meaning use by both highway-legal and non-highway-legal motor vehicles) on a designated system of roads (primarily Level 2 with some Level 3, 4 and 5 roads) in Wyoming only. South Dakota State law requires that only highway-legal motor vehicles may use public roads. Wyoming State law provides for use of both highway-legal and non-highway-legal motor vehicles on certain roads.
officially recognized (enrolled) by the State. If this alternative were selected, it would comply with South Dakota State law because it would allow no motorized mixed use on public roads. It would comply with Wyoming State law because all motorized-mixed-use roads would be enrolled in the Wyoming ORV program.

**Vehicle Operators** - It is important to understand that only users with a valid state driver’s license (from any state) would be legally allowed to operate motor vehicles on the roaded portion of the motorized travel system in this alternative. Unlicensed operators could legally operate a motor vehicle only on the trail portion of the system. This would comply with current state law in both South Dakota and Wyoming. Please refer to Table 6 for more information on vehicle and operator requirements, and motorized-mixed-use opportunities available under this alternative.

**Cross-country Use** - No motorized cross-country travel would be allowed in this alternative, with certain exceptions as described earlier.

**A Forest Plan amendment** would be required to implement this alternative. Certain standards and guidelines would be updated to conform to the final rule and amended regulations, to provide that motorized vehicle use would be allowed on roads, trails, and areas only as shown on the motor vehicle use map or as contained in a Forest Travel Order. Refer to Appendix F for specific changes to existing Forest Plan direction proposed under this alternative. It is anticipated that these proposed changes would constitute a minor or nonsignificant Forest Plan amendment.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Non-highway-legal vehicles allowed on SD public roads?*</th>
<th>Valid State operator license required?</th>
<th>Motorized mixed-use road miles (non-hwy-legal use allowed)</th>
<th>Motorized trail miles (non-hwy-legal use allowed)</th>
<th>Total non-highway-legal vehicle travel mileage to designate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt. A</td>
<td>No</td>
<td>Yes</td>
<td>160 miles</td>
<td>36 miles</td>
<td>196 miles</td>
</tr>
<tr>
<td>Alt. B</td>
<td>Yes**</td>
<td>Yes</td>
<td>2226</td>
<td>663</td>
<td>2889</td>
</tr>
<tr>
<td>Alt. C</td>
<td>Yes**</td>
<td>Yes</td>
<td>2878</td>
<td>771</td>
<td>3649</td>
</tr>
<tr>
<td>Alt. D</td>
<td>Yes**</td>
<td>Yes</td>
<td>580</td>
<td>320</td>
<td>900</td>
</tr>
<tr>
<td>Alt. E</td>
<td>No</td>
<td>Yes</td>
<td>160</td>
<td>36</td>
<td>196</td>
</tr>
</tbody>
</table>

* In Wyoming, non-highway-legal vehicles are allowed only on roads enrolled in the State program. In Alternatives B, C and D, non-highway-legal vehicles would be allowed on all designated roads in Wyoming because they would be enrolled in the State program.

** Alternatives B, C and D would pre-empt (not conform to) South Dakota State law for vehicle registration, so non-highway-legal vehicles would be allowed on motorized-mixed-use roads. No alternative would pre-empt any State requirement for operator licensing.
Figure 2. Acres open to motorized cross-country use under each alternative (NOTE: Cross-country travel in Alternatives B and C would be for limited purposes only)

Figure 3. Miles of motorized-mixed-use routes by alternative, in terms of trails and mixed-use roads (NOTE: High current use on unauthorized routes is not reflected in this figure, but is shown as cross-country use in Figure 2)
Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate a range of reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods to achieve the purpose and need. Some of these alternatives may have duplicated the alternatives considered in detail; had high potential to cause unnecessary environmental harm, or may have been outside the scope of the purpose and need. The Forest considered these other alternatives, but dismissed them from detailed consideration. Those other alternatives, and the reasons they were dismissed, are discussed below.

1) The original proposed action was evaluated and dismissed without detailed consideration. Better data was developed and received that warranted corrections. Also, based on scoping comments from the public and further input from ranger district personnel, routes were added or deleted to better meet the NFAB recommendations. It became apparent that the original proposed action could be refined and improved, and for these reasons, it was dismissed. The modified proposed action (Alternative B) carries forward the intent of this original proposal.

2) An alternative was considered that would have allowed motorized game retrieval up to one mile, and dispersed camping up to 300 feet, from certain designated roads. Elements of this approach were suggested by several parties during scoping, including the South Dakota Department of Game, Fish and Parks. The Forest Service found that a strict application of this approach would have created small isolated areas in some places that would not have been open to these activities. These isolated areas would be difficult for National Forest users and law enforcement personnel to identify, and thus would be difficult to comply with as well as to enforce. This alternative would also affect cultural sites. For these reasons, this alternative was dismissed from detailed consideration. However, this concept was partially adopted in Alternative C to allow motorized game retrieval in certain areas that correspond to about one
mile from certain roads, and dispersed camping up to 300 feet from designated roads (see
description of Alternative C on page 28.)

3) Several respondents to scoping requested that the Forest allow motorized cross-country travel
on large areas. The Travel Management Rule allows this use of National Forest System lands
subject to site-specific analysis. The Forest Service considered permitting such use on large
areas but dismissed it from detailed consideration because current relatively unrestricted
motorized cross-country use has begun to have effects to natural and cultural resources that
are unacceptable in some areas. The Forest Service anticipates that an increase in such use,
especially if concentrated in a smaller area, could cause effects to natural and cultural
resources that could become unacceptable. This would conflict with the agency conservation
mission and stewardship responsibilities.

As an alternative to unlimited motorized cross-country use, the Forest Service developed the
concept of motorized trail systems (MTSs), in which high-density motorized road and trail
opportunities would be offered. While these would not provide true cross-country
experiences, the Forest Service believes that these areas could meet the desires of many users
for a similar experience, without the potential for incurring off-route resource damage.
Motorized cross-country recreation opportunity is currently offered at other places in the
Black Hills region including Railroad Buttes on the Nebraska National Forest, and several
private facilities in the Spearfish, Rapid City, and Hermosa areas. Finally, this activity is
included in Alternative A as part of the current condition. Limited motorized cross-country
use would also be allowed under Alternatives B and C in the form of game retrieval and
dispersed camping, and in Alternative C in the form of three small cross-country practice
areas.

4) Various individuals, groups, and local governments suggested that numerous individual routes
that are not included in any of the action alternatives be opened or remain open to motorized
use. Existing and proposed routes were individually evaluated by ranger district and ID
Team personnel in a detailed review of routes in each district. Individual routes may have
been dismissed from further consideration for one or several reasons, including: site-specific
conflicts with natural or cultural resources, conflicts with other users, concerns over
jurisdiction, insufficient funding to fully consider all proposals, or because they may not
have fit the concept of one or more of the alternatives.

5) The Norbeck Society and other organizations suggested the original proposed action be
modified in several ways. The Society recommended that additional “Walk-in Only Areas” be
designated, and that any motorized trails that might affect these areas should not be
considered for designation. The recommendation to designate additional “Walk-in Only
Areas” was evaluated by the ID team and dismissed for several reasons. First, the purpose and
need for this project is to bring the Forest into compliance with the 2005 Travel Management
Rule and designate motorized routes; designation of nonmotorized routes is not the focus of
this project. Second, the Forest Plan currently contains direction regarding nonmotorized trail
opportunities. Regarding motorized trails that might affect these areas, the analysis in this
document will consider the effects of motorized route designation on nonmotorized recreation
opportunities. Finally, the Forest Service incorporated concepts in the Norbeck Society
recommendation into Alternative D, and believes that the concern underlying this
recommendation is addressed in that alternative.

6) The Blue Ribbon Coalition and other organizations asked the Forest Service to formulate and
consider an alternative that would maximize motorized recreation opportunities. Alternative C
was developed to provide a high level of motorized recreation. The Forest Service considered other routes that would provide even higher levels of motorized recreation opportunity. These were evaluated by the interdisciplinary team and dismissed from further consideration for several reasons. First, it was found that motorized recreation at higher levels than shown in Alternative C violated Forest Plan standards for protection of resources. Second, it was found that many additional motorized routes that were considered did not enhance or fit with the concept of Alternative C. Specifically, many of these routes did not provide looped route opportunities or did not connect looped routes to form a coherent, manageable travel system. Third, some routes evaluated were found to cross other jurisdictions that would have required additional work and NEPA analysis in order to acquire easements or rights-of-way to allow public use. And finally, the addition of some proposed routes would continue or increase high sound or noise levels from motorized use near adjacent private lands.

Comparison of Alternatives

Table 7 provides information related to indicators listed for the issues in Chapter 1. This information is provided to give readers a sense of the alternatives. Not all indicators analyzed for each resource are shown here. For more information on how the alternatives address the indicators, please refer to the individual resource sections in Chapter 3. Following this table is a summary narrative comparison of the alternatives that interprets information shown here.
### Table 7. Comparison of indicator measures for the alternatives

<table>
<thead>
<tr>
<th>Indicator Measure</th>
<th>Alternative</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tbody>
<tr>
<td><strong>ISSUE 1 – Effects on Natural and Cultural Resources</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Botanical Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total miles of open NFS motorized routes</td>
<td></td>
<td>3,776</td>
<td>4,129</td>
<td>4,353</td>
<td>3,197</td>
<td>3,776</td>
</tr>
<tr>
<td>Number of motorized use trailheads</td>
<td></td>
<td>7</td>
<td>31</td>
<td>34</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Miles/acoes of routes within spruce habitat</td>
<td></td>
<td>100</td>
<td>100</td>
<td>97</td>
<td>83</td>
<td>100</td>
</tr>
<tr>
<td>Miles of motorized routes in hardwood habitat</td>
<td></td>
<td>179</td>
<td>208</td>
<td>225</td>
<td>154</td>
<td>179</td>
</tr>
<tr>
<td><strong>Wildlife Habitat Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total miles of open NFS motorized routes</td>
<td></td>
<td>3,776</td>
<td>4,129</td>
<td>4,353</td>
<td>3,197</td>
<td>3,776</td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td></td>
<td>864,000</td>
<td>63,500</td>
<td>184,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td></td>
<td>864,000</td>
<td>179,000 (elk only)</td>
<td>385,500 (deer and elk)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval – includes beginner practice areas)</td>
<td></td>
<td>864,000</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total area open to motorized cross-country travel (acres) (Note: acres not additive)</td>
<td></td>
<td>864,000</td>
<td>179,000</td>
<td>485,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Miles of motorized routes in ponderosa pine habitat</td>
<td></td>
<td>2,661</td>
<td>2,968</td>
<td>3,156</td>
<td>2,266</td>
<td>2,661</td>
</tr>
<tr>
<td>Miles of motorized routes in spruce habitat</td>
<td></td>
<td>100</td>
<td>100</td>
<td>97</td>
<td>83</td>
<td>100</td>
</tr>
<tr>
<td>Miles of motorized routes in hardwood habitat</td>
<td></td>
<td>179</td>
<td>208</td>
<td>225</td>
<td>154</td>
<td>179</td>
</tr>
<tr>
<td>Miles of routes within 400 feet of riparian areas</td>
<td></td>
<td>2,050</td>
<td>2,186</td>
<td>2,271</td>
<td>1,739</td>
<td>2,050</td>
</tr>
<tr>
<td>Miles of motorized routes in grass cover type</td>
<td></td>
<td>647</td>
<td>673</td>
<td>684</td>
<td>562</td>
<td>647</td>
</tr>
<tr>
<td>Miles/sq. mile of winter open route density in MAs 5.4/5.43</td>
<td></td>
<td>1.22/0.99</td>
<td>1.35/0.95</td>
<td>1.38/0.95</td>
<td>1.09/0.95</td>
<td>1.22/0.99</td>
</tr>
<tr>
<td><strong>Hydrology and Fisheries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of motorized road and trail crossings on perennial streams</td>
<td></td>
<td>1,778</td>
<td>547</td>
<td>536</td>
<td>455</td>
<td>547</td>
</tr>
<tr>
<td>Miles of road/trail within 30 feet of a perennial stream</td>
<td></td>
<td>59</td>
<td>20</td>
<td>20</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Miles of road/trail within 119 feet of a perennial stream</td>
<td></td>
<td>285</td>
<td>125</td>
<td>125</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td><strong>Soils</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td></td>
<td>864,000</td>
<td>63,500</td>
<td>184,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td></td>
<td>864,000</td>
<td>179,000 (elk only)</td>
<td>385,500 (deer and elk)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval)</td>
<td></td>
<td>864,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total area open to motorized cross-country travel (acres) (Note: not additive)</td>
<td></td>
<td>864,000</td>
<td>179,000</td>
<td>485,500</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>
Table 7. Comparison of indicator measures for the alternatives

<table>
<thead>
<tr>
<th>Indicator Measure</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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</thead>
<tbody>
<tr>
<td><strong>Range and Noxious Weeds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total miles of open NFS motorized routes</td>
<td>3,776</td>
<td>4,129</td>
<td>4,353</td>
<td>3,197</td>
<td>3,776</td>
</tr>
<tr>
<td>Acres open to dispersed camping (motorized)</td>
<td>864,000</td>
<td>63,500</td>
<td>184,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to game retrieval (motorized)</td>
<td>864,000</td>
<td>179,000</td>
<td>385,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>ISSUE 2 – Effects on Recreation Opportunities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Forest Roads (ML 2-5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road open to all vehicles (motorized-mixed-use) [NOTE: For all indicators numbers in parentheses show seasonal mileages]</td>
<td>160 (12)</td>
<td>2,226 (588)</td>
<td>2,878 (922)</td>
<td>580 (265)</td>
<td>160 (12)</td>
</tr>
<tr>
<td>(WY only)</td>
<td>(SD and WY)</td>
<td>(SD and WY)</td>
<td>(SD and WY)</td>
<td>(SD and WY)</td>
<td>(WY only)</td>
</tr>
<tr>
<td>Miles of road open to highway-legal vehicles only (not mixed-use)</td>
<td>3,580 (656)</td>
<td>1,240 (249)</td>
<td>704 (70)</td>
<td>2,297 (361)</td>
<td>3,580 (656)</td>
</tr>
<tr>
<td><strong>Total miles of open NFS roads (Maintenance Levels 2-5)</strong></td>
<td>3,740 (668)</td>
<td>3,466 (837)</td>
<td>3,582 (992)</td>
<td>2,877 (626)</td>
<td>3,740 (668)</td>
</tr>
<tr>
<td><strong>Forest Trails</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of trail open to all vehicles (now includes rock crawler miles)</td>
<td>0</td>
<td>173 (65)</td>
<td>176 (76)</td>
<td>118 (48)</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles with width limitation</td>
<td>36</td>
<td>414</td>
<td>460</td>
<td>181</td>
<td>36</td>
</tr>
<tr>
<td>50 inches or less in WY</td>
<td>95 (95)</td>
<td>80 (73)</td>
<td>31 (31)</td>
<td>150 (62)</td>
<td>24</td>
</tr>
<tr>
<td>65 inches or less in SD (special vehicle designation)</td>
<td>319 (177)</td>
<td>380 (196)</td>
<td>150 (62)</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td>0</td>
<td>76 (1)</td>
<td>134 (25)</td>
<td>21 (0)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total miles of open NFS trails</strong></td>
<td>36 (24)</td>
<td>663 (338)</td>
<td>771 (370)</td>
<td>320 (141)</td>
<td>36 (24)</td>
</tr>
<tr>
<td><strong>Total miles of open NFS roads and trails</strong></td>
<td>3,776 (692)</td>
<td>4,129 (1,175)</td>
<td>4,353 (1,362)</td>
<td>3,197 (767)</td>
<td>3,776 (692)</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>7</td>
<td>31</td>
<td>34</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping</td>
<td>864,000</td>
<td>63,500</td>
<td>184,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval</td>
<td>864,000</td>
<td>179,000</td>
<td>385,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acres open to cross-country travel (nongame retrieval)</td>
<td>864,000</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total area open to motorized cross-country travel (acres)</strong> (Note: not additive)</td>
<td>864,000</td>
<td>179,000 (elk only)</td>
<td>485,500 (deer and elk)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Beginner practice areas (cross-country areas) less than 5 acres</td>
<td>0</td>
<td>3 areas; 10 acres total</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Effects to nonmotorized opportunities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of NFS motorized routes within ½-mile of a nonmotorized trail</td>
<td>318</td>
<td>358</td>
<td>382</td>
<td>211</td>
<td>318</td>
</tr>
<tr>
<td>Miles of road / trail closed to motorized use in SPNM or RNNM ROS classes</td>
<td>72 / 333</td>
<td>70 / 331</td>
<td>70 / 311</td>
<td>84 / 363</td>
<td>72 / 333</td>
</tr>
</tbody>
</table>
### Table 7. Comparison of indicator measures for the alternatives

<table>
<thead>
<tr>
<th>Indicator Measure</th>
<th>Alternative</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
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<tbody>
<tr>
<td><strong>ISSUE 3 – Effects of Transportation System Design on Management Capabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of road converted to trail (may incur higher maintenance costs)</td>
<td></td>
<td>0</td>
<td>207</td>
<td>205</td>
<td>146</td>
<td>0</td>
</tr>
<tr>
<td>Miles of ML 2 roads with motorized mixed use</td>
<td></td>
<td>49</td>
<td>1,914</td>
<td>2,537</td>
<td>461</td>
<td>48</td>
</tr>
<tr>
<td>Miles of ML 3, 4 and 5 roads with motorized mixed use</td>
<td></td>
<td>111</td>
<td>312</td>
<td>340</td>
<td>118</td>
<td>112</td>
</tr>
<tr>
<td><strong>Total miles of ML 2, 3, 4, and 5 roads with motorized mixed use</strong></td>
<td></td>
<td>160</td>
<td>2,226</td>
<td>2,878</td>
<td>580</td>
<td>160</td>
</tr>
<tr>
<td>Number of motorized trailheads (would incur costs to maintain, and to rehabilitate if vandalized)</td>
<td></td>
<td>7</td>
<td>31</td>
<td>34</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Number of dead-end spurs less than or equal to one mile in length/miles of these spurs (may require more vigilant law enforcement patrol)</td>
<td></td>
<td>1,739 / 774 miles</td>
<td>1,301 / 597 miles</td>
<td>1,318 / 612 miles</td>
<td>1,035 / 463 miles</td>
<td>1,739 / 774 miles</td>
</tr>
<tr>
<td>Miles of NFS roads by maintenance level (ML):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML 1</td>
<td></td>
<td>1,316</td>
<td>1,358</td>
<td>1,260</td>
<td>2,062</td>
<td>1,316</td>
</tr>
<tr>
<td>ML 2</td>
<td></td>
<td>3,083</td>
<td>2,827</td>
<td>2,939</td>
<td>2,241</td>
<td>3,083</td>
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<tr>
<td>ML 3</td>
<td></td>
<td>510</td>
<td>493</td>
<td>497</td>
<td>490</td>
<td>510</td>
</tr>
<tr>
<td>ML 4</td>
<td></td>
<td>143</td>
<td>142</td>
<td>142</td>
<td>142</td>
<td>143</td>
</tr>
<tr>
<td>ML 5</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total miles of NFS roads</strong></td>
<td></td>
<td>5,056</td>
<td>4,824</td>
<td>4,842</td>
<td>4,939</td>
<td>5,056</td>
</tr>
<tr>
<td><strong>Total miles of Forest trails</strong></td>
<td></td>
<td>36</td>
<td>663</td>
<td>771</td>
<td>320</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total NFS road and trail miles to maintain</strong></td>
<td></td>
<td>5,092</td>
<td>5,487</td>
<td>5,613</td>
<td>5,259</td>
<td>5,092</td>
</tr>
<tr>
<td>Number of unauthorized routes used on NFS lands (not maintained, but may need rehabilitation)</td>
<td></td>
<td>4,109</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>ISSUE 4 – Social and Economic Concerns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles of NFS motorized routes within ½-mile of a nonmotorized trail</td>
<td></td>
<td>318</td>
<td>358</td>
<td>382</td>
<td>211</td>
<td>318</td>
</tr>
<tr>
<td>Miles of designated NFS motorized routes through or within 300 feet of lands of other ownerships</td>
<td></td>
<td>504</td>
<td>490</td>
<td>500</td>
<td>423</td>
<td>504</td>
</tr>
<tr>
<td>Number trailheads within 3 miles of a potential gateway community</td>
<td></td>
<td>0</td>
<td>10</td>
<td>11</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total miles of proposed routes open to motorized use</strong></td>
<td></td>
<td>3,776</td>
<td>4,129</td>
<td>4,353</td>
<td>3,197</td>
<td>3,776</td>
</tr>
</tbody>
</table>
Comparison of Alternatives by Issue

This section briefly compares the five alternatives studied in detail in this FEIS. The alternatives are described and compared in terms of the effects each would have on the key issues described in Chapter 1. The preceding table displays comparative summaries of the effects of each alternative as well. The environmental consequences that could be expected from implementing each of the alternatives are more fully described in Chapter 3 of this document and information contained in the project file.

Issue 1 – Effects on Natural and Cultural Resources

The soil resource would see the most risk of disturbance from cross-country motorized use under Alternative A, followed by Alternatives C, B, D, and E. Reducing the area open to motorized cross-country use would also give the greatest benefit to retaining or improving vegetative productivity of the soil resource. Levels of road and trail miles open to motorized use could indirectly affect soils through more OHV parking on the edge of the road or trail, more route maintenance needed, and more time needed for recovery. Alternatives C, B, and A would have the greatest effects, with Alternatives D and E less.

Concerning hydrology and fisheries, the alternatives with the most stream crossings and roads close to streams would contribute the most sediment, but generally, all action alternatives are similar in effects to each other and would have less adverse effects than the current situation (Alternative A). Alternatives B, C, and E reduce the number of water crossings by almost 70 percent, and Alternative D by 75 percent. With respect to miles of roads and trails within 30 and 119 feet of perennial streams, Alternatives B and C reduce the mileage by over 50 percent, and Alternatives D and E by over 60 percent.

Designation of new trailheads, game retrieval, and dispersed camping would not be likely to have adverse effects on the water resource if design criteria are followed. Alternatives with more acreage open to some form of cross-country use would potentially have more effects on wetlands, with Alternative A having the most acreage open to this use. Alternatives C and B have less acreage open, respectively, and both would limit motorized cross-country use to game retrieval and dispersed camping only. Alternatives D and E would have by far the least acreage open to this use.

Wildlife habitat and species would see a net benefit from implementing any of the action alternatives due to restrictions on motorized cross-country travel. Alternative D would be the most beneficial, followed by Alternatives E, B, and C. The effects of motorized game retrieval in Alternatives B and C could be expected to be minor. Of the action alternatives, Alternative C would have the most road and trail miles open to motorized use, and would be expected to displace wildlife more than any other alternative, followed by Alternatives B, E, and D.

Regarding effects to botanical and rare plant values, implementation of any of the action alternatives would be expected to have a net positive effect on native plant species in several habitat types due to the amount of area that would be closed to motorized cross-country travel. The effects of motorized cross-country game retrieval on plant species in Alternatives B and C is expected to be minor since the use would occur outside the reproductive season for most species. Alternative D would have the lowest number of route miles in hardwood habitat and within 400 feet of riparian areas, and thus show the greatest benefit; Alternatives B and C would have the highest number of route miles and show the least benefit; and Alternatives A and E would be between these. In spruce habitat, Alternative D would have the lowest number of route miles, decreasing about 17 percent from current levels; Alternatives A, B, C and E would be about equal in route mileage. All species of sensitive plants would be expected to persist in the project area if design criteria are implemented to
avoid known occurrences. The action alternatives would provide a net benefit to these species by reducing or eliminating motorized cross-country travel.

With respect to **effects on the range resource, livestock grazing, and the potential for noxious weed spread**, the main indicators are total miles of road and consequent route density, and acreage open to motorized cross-country use. Alternative A contains the highest concentration of routes, including unauthorized routes, and allows unrestricted access to the greatest acreage. This contributes to matting down or removing area of vegetation, harassment of livestock, and potential for weed spread. The number and mileage of motorized routes and acreage open to motorized cross-country use would be reduced in Alternatives C, B, E and D, in that order, with the least mileage in Alternative D. Alternatives D and E would show the greatest benefits due in large part to their restrictions on motorized cross-country use.

Alternative A would have the most **effects to cultural resources** by potentially allowing motorized cross-country travel to occur on cultural resource sites without any site protection. Alternatives C and B would see less area open to cross-country travel and effects to resources, with Alternatives D and E having no area open to this use. Alternatives B, C, and D would concentrate motorized use on routes within corridors, which could increase the potential severity of impacts to resources in these areas, but this potential could be reduced by site-specific protection measures. Alternative D would have the least impacts overall by reducing the motorized route mileage and eliminating cross-country travel.

**Under all alternatives, access would be provided as needed** for timber and forest fuels management, fire suppression, and mineral exploration. Access for prospecting and mineral development would be provided as appropriate and necessary.

**Issue 2 – Effects on Recreation Opportunities**

**Recreation opportunity in terms of route miles available for licensed drivers** on motorized-mixed-use roads and trails, with or without vehicle registration, would be greatest under Alternative C, then B, with much less route mileage under Alternative D. Route opportunity available to unlicensed drivers (trails only) with or without vehicle registration would be greatest under Alternative C, then B, with much less mileage under Alternative D, and less yet under Alternative E.

**Motorized cross-country use** for any purpose would be available only under Alternative A. Motorized cross-country use for the limited purposes of game retrieval and dispersed camping only would be allowed on the most area in Alternative A, with less area in Alternative C and then B. Alternatives D and E would allow no motorized cross-country use for any purpose.

The Recreation Opportunity Spectrum (ROS) is used in the Forest Plan to describe recreation opportunities available in different areas of the Forest. Nonmotorized recreation opportunities are offered in areas with ROS classes of primitive (P), semi-primitive nonmotorized (SPNM), and roaded-natural nonmotorized (RNNM). Under all alternatives, 10 percent of the Forest area would continue to provide these opportunities; primitive ROS designation would be unaffected in the Black Elk Wilderness and Inyan Kara Inventoried Roadless Area; and the ROS standard in research natural areas (RNAs) would be met. The miles of road or trail closed to motorized use in areas of SPNM and RNNM classes would decrease from current levels in Alternatives B and C, representing less potential for nonmotorized route opportunity in these areas; and would increase in Alternative D, representing more potential nonmotorized route opportunity.

**Nonmotorized trail opportunity** across the Forest is currently 311 miles on 35 trails, with another 12 miles of the Centennial Trail shared with motorized users. This opportunity would remain the same under all alternatives. However, based on the number of miles of motorized trail within ½-mile
of a nonmotorized trail, Alternative D would have by far the lowest potential for noise disturbance to nearby nonmotorized users, followed by Alternatives A and E, with Alternatives B and C about equal in higher potential to disturb nearby nonmotorized users.

**Issue 3 – Effects of Transportation System Design on Management Capabilities**

Travel management under any of the action alternatives would be more easily enforced by law enforcement personnel, because users not complying with the motor vehicle use map could be cited.

Many factors must be considered to estimate system costs. Alternative E would not create a motorized trail system beyond the existing roads and would be the most supportable with current funding levels. Concerning Alternatives B, C, and D, the miles of trails, number of trailheads and miles of roads to be closed would be the factors having the largest effect on long-term costs. Based on these, Alternative D would have the lowest costs, with Alternative C the greatest, followed by Alternative B.

Based on the total number of trailheads and system road and trail miles, and other deferred maintenance costs, Alternative C would be the most costly to implement, followed by Alternatives B and D. Alternatives A and E would cost the least. Annual maintenance costs of the alternatives would follow the same order, with Alternative C the highest. Increased costs of vandalism could be expected with higher numbers of trailheads. Alternatives B and C have the highest number, with Alternative D less and Alternatives A and E the lowest number.

Based on the number of miles of roads open to motorized mixed use by both highway-legal and non-highway-legal vehicles, Alternative D would provide the greatest emphasis on user safety, followed by Alternatives B, E, and C.

**Issue 4 – Social and Economic Concerns**

Alternatives B and C are roughly equal as having the most trailheads located within 3 miles of a potential gateway community, followed by Alternative D. Alternatives A and E have no trailheads located within 3 miles of a potential gateway community. Based on the number of miles of trail within 300 feet of adjacent private land, Alternative D would have the lowest potential for noise disturbance and increased road and trail dust to neighbors. The other alternatives would all have higher potential, at about the same level.

The population in the Black Hills region, and recreational use of the Forest, would continue to grow under all alternatives. It is expected that user expectations for recreational experiences will continue to be diverse. The loss of OHV recreational opportunities from limiting or prohibiting cross-country motorized travel would be at least partially offset by the enhanced OHV trail system opportunities under Alternatives B, C, and to a limited extent Alternative D. Commercial opportunities could develop on adjacent private properties to provide cross-country areas for OHV users seeking opportunities for activities such as hill-climb, motocross, mud-bogging, or rock-crawling. None of the alternatives would be expected to create any measurable social or economic consequences on the Black Hills region.
Implementation
The Forest would use the following management strategies to implement the Travel Management Rule:

- **Motor vehicle use map production.** The motor vehicle use map would display designated routes open to motorized vehicle use. The routes would be designated open to the public by vehicle type and season of use. The map would be available to the public at no cost. The motor vehicle use map would be published annually. Based on any issues including resource impacts or enforcement changes could be made to the motor vehicle use map after its initial publication. The regulations at 36 CFR 212.57, 212.54 recognize that the designations of roads, trails and areas for motorized vehicle use are not permanent and that environmental impacts, changes in demand, route construction, and monitoring conducted under the final rule may lead responsible officials to considering revising designations. Any signage implemented on the ground would coincide with the motor vehicle use map but legal enforcement would be based on the motor vehicle use map, not on on-site signage. Publishing a motor vehicle use map is the only legal requirement that must be met to establish and enforce the rule.

- **On-the-ground implementation.** The Forest would retain the authority to implement emergency and project level travel planning, either of which could revise designations.

- **Phased implementation.** Any alternative selected based on the analysis in this document would likely require that certain design criteria or mitigating measures be put in place prior to full implementation. As these measures identified in the analysis are completed, the associated routes would be designated on the motor vehicle use map and opened for use as appropriate.

- **Enforcement.** The Forest recognizes that enforcement would be critical to the successful implementation of the Travel Management Rule. The Forest is currently enhancing the available law enforcement staff by increasing field presence of uniformed Forest employees, Forest Protection Officers, and coordinating with other agency enforcement personnel. All Forest personnel have been directed to observe, record, and report violations of our regulations.

- **Partnerships.** The Forest would rely on partnerships to collaboratively work with Federal, State, county, and tribal agencies. The Forest would also collaborate with motorized and nonmotorized recreation user groups, conservationists and others to provide access to National Forest System lands on routes and in areas that are environmentally and socially sustainable. Currently, many of the Forest’s motorized routes and areas are maintained and improved through cooperative relationships.

- **Public education.** The public would be provided with tools to help them access and appropriately use the designated system, including but not limited to the Travel Management home page of the Forest Internet website; the motor vehicle use map in easily usable form, hardcopy and electronic; appropriate route signing; interpretive signs on routes and at trailheads; advertisements and notices in newspapers of record; and other tools as appropriate.

- **Volunteer group participation.** The Forest would establish a trail ranger program in which volunteer groups might participate. Participating volunteer groups would (1) engage users in the management of their National Forest, (2) promote safe and responsible riding, (3) inform and educate riders about trail rules and proper land use, (4) monitor trail activity and reporting unsafe trail conditions or illegal activities, (5) perform light trail maintenance, and (6) respond to and assist trail emergencies.
• **Recreation Enhancement Act.** Through a separate action under the Recreation Enhancement Act, user fees would be collected for the operation and maintenance of the off-highway vehicle system.

**Monitoring**

The Travel Management Plan would be tiered to the Forest Plan desired conditions, goals and objectives and would follow (or amend) standards and guidelines. The Forest Plan monitoring strategy is designed to evaluate the achievement of desired conditions, goals, objectives, and the effectiveness of standards and guidelines.

Some monitoring questions that pertain to travel management are listed in the Forest Plan monitoring strategy (objectives 309 and 407-422). These questions would be used to determine whether travel management is being effectively managed on the Forest. Monitoring motorized use as part of the Forest Plan is required in 36 CFR 212.57. The Forest would reference the Forest Plan monitoring strategy where appropriate. The ID team also has compiled additional monitoring needs in the project area, which are needed to validate assumptions used in this planning process, and to verify that the plan is being implemented as intended. Monitoring items would be prioritized by the responsible official if funding is not available to implement all objectives or items listed or referenced in the monitoring plan. Specific monitoring items include completion of the stream crossing protocol, needed to identify stream crossings not meeting standards and to prescribe rehabilitation measures; and monitoring of plant occurrences, which is assumed in the effects analysis.
Chapter 3. Affected Environment and Environmental Consequences

Introduction

This chapter describes the physical, biological, social, and economic environments of the project area and the effects of implementing each alternative on that environment. The effects analysis and disclosure presented here is tiered to the analysis presented in the Final EIS for the Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 1996a), and the Final EIS for the Phase II Amendment to the 1997 Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 2005a).

This chapter presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Analysis of direct, indirect and cumulative effects of the alternatives was completed by the ID team incorporating field observations, surveys and review; aerial photography; resource modeling; literature review; past experience and professional judgment; information obtained through monitoring; Forest Plan direction and analysis; and public participation. Direct and indirect effects are effects that could be expected from the implementation of this project. Direct effects are those occurring at the same time and place as the initial cause or action. Indirect effects occur later in time or in a different location than the activity that causes them. Direct and indirect effects of the proposed action and alternatives were analyzed over a period extending ten years into the future, unless stated otherwise.

Cumulative effects are effects of this project when added to the effects of other actions. Cumulative effects analysis accounts for the incremental addition of direct and indirect effects of this project, added to past, present and reasonably foreseeable effects from other sources. The area analyzed for cumulative effects is the area within the Forest boundary, unless otherwise stated. The time horizon evaluated for cumulative effects analysis was generally ten years into the future, unless otherwise stated.

Past, Present, and Reasonably Foreseeable Activities

Past actions are addressed by the Council on Environmental Quality (CEQ) in the following manner: “Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” (CEQ Memo of June 24, 2005.) In other words, the effects of all past actions have created the current affected environment and existing condition; consequently, specific past actions do not need to be identified for the cumulative impacts analysis. In general, past actions that have taken place over the last 100 years include grazing, timber harvest, mining and exploration, recreational camping and travel, wildfires, prescribed burning, and small product removal (i.e., post and poles, and firewood).

Present actions are typically ongoing activities and are treated similarly to past actions. These activities include winter recreation such as snowmobiling and skiing; summer recreation such as hunting, dispersed camping and off-highway vehicle use; commodity uses such as gathering of fuelwood and other forest products, and livestock grazing; timber harvest and commercial fuel management, and associated road construction and reconstruction; wildfire suppression; noxious weed treatments; and other activities.
Reasonably foreseeable actions are those Forest Service actions that are formal proposals or decisions not yet implemented at the time of the analysis, and those non-Forest Service actions whose implementation is no longer speculative. Activities that add to the effects of designated travel routes include wildfires, timber harvesting, fuel reduction, livestock grazing, and recreational uses (hunting, hiking, motorized recreation, etc.). In general, it is assumed that Forest actions would continue at roughly the rate experienced over the last 10 years. It is assumed that the rate of private land subdivision and development, and the requests for access to these private parcels, would increase over what has been seen in the last 10 years.

The existing condition described in Chapter 2 for Alternative A is the baseline for the affected environment and environmental consequences that are discussed in the sections below. This existing condition includes cross-country travel and route proliferation on the Forest.

See Appendix E for a partial listing of past, present and reasonably foreseeable future activities considered in the cumulative effects analysis for this project.

**General Assumptions for All Alternatives**

In developing the range of alternatives, the following assumptions were used. These assumptions were also made when evaluating the effects of the alternatives. Under any of the action alternatives:

- The public would generally observe and comply with the proposed transportation system. Specifically, motorized users would use only motorized routes designated on the motor vehicle use map, and would refrain from using routes not designated on that map.
- Motorized game retrieval and dispersed camping activities would not enter into or cross perennial streams.
- More areas open for motorized game retrieval would generally be expected to generate more use of these areas.
- Concentrating vehicle use to reduce effects on routes and areas not designated would increase use and possibly effects on routes and areas that are designated.

**Resources Not Addressed**

In this EIS, the Forest Service addresses the effects of the proposal and alternatives to a number of resources. The lands and minerals resources would not be affected by this proposal and thus are not addressed here at length. More specifically, this proposal would not affect legally held rights of access. As described earlier, there are about 300,000 acres of lands of other ownerships within the proclaimed Forest boundary. The acreage and pattern of distribution of these individual parcels of intermingled lands has influenced the development of the Forest transportation system, and would continue to do so under any alternative selected. The Forest Service has authorized a number of rights-of-way and easements allowing landowners reasonable access to their property across National Forest System lands, as required by law. These routes are included in the analysis in this document as appropriate. The agency would continue to provide for reasonable access as required by law under any alternative selected. Since the decision on this project would not affect legal access, the effects of the alternatives on such access are not discussed here at length.
Recreation

Introduction
Recreation in the Black Hills has been occurring for centuries. In the early days, activities that are considered recreational today were more of a way of life. Native Americans used the lands as hunting grounds and places to collect medicinal plants. With General Custer’s expedition in 1874 came an influx of white settlers into the region in search of gold. Mining towns soon appeared everywhere, establishing travelways that are still used today. The first parks were established within and around the Black Hills, which increased tourism opportunities. These included Wind Cave National Park in 1903, Devil’s Tower National Monument in 1906, Jewel Cave National Monument in 1908, and Mount Rushmore National Memorial in 1927.

By 1933, the arrival of the Civilian Conservation Corps helped to improve roads, bridges, and trails to access the area and improve the resources of the region. By the 1960s, Forest managers wanted to increase tourism activities. Campgrounds, picnic areas, and other recreational infrastructure, such as cabins and hiking trails were developed to provide places for people to recreate.

Today, visitors to the Black Hills enjoy a variety of recreational opportunities such as developed and dispersed camping, picnicking, driving along scenic byways, hiking, mountain biking, horseback riding, wilderness experiences, fishing and hunting, rock climbing, water-related activities, winter activities, interpretive and educational sites, fire lookout towers, and observation sites. Motorized users of the Black Hills include a variety of off-highway vehicles, such as all-terrain vehicles, utility vehicles, jeeps, and off-highway motorcycles as well as a variety of highway-legal vehicles such as passenger cars, trucks, vans, buses, motorhomes, and touring motorcycles.

Applicable Laws, Regulations, Policy, and Forest Plan Direction
Providing outdoor recreation opportunities with minimum impacts to natural resources is a primary goal in the Forest Service Strategic Plan (USDA Forest Service 2004d). OHV use has been allowed on National Forest System lands since prior to the 1970s and is one of the fastest growing recreational activities on public lands. Two objectives of the Strategic Plan are to (1) emphasize improvement of public access and (2) improve the management of OHV use to protect natural resources, promote safety, and minimize conflicts among users (USDA Forest Service 2004d).

Variation in State Laws for Motorized Activities - Lands administered by the Forest lie in two states: South Dakota (containing about 83 percent of the Forest) and Wyoming (17 percent). Each State has different laws that impact the motorized travel opportunities on the Forest. In 2002, the Wyoming legislature signed into law Wyoming Statute 311-101, which resulted in a recreational program for registering OHVs on designated trails, routes, and areas. The Bearlodge Ranger District, which lies entirely in Wyoming, enrolled 24 miles of roads to be open to vehicles 50 inches wide or less (to be managed as motorized trails for public use) and about 258 miles of roads open to all vehicles. Wyoming State law allows drivers of any age on the routes designated as trails. Trails enrolled under the program require an OHV sticker, while enrolled roads require a licensed driver and the vehicle to display either an OHV sticker or license plate.

South Dakota currently does not have an OHV program. South Dakota State traffic law 32-20-12 regulates motorized opportunities on highways and roads within the Forest. Roads classified as
“public roads” require licensed drivers and that motor vehicles be registered; otherwise motor vehicles may be operated in the outer edge of road ditches. Roads under Forest Service jurisdiction and open to motorized use are considered public roads.

**State Law for Dispersed Camping** - Dispersed camping sites are widespread through the Black Hills, especially in Wyoming. The lower density of dispersed camping in South Dakota is likely due to the restriction on open fires by South Dakota State statute 34-35-15, established in 1941. Visitors recreating in South Dakota are only allowed to have campfires in developed campgrounds with established fire grills. Wyoming does not restrict open fires except by special orders during periods of drought. Different user groups have developed the existing sites based on their accessibility and the experiences they are seeking. Dispersed campsites across the Forest are occupied primarily in the summer recreation season and during the fall hunting season. Most of the campsites lie within 300 to 500 feet of open roads.

**Forest Plan Direction for Recreation Opportunities** - One of the goals of the Forest Plan is to provide a range of recreational opportunities. Several management aspirations are as follows: Forest trails will provide recreation opportunities for persons with disabilities, hikers, mountain bikers, cross-country skiers, snowmobiles, horseback riders, ATVs, motorbikes, and four-wheel drive vehicles. Trails typically will be managed to minimize user conflicts. The trail system will link many recreation points of interest, other agency trails, and communities to provide a diverse array of recreational opportunities and travel routes. The majority of trail opportunities will be oriented towards day use with opportunities for multi-day trips on a system of interconnecting trails (USDA Forest Service 2006a).

**Recreation Opportunity Spectrum (ROS) Direction** - The Forest Plan identified all ROS classes as guidelines with the exception of those in Management Emphasis Area 2.2, Research Natural Areas, in which the semi-primitive nonmotorized ROS class is a standard (USDA Forest Service 2006a).

As a Forest guideline, dispersed recreation is discouraged within 100 feet from lakes and streams unless exceptions are justified by terrain (USDA Forest Service 2006a). A Forest standard for dispersed camping within the Peter Norbeck Scenic Byway (MA 4.2A) prohibits camping within 300 feet of highways and Forest development roads, except in developed campgrounds (USDA Forest Service 2006a).

Developed recreation sites, such as trailheads, are not to be located in or immediately adjacent to known locations of Region 2 sensitive or plant species of local concern (USDA Forest Service 2006a).

**Forest Special Orders Affecting Travel Management** - An executive special order, signed on June 17, 1992, prohibits dispersed camping within the Spearfish Canyon Scenic Byway. (Executive Order 23)

**Hunting** - The Forest is open to public hunting for a variety of game species including turkey, elk, deer, mountain goat, bighorn sheep, and mountain lion. Mountain goat and mountain lion hunt seasons are very limited in terms of animal quota and amount of hunt time. The majority of the hunters come to the Forest for elk, turkey, and deer seasons in the fall between August and December. Table 8 indicates the number of licenses sold and animals harvested from the Forest in 2006 for elk and deer species. National Forest System lands account for the majority of public lands within the hunt areas.
Table 8. Hunting in the Forest for 2006 as represented in reports from Wyoming and South Dakota Game and Fish Departments*

<table>
<thead>
<tr>
<th>Location and animal</th>
<th>Hunt areas</th>
<th>Licenses sold</th>
<th>Animal harvests</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Dakota</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elk</td>
<td>Black Hills</td>
<td>2,670</td>
<td>1,358</td>
</tr>
<tr>
<td>Deer</td>
<td>Black Hills</td>
<td>8,932</td>
<td>6,810</td>
</tr>
<tr>
<td>Wyoming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elk</td>
<td>1; 116</td>
<td>505</td>
<td>225</td>
</tr>
<tr>
<td>Deer</td>
<td>2; 4</td>
<td>2,619</td>
<td>3,566</td>
</tr>
<tr>
<td>Mule Deer</td>
<td>2; 4</td>
<td>2,619</td>
<td>1,124</td>
</tr>
</tbody>
</table>

* Not all the hunting occurred on National Forest lands. There are additional public lands, State lands and private properties within these hunt areas open to public hunting opportunities.

**Methodology**

Recreation is a social resource in that it’s based on personal interpretation. What might be considered a quality experience for one person, may not necessarily apply to another. No amount of research can adequately be utilized to measure the effects on the quality of recreation someone may encounter. Research documents were reviewed to provide an understanding of how different experiences could impact recreation activities. The analysis is largely based on information from:

- Attributes contained in GIS for roads and recreation
- Personal professional knowledge of recreation resources
- Personal professional experience working with various recreation user groups

During the scoping process the public indicated that the relationship of motorized and nonmotorized recreation was one of the most important issues. There is a desire for quality recreation experiences, while addressing potential conflicts between the different users. Concern was expressed regarding potential impacts to nonmotorized recreation uses including damage to trail surfaces, noise, safety, and reduction in quality of nonmotorized recreation experience due to user conflicts. Concern was also expressed regarding potential impacts between different motorized user groups.

**Issues**

From the public involvement, the Forest identified public concerns that should be analyzed in detail in the EIS. Three of the issue statements relate to the recreation resource:

**Issue 2 - Effects on recreational opportunities.** Recreational opportunities can be divided into two categories; motorized and nonmotorized. The designation of motorized opportunities, particularly the designation by vehicle class, may affect nonmotorized opportunities. With the variety of motorized vehicles on the market, recreational experiences between the motorized users could be impacted when travel routes are shared. The opportunities for motorized dispersed camping and motorized game retrieval could also be impacted as a result of designating travel routes.

**Indicators**

- Miles of road open to all vehicles
- Miles of road open to highway-legal vehicles only
- Miles of trail open to all vehicles, including rock crawlers
- Miles of trail open to vehicles 50 inches or less in width (WY only)
- Miles of trail open to vehicles 65 inches or less in width (SD only)
- Miles of motorcycle trail
- Concentrated, cross-country travel areas less than 5 acres
- Acres open to game retrieval
- Acres open to dispersed camping
- Number of motorized trailheads

**Issue 3 - Effects of transportation system design on management capabilities.** How particular routes are classified for motorized-mixed-use opportunities could impact unlicensed drivers opportunities to recreate with families.

*Indicator*
- Miles of roads converted to trail

**Issue 4 - Social and economic concerns.** Where the motorized travel routes are identified could impact businesses and private property.

*Indicators*
- Miles of designated motorized routes within 300 feet of lands of other ownerships
- Number of trailheads within 3 miles of a gateway community

**Affected Environment**

The Forest is a regionally important recreation destination in South Dakota and Wyoming. The natural and cultural diversity within the rugged hills provides the basis for a wide variety of recreational activities and is vital to the area’s recreation and tourism industries. Interspersed in and around the Forest are five National Park Service units including Devil’s Tower National Monument and Mount Rushmore National Memorial. Custer and Bear Butte State Parks, Bureau of Reclamation lands, and historic towns also lie within the area.

Since the Forest is a popular recreational destination, visitors to the Forest use motorized access to a high degree. In 2004, the National Visitor Use Monitoring survey for the Black Hills estimated that 1.2 million people visit the region annually. “Driving for pleasure” was identified as one of the top five activities, and as the second highest reason people visit the Forest (USDA Forest Service 2004c). In 2006, based on the survey information, the Forest Supervisor developed a marketing strategy for the Forest, “Access for the Ages”, which focuses recreation opportunities on specialized campgrounds, roaded recreation opportunities and a system of trails connecting communities showcasing the user-friendly access provided by the Forest to year-round family activities. The Forest offers hundreds of miles of Federal and State highways, County roads and Forest roads, including the Norbeck and Spearfish Scenic Byways.

As stated earlier, Forest visitors enjoy a wide variety of recreation opportunities, including on- and off-road motorized use. Some motorized use is required to access most of these opportunities, no matter what the visitor’s recreational preference may be.

To provide a variety of recreational experiences for the visitor, the Forest utilized a classification system referred to as Recreation Opportunity Spectrum (ROS). ROS is a planning and management tool that categorizes recreation opportunities into six settings, ranging from
primitive to urban (see Glossary). The Forest Plan identified four of the six settings for its management emphasis including primitive, semi-primitive nonmotorized, semi-primitive motorized and roaded natural. The roaded natural category was further expanded to add another category called roaded natural nonmotorized to provide the Forest with additional diversity. Table 9 shows the acres and percent of Forest area within each of the ROS classifications. Within ROS classes, visitors can expect to find a variety of recreational activities, including developed and dispersed, motorized and nonmotorized opportunities.

The majority of the motorized travel system on the Forest is accessible by passenger type vehicles including cars, trucks, vans, buses, motor homes, SUVS, and touring motorcycles. Off-highway vehicles, including ATVs, jeeps, and off-highway motorcycles were sampled in the 2004 National Visitor Use Monitoring survey, but ranked 11th (2.99 percent) among the 25 types of recreational activities sampled as the primary purpose for visits to the Forest (USDA Forest Service 2004c).

Table 9. Black Hills National Forest ROS classes

<table>
<thead>
<tr>
<th>ROS</th>
<th>Acres</th>
<th>Percent of National Forest acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primitive</td>
<td>14,847</td>
<td>1.19</td>
</tr>
<tr>
<td>Semi-primitive nonmotorized</td>
<td>36,237</td>
<td>2.91</td>
</tr>
<tr>
<td>Semi-primitive motorized</td>
<td>11,996</td>
<td>0.96</td>
</tr>
<tr>
<td>Roaded natural</td>
<td>1,105,582</td>
<td>88.71</td>
</tr>
<tr>
<td>Roaded natural nonmotorized</td>
<td>78,177</td>
<td>6.27</td>
</tr>
<tr>
<td>Total</td>
<td>1,246,839</td>
<td></td>
</tr>
</tbody>
</table>

Motorized recreation on the Forest can be divided into five user groups including passenger vehicles, four-wheel drive vehicles, all-terrain vehicles, utility vehicles, and off-highway motorcycles. Each group represents a different motorized need for their experience. Some users prefer roads, some trails, and some prefer the freedom to traverse the forest environment. Scoping comments on the proposed action indicated that the customers of the Black Hills National Forest prefer to see a variety of motorized recreation opportunities.

There are three ways motorized users travel on the Forest: roads, trails and cross-country. Roads are described by maintenance levels as identified in the engineering section. These maintenance levels allow the managers to construct or reconstruct routes to the standard appropriate to the intended use. The higher the maintenance level, the better quality the road is and the higher the expected speed will be. These roads are referred to as main arterial roads, and they often lead to points of interest such as campgrounds and picnic areas. Lower maintenance level roads tend to require higher clearance vehicles, such as trucks and sports utility vehicles. These routes may not lead to a particular recreation destination, but are often used by hunters or visitors that want a deeper woods experience. Due to the roughness of the route, they are travelled at reduce speeds.

Motorized trails are often defined by trail classes. The Black Hills National Forest currently has a limited number and mileage of designated motorized trails available to public motorized travel, (see Table 7 Alternative A), which have not been categorized into trail classes. Once the travel management process is completed, trails will be defined by classes corresponding to opportunities. As with road maintenance levels, the higher the trail class is, the better quality the trail is. Lower trail classes would identify rougher trails that may be more suitable for slower speeds such as rock-crawling opportunities.
Cross-country travel on the Forest has increased over time as off-highway vehicles, all-terrain vehicles and motorcycles have become more popular forms of recreational travel. In addition to cross-country travel, users often employed routes created from timber sales or mining activities to traverse the countryside and avoid the main road systems. These routes were closed after management activities using vegetation or closure devices to discourage motorized travel and were never considered part of the overall transportation system for the Forest. They are referred to as unauthorized routes (see the engineering section). As off-highway travel became more popular, these unauthorized routes were discovered and “adopted” by the public as motorized riding opportunities. In addition to management-created unauthorized routes, user-created routes have also developed from continuous use by the public. These routes were often not designed to professional standards, but formed as a motorized vehicle continuously traversed the ground creating tire ruts in the soil. Today, the Forest has identified 4,109 miles of unauthorized and user-created routes across the Forest. Approximately 7 percent of these routes lie within areas designated as nonmotorized areas on the Forest.

In February 2008, the report, “Off-Highway Vehicle Recreation Use in the United States” was produced to identify statistical information about OHV use. A phone survey was conducted to measure participation in outdoor recreation. Nearly 92,000 people were surveyed between 1999 and 2007. The report showed a dramatic increase in retail sales nationwide of ATVs and off-highway motorcycles between 1995 (368,600 total units sold) and 2003 (8,010,000 total units sold). The report also provided data by individual states population segment 16 years and older participating in an OHV program. Interestingly, Wyoming ranked highest in the nation for percentage of state population participating in OHV use, while South Dakota ranked 8th in the nation (Cordell 2008).

**Environmental Effects Analysis**

**Direct and Indirect Effects**

**Alternative A – No Action**

The Forest currently has 3,740 miles of National Forest System roads open to motorized travel yearlong and 692 miles seasonally, excluding roads under other jurisdiction, and 864,000 acres (72 percent) of National Forest System lands open to off-road (cross-country) motorized travel for recreation and game retrieval. Approximately 12 miles of officially designated motorized trails exist in South Dakota, while Wyoming has designated 24 miles of closed National Forest System roads open to motorized vehicles 50 inches wide or less under the Wyoming OHV program. Also, in Wyoming, all National Forest System roads open to motorized vehicles have been enrolled in the Wyoming OHV program, thus requiring all vehicles to either be highway-legal or display an OHV sticker. Across the Forest, current management policy is to close all new temporary or nonsystem management-created routes to motorized use. In addition, under this alternative there is no special designation for motorcycle trails or rock-crawler areas.

**Motorized opportunities.** The National Forest System roads currently open to all forms of motorized travel would continue to provide access for highway-legal vehicles for a variety of recreational activities. All new temporary or nonsystem management-created routes would generally continue to be managed as closed to public motorized use. Attempts have been made to close these unauthorized roads by revegetation, physically barricading or signing as closed to motorized access. Unauthorized roads could occur anywhere on the Forest, including in areas open or closed to cross-country travel.
The motorized opportunity on the Forest is a shared component with all motorized users. The limited amount of motorized trails open to vehicles 50 inches wide or less means that these users are mixing with full-size vehicles on higher speed roads creating a safety concern for accidents. In an effort to avoid these conflicts, ATVs and motorcycle users usually find their own places to recreate, thus creating their own trail systems for their personal desires. Some of these user-created trails are along old roads that may have been used for logging or other resource activity (unauthorized roads). Motorcycle riders, in particular, have created their own trail system within areas open to cross-country travel since the designated motorized trails do not offer the narrow experience they prefer. Continued use of these trails can and would continue to cause environmental harm, especially those located in environmentally sensitive areas. Motorized vehicles that are not highway legal in South Dakota would be restricted to designated trails to comply with State law. Roads under Forest Service jurisdiction open to motorized use would require motorized vehicles to be highway legal and to be operated by licensed drivers. In Wyoming, vehicles that are not highway legal must have an OHV sticker under State law and must be operated by a licensed driver on National Forest roads. Families with unlicensed drivers for either State would be restricted to trails only. This would limit families with unlicensed drivers to 12 miles of officially designated trails in South Dakota and 24 miles of trails in Wyoming. While Wyoming motorized trails do have a limited amount of looping opportunities, South Dakota does not, requiring the families to traverse the same trail twice.

Private land, State land and other Federal ownership accounts for 20 percent of the acreage within the Black Hills National Forest boundary, or about 300,000 acres. Many landowners are concerned that the motorized activities in the Black Hills would impact their land and access; others are concerned that they would not be able to access the designated trail system from their homes, requiring them to trailer to designated trailheads. Under Alternative A, 504 miles of National Forest System roads, 4 miles of trails, and 523 miles of other jurisdiction roads (such as County or Federal highways) would be located within 300 feet of private property and open to motorized use either seasonally or yearlong. Access to these properties is maintained for highway-legal vehicles, but non-highway-legal vehicles may be restricted. Landowners with non-highway legal vehicles or unlicensed drivers could be required to trailer to designated trailheads to access trails.

Cross-country travel. As a result of the continued cross-country travel opportunities, there would be continued confusion to recreation users with regards to travel management policy and restrictions. In areas where roads are closed to motorized use, but the Forest land surrounding the roads is open to motorized use, visitors could be likely to utilize the closed road illegally rather than traverse the Forest. With 864,000 acres of Forest land (72 percent) open to cross-country travel, motorized access would likely continue on unauthorized routes. It is likely within these open cross-country areas that additional user-created trails could form as riders cut through the landscape and connect unauthorized routes together.

Recreation conflicts occur when participation in one recreation activity reduces the recreation experience of another user. Conflicts are often between motorized and nonmotorized recreationists. However, conflicts can also occur between individual motorized users when cross-country travel leaves unsightly damage to the land and motorized users fail to implement the “tread lightly” principles, or when ATVs access trails being utilized by motorcycles. User conflicts would continue to increase under this alternative as more motorized recreation occurs on lands with unrestricted motorized cross-country travel. Motorized recreation use is increasing and as this use increases, more people would travel cross-country in places where it is allowed.
Conflict deriving from motorized cross-country travel would be reduced when site-specific planning is completed and implemented, or when emergency closures are put into effect.

Landowners whose property is adjacent to National Forest lands open to cross-country travel could access the Forest with their off-road vehicles from their back yards. This could create new trails or continually damage unauthorized trails already established. Open cross-country travel provides the opportunities for landowners to ride outside their homes without having to trailer their unlicensed vehicles to designated trailheads. Over time, as these trails become permanent marks on the landscape, other motorized users would follow them and could trespass on private property. Conflicts between adjacent landowners and the general public following unfamiliar trails could result from these unauthorized routes.

There would be no effect on people with disabilities or those people not physically fit to walk distances, because the same opportunities for motorized travel would be available to any visitor of the National Forest.

Recreation opportunity spectrum. Ten percent of the Forest has been designated as primitive, semi-primitive nonmotorized, or roaded natural nonmotorized ROS classes. These ROS classes are designed to offer the public an opportunity for a quiet experience. Some of these areas have designated nonmotorized trail systems for hiking, horseback riding, or mountain biking opportunities. Others offer opportunities for the public to explore on their own. All areas have unauthorized or low maintenance roads that the public is free to use for nonmotorized activities. Table 10 indicates the total number of miles of roads by maintenance level that lie within areas designated as semi-primitive nonmotorized or roaded natural nonmotorized ROS classes.

Table 10. Miles of road within semi-primitive nonmotorized (SPNM) and roaded natural nonmotorized (RNNM) areas

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Miles in SPNM</th>
<th>Miles in RNNM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML 1</td>
<td>31</td>
<td>152</td>
</tr>
<tr>
<td>ML 2</td>
<td>23</td>
<td>65</td>
</tr>
<tr>
<td>ML 3</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>ML 4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Other jurisdiction</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Unauthorized/user created</td>
<td>40</td>
<td>182</td>
</tr>
<tr>
<td>Total route miles</td>
<td>108</td>
<td>440</td>
</tr>
</tbody>
</table>

Table 11. Alternative A roads or trails open and closed to motorized use within semi-primitive nonmotorized or roaded natural nonmotorized areas

<table>
<thead>
<tr>
<th></th>
<th>Miles in SPNM</th>
<th>Miles in RNNM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads or trails open to motorized activities</td>
<td>36</td>
<td>107</td>
</tr>
<tr>
<td>Roads or trails closed to motorized activities</td>
<td>72</td>
<td>333</td>
</tr>
<tr>
<td>Total route miles</td>
<td>108</td>
<td>440</td>
</tr>
</tbody>
</table>

Although the desired condition of these ROS classes is to offer a solitude experience, many are affected by existing roads open to motorized activities. Of the semi-primitive nonmotorized class, only the Research Natural Areas and Fort Meade Watershed restrict or close roads to
motorized use inside the boundary of ROS designation. Of the roaded natural nonmotorized class, 5 of the 22 areas restrict motorized access inside the designated boundary. For some of the areas, such as Little Spearfish Creek, Norbeck Wildlife Preserve, or McIntosh Fen semi-primitive nonmotorized areas, access roads are main system Level 4 roads or Federal highways that provide access to other parts of the Forest. In other cases, the access roads are low-level maintenance roads that provide access to the areas or trailheads, such as Sand Creek, Lower Hell Canyon, Eagle Cliff, and Pactola Spillway. The smaller the nonmotorized area, the bigger an impact motorized access has on it. Regardless of the purpose of the road, motorized access into nonmotorized areas affects the quiet and serene experience that some visitors desire.

Continued implementation of this alternative would not be consistent with Forest Plan guideline 5101 for ROS designation. Motorized opportunities would continue to impact areas with semi-primitive nonmotorized and roaded natural nonmotorized designations. The Forest Plan ROS standard for the five areas assigned as Management Emphasis 2.2, Research Natural Areas, has been achieved by eliminating or restricting motorized access within the designated areas. The two areas identified as primitive ROS setting, Black Elk Wilderness, and Inyan Kara Inventoried Roadless Area, also meet the Forest Plan ROS guideline by restricting motorized access within their boundaries.

Table 12. Analysis indicators for Alternative A

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles (motorized mixed use)</td>
<td></td>
</tr>
<tr>
<td>Yearlong – Wyoming only; license plate or OHV sticker</td>
<td>160 miles</td>
</tr>
<tr>
<td>Seasonally – Wyoming only; license plate or OHV sticker</td>
<td>12 miles</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>3,580 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>656 miles</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles, including rock crawlers</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width (WY only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>24 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width (SD only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>12 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Beginner practice areas less than 5 acres</td>
<td>0 areas</td>
</tr>
<tr>
<td>Acres open to motorized cross-country travel</td>
<td>864,000 acres</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval</td>
<td>864,000 acres</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping</td>
<td>864,000 acres</td>
</tr>
<tr>
<td>Number of motorized trailheads</td>
<td>7 trailheads</td>
</tr>
<tr>
<td>Miles of roads converted to trail</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of designated motorized routes within 300 feet of lands of other ownership</td>
<td>504 miles</td>
</tr>
<tr>
<td>Number of trailheads within 3 miles of a gateway community</td>
<td>0 trailheads</td>
</tr>
</tbody>
</table>
**Dispersed camping.** Motorized dispersed camping would continue to occur anywhere on the Forest with minimal restrictions with the exception of the Norbeck area, wilderness, research natural areas, Spearfish Canyon, and any area specifically designated through a Forest special order to prohibit dispersed camping.

**Game retrieval.** The greatest impact to hunters occurs when motorized vehicles access areas designated nonmotorized. Under this alternative, with 72 percent of the Forest’s land base open to cross-country travel, big game hunters have many opportunities to utilize any motorized vehicle to retrieve their harvests for any game species, including turkey, elk, deer, mountain lion, and mountain goat. For the nonmotorized hunter, 28 percent of the National Forest System land area is restricted for motorized access.

When motorized hunters impact the nonmotorized areas during hunting seasons, it affects those hunters whose methods of accessing, scouting, stalking, and retrieving are by foot or horse. To some extent, even in open cross-country areas, those motorized hunters who stay on roads and trails can be affected by hunters who travel cross-country. Their hunting experience may be reduced or spoiled by others who might use motorized vehicles to travel cross-country to scout for game, access favorite hunting areas, and drive or chase game for a better shot or to retrieve game. For many, the noise created by motorized vehicles diminishes the hunting experience because it disturbs and displaces game animals from the immediate area. The effects are more pronounced where motorized cross-country use is more common, such as on flatter or more open terrain. Fewer hunters are affected in the heavily timbered and or steeper areas where there is less opportunity for motorized cross-country travel, or in areas currently closed to cross-country travel.

Continued forest management activities, such as timber harvesting or prescribed burning, can also displace game species and affect a successful hunt. Some hunters have complained that if an area of the Forest restricts motorized access, it should restrict that access to all, including Forest managers and its contractors and permittees.

**Roadless.** The Inyan Kara, Sand Creek, and Beaver Park roadless areas make up the roadless inventory for the Forest. A characteristic of roadless areas is to provide for solitude and primitive experiences that are affected only through forces of nature and human influence is substantially unnoticeable. These areas are designated nonmotorized areas by Forest Plan direction.

Inyan Kara lies within Management Area 3.2A and has a Forest Plan guideline ROS classification of primitive. The mountain is completely surrounded by private ranches and Wyoming Highway 585 lies about 3 miles east. Vehicular noise can be heard on the mountain, but is muffled by the distance. There is no designated nonmotorized trail.

Beaver Park lies within Management Areas 3.32 (north), and 5.3B (west), both of which have Forest Plan guidelines of semi-primitive nonmotorized ROS classifications. The southern portion lies within Management Area 4.1, with a Forest Plan guideline of roaded natural nonmotorized ROS classification. Along the western and northern borders of Beaver Park is NFS road 139, a road about 6 miles long open seasonally to all vehicles. Interstate 90 and a subdivision lie less than a mile from the eastern border of Beaver Park. Centennial Trail runs through Bulldog Gulch, less than a mile south of road 139.

The Sand Creek roadless area is made up of Management Areas 3.7 and 4.1, both with a Forest Plan guideline of roaded natural nonmotorized ROS classification; and Management Area 3.1, with a Forest Plan guideline of semi-primitive nonmotorized ROS classification. Several open
motorized public roads lie adjacent to the Sand Creek boundary, including NFS roads 863, 866, 802.1A, 802, and 864. There are additional NFS roads inside the boundary of Sand Creek roadless area that are currently closed to motorized public use. Sand Creek has no designated nonmotorized trails.

Motorized activities along the borders of any roadless area can create additional unnatural noise. Motorized routes along the border create a more direct source of unnatural noise than that from roads outside the boundaries, such as interstate highway traffic, subdivisions, or ranches. The extent of the impact derives in part from the personal preferences of the visitor and the desired experience they are seeking. Some visitors will tolerate unnatural noises for short durations, while others may not. Visitors traversing the ridges will experience more noise impacts than those within the creek bottoms due to the natural terrain and vegetation that help buffer noise.

Roads mentioned for Sand Creek and Beaver Park’s NFS road 139 are maintained and utilized by the public and Forest Service regularly. These routes serve as the boundaries for these roadless areas and their management is consistent with Forest Plan management area direction and ROS settings.

**Alternative B - Modified Proposed Action**

This alternative would designate a total of 4,129 miles of motorized opportunities on roads and trails yearlong and 1,175 miles seasonally for all types of vehicles. Motorcycle trails would account for 76 miles, while trails 50 inches wide or less in Wyoming would account for 95 miles and trails 65 inches wide or less in South Dakota would account for 319 miles. Trails open to all vehicles, which includes rock crawling opportunities would total 173 miles. Most seasonal designation of trails and roads would overlap with snowmobile trails or big game habitat areas. Dispersed camping would be restricted to within 100 feet of designated roads, while game retrieval would be restricted to 300 feet off of designated routes for retrieval of elk.

**Motorized opportunities.** The proposed routes for motorized designation consist mostly of a variety of roads. Those using passenger type vehicles would not experience any change in access to developed sites or recreational trailheads. Users desiring off-road opportunities would experience changes with the closure of cross-country travel and the limitation to designated routes. Motorized users who desire challenging experiences with cross-country travel may find a road-based system dull and not challenging enough.

Routes designated in South Dakota as trails open to all vehicles tend to be more rugged and rocky requiring higher clearance vehicles to traverse the ground. Some of these trails also include routes specifically suited for rock-crawling-type vehicles. These route miles may provide a more challenging ride for people than a typical road-based system.

To provide a trail experience, some routes would be restricted to vehicles 65 inches wide or less for South Dakota and 50 inches wide or less for Wyoming to reduce conflicts with larger vehicles. These routes have grass or native surfaces rather than gravel and can provide for a narrower trail experience that some visitors prefer if managers choose to limit maintenance along the road to the specified widths. Over time, these routes would narrow as vegetation naturally encroaches on the road. However, if these routes are needed for future management activities such as logging, the trail experience would be lost at least temporarily as the roads are reconstructed to a wider width to accommodate logging vehicles. In Wyoming, these trails would require an OHV sticker and would be open to drivers of any age to operate vehicles 50-
inches-wide or less, while in South Dakota these trails would be available for both highway-legal and non-highway-legal vehicles with widths of 65 inches or less.

The larger trail width limits in South Dakota would provide additional opportunities for people with side-by-side vehicles, commonly referred to as UTVs (utility-terrain vehicles). A large number of UTVs currently manufactured vary in width up to 65 inches or more; many are in the range of 60 to 62 inches in width (see process paper in the administrative record.) Families, friends, and clubs riding a combination of recreational vehicles up to 65 inches in width could all travel together for a trail ride in South Dakota. However, in Wyoming, State law limits the size of vehicles capable of travelling on them to 50 inches in width or less. UTVs are generally wider than 50 inches and would be restricted from travelling the trails in Wyoming.

Although there would be more opportunities for motorized recreation for vehicles 65 inches wide or less in South Dakota and 50 inches wide or less for Wyoming as a result of restricting motorized access on some NFS roads under this alternative, conflicts between motorized users would continue to occur on all designated routes. Also, conflicts between management activities and motorized users could occur on routes designated as trails if administrative use of these routes allows access by full size vehicles. Safety concerns for head-on collisions, particularly along blind corners, could occur on any road designated for motorized use between full-size vehicles and vehicles 50 to 65 inches wide or less. Conflicts between motorcycles could occur with collisions along the narrow trail if speeds are too fast or visual impairments from the vegetation exists. Please refer to the Engineering section in this document for further discussion of safety of motorized mixed uses on roads.

Single-track (motorcycle) trails have been proposed in South Dakota. These trails offer a narrow riding experience that motorcyclists prefer. The trails are not designed for looping opportunities; however, riders could travel back to their starting points by accessing other roads or trails open to all users or vehicles 65 inches or less. Traveling these other routes could reduce their desired narrow experience, but would allow a change in scenery. To continue with the narrow experience, single-track users may just turn around and return on the same path.

Due to the purpose for which many roads were constructed or established, it is likely that some of the motorcycle trails have sufficient width to accommodate ATVs. Over time, ATVs create two tracks, which could make it difficult for single-track vehicles (motorcycles) to negotiate the trail. Since the designated system consists mostly of roads that were designed for management activities, the recreating public may be impacted by logging traffic, road equipment, fire equipment, etc., as the Forest continues to manage the resources of the land. It is expected that some routes may be closed temporarily to reduce user conflicts and safety hazards until management activities are completed. These temporary closures would displace motorized use to other locations, which could increase resource impacts and possible damage.

Under this alternative, more opportunities would exist for non-highway-legal vehicles to travel the designated system. Any route identified open to all motorized use would be open to non-highway-legal vehicles for South Dakota; Wyoming would still require non-highway-legal vehicles to display an OHV sticker. State law would still require operators to carry a driver’s license when operating on public roads. Designated trails would offer the only opportunities for unlicensed drivers to travel. Families with unlicensed drivers would likely enjoy the motorized opportunities designed in this alternative. This alternative offers 1,000 miles of trails between both States open to a variety of motorized use either yearlong or seasonally.
For private, State, and other Federal ownership lands, this alternative would have 490 miles of NFS roads, 30 miles of trails, and 523 miles of other jurisdiction roads (such as county or Federal highways) located within 300 feet of private property open to motorized use either seasonally or yearlong. Access to these properties would be maintained for highway-legal vehicles, but non-highway-legal vehicles may be restricted. Landowners and other users with non-highway-legal vehicles or unlicensed drivers would be required to trailer to designated trailheads to access trails.

**Trailheads.** Thirty-one trailheads have been identified for this alternative to provide parking opportunities for recreation activities. Of these, 10 are within 3 miles of communities that offer amenities such as hotels, gas stations, and restaurants. Additional trailheads may also be located within 3 miles of amenities along major highways that are outside communities.

**Recreation opportunity spectrum.** As compared with Alternative A, Alternative B would open additional roads to motorized opportunities inside areas with ROS settings for nonmotorized activities (see Table 13). For semi-primitive nonmotorized areas, three areas – Dugout, Cook Lake, and Sundance Burn – would have roads opened to motorized use. On the other hand, Beaver/Bear Gulch and Norbeck Wildlife Preserve would see roads closed to motorized use. All other semi-primitive nonmotorized areas remain unchanged from Alternative A. Both Cook Lake and Dugout would offer opportunities to connect motorized trails 50 inches wide for looping opportunities, while Sundance Burn would identify a trail to an overlook. Overall, this alternative would open 2 miles of new routes to motorized use within semi-primitive nonmotorized areas.

Of the roaded natural nonmotorized areas, Bogus Jim, Smith Draw, Eagle Cliff, Forbes Gulch, and Wood Canyon would see new roads opened to motorized use. Forbes Gulch would have approximately 4 miles of motorized trail designated open to all vehicles by special permit only for motorized events. Smith Draw, Wood Canyon, and Bogus Jim would see an increase in motorized use through designation of trails open to vehicles 50 inches wide or less (in Wyoming) or 65 inches or less (in South Dakota), or motorcycles, while Black Fox, Lower Rapid Creek, Battle Creek, Swede Gulch, Pactola Spillway, Buckhorn/Bear Gulch, and Management Area 5.43, Big Game and Resource Production, would see reductions in motorized access to currently open roads. Overall, this alternative would open 2 miles of new routes to motorized use within roaded natural nonmotorized areas.

<table>
<thead>
<tr>
<th>Table 13. Alternative B roads or trails open and closed to motorized use within semi-primitive nonmotorized or roaded natural nonmotorized area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads or trails open to motorized activities</td>
</tr>
<tr>
<td>Roads or trails closed to motorized activities</td>
</tr>
<tr>
<td>Roads or trails open to motorized activities</td>
</tr>
<tr>
<td>Total route miles</td>
</tr>
</tbody>
</table>

* Alternative A mileages shown in parentheses

This alternative would not meet Forest Plan guideline 5101 for ROS designations in that more motorized opportunities would be offered within, and would continue to impact areas with semi-primitive nonmotorized, and roaded natural nonmotorized designations. The Forest Plan ROS standard for the five areas assigned as Management Area 2.2, Research Natural Areas, has been achieved. The two areas identified as primitive ROS setting, Black Elk Wilderness and Inyan...
Kara Inventoried Roadless Area would also be consistent with the Forest Plan ROS guideline by restriction of motorized access within their boundaries.

**Cross-country travel.** This alternative would eliminate recreational experiences associated with cross-country driving. Recreation conflicts associated with cross-country travel would also be eliminated. Over time, unauthorized trails within open cross-country areas would revegetate. Motorized users desiring the experience of cross-country travel would need to find other areas to recreate on neighboring lands such as the Railroad Buttes motorized use area.

Most National Forest System lands would still be accessible to some degree by motorized vehicles under this alternative as the road and trail network is generally dense enough that people would not have to walk more than a mile to reach a road or trail. Some people may view the restriction on motorized cross-country use as a loss of recreation opportunity. Restricting motorized cross-country travelers to roads and trails would have little to no effect on motorized visitors who only use roads and trails now.

**Dispersed camping.** Dispersed camping would be restricted to 100 feet off of designated roads, although not all areas along designated roads are suitable for dispersed camping due to topography and vegetation. This could result in campsites being very close to motorized roads. Dust and noise from adjacent roads could impact campsites. No motorized dispersed camping would be allowed from any designated motorized trail. Therefore, dispersed campers desiring more distance off a road would be displaced. For Alternative B, the current management direction that restricts motorized dispersed camping would be the same as Alternative A.

**Game retrieval.** Off-road motorized game retrieval opportunities under this alternative would be restricted to 300 feet for retrieval of harvested elk only off of designated routes. Limiting motorized hunters to this specific distance for elk retrieval only would reduce the conflicts between motorized and nonmotorized hunters, but could create more illegal road hunting problems for game enforcement officers. Under Alternative B, motorized hunters would not be allowed to travel cross-country to scout for game or access favorite hunting areas.

**Roadless.** Please refer to Alternative A for discussion and description of the roadless areas. There are no motorized routes proposed in the Inyan Kara roadless area.

Besides NFS road 139 proposed to be open seasonally for all vehicles, a 4-mile currently unauthorized route on the south side of Beaver Park within Forbes Gulch is proposed for motorized events under a special use permit for three or four weekends of the year. Forbes Gulch lies within Management Area 4.1 and is about 2 miles from the Centennial Trail.

No new motorized use is proposed in the Sand Creek Roadless Area, including the Cranberry Springs route. All other roads bordering Sand Creek as described in Alternative A would continue to be open to all vehicles.

As with Alternative A, one impact to roadless areas from motorized use is noise, which affects the solitude and primitive nature that characterizes roadless areas. Proposed use of the Forbes Gulch route under a special use permit would likely create more noise impacts during the event. Since this is a bottomland route, the noise would be louder on the adjacent ridges. Visitors traversing the area 2 miles away on the Centennial Trail, also located in a bottomland area in Bulldog Gulch, may hear distant rumbling of vehicular traffic due to the terrain and vegetation that can act as a natural barrier to noise. Any ridges within any of the roadless areas would
experience the greatest impacts from vehicular noise from roads adjacent to the roadless areas or several miles away, such as interstate highway traffic, ranches, and subdivisions.

The recreational emphasis for MA 4.1 is nonmotorized recreation (goal 4.1-401). The proposed Forbes Gulch route would not meet a Forest Plan guideline for roaded natural nonmotorized ROS setting (guideline 5101) or guidelines identified for transportation and travel. Guideline 4.1-9102 does allow limited motorized travel on designated routes, to conduct vegetation management and states “generally the road system will be closed to motorized travel”.

Table 14. Analysis indicators for Alternative B

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles (motorized mixed use)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>2,226 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>588 miles</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>1,240 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>249 miles</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles, including rock crawlers</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>173 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>65 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width (WY only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>95 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>95 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width – (SD only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>319 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>177 miles</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>76 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>1 miles</td>
</tr>
<tr>
<td>Beginner practice areas less than 5 acres</td>
<td>0 areas</td>
</tr>
<tr>
<td>Acres open to motorized cross-country travel</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval – 300 feet</td>
<td>179,000 acres</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping – 100 feet</td>
<td>63,500 acres</td>
</tr>
<tr>
<td>Number of trailheads</td>
<td>31 trailheads</td>
</tr>
<tr>
<td>Miles of roads converted to trail</td>
<td>207 miles</td>
</tr>
<tr>
<td>Miles of designated motorized routes within 300 feet of lands of other ownership</td>
<td>490 miles</td>
</tr>
<tr>
<td>Number of trailheads within 3 miles of a gateway community</td>
<td>10 trailheads</td>
</tr>
</tbody>
</table>

Alternative C

This alternative would designate 4,353 miles of motorized opportunities on roads and trails yearlong and 1,362 miles seasonally for all types of vehicles. Motorcycle trails would account for 134 miles, while trails 50 inches wide or less would total 80 miles in Wyoming and trails 65 inches and less for South Dakota would total 380 miles. Trails open to all vehicles, which includes rock-crawling opportunities would total 176 miles. Most seasonal designation of trails and roads would overlap with snowmobile trails or big game habitat areas. In addition to the designation of roads and trails, three small areas, less than 5 acres each, would be set up as beginner practice areas. Dispersed camping would be restricted to within 300 feet of designated roads, while game retrieval would be allowed in a designated area of about 385,500 acres open for cross-country retrieval of harvested elk or deer.
**Motorized opportunities.** For South Dakota, this alternative would designate more routes and trails to provide increased motorized travel opportunities for families or motorized clubs that have a combination of recreational vehicles. However, all motorized users would be competing for access along routes, thus possibly increasing conflicts between motorized user groups. Some routes may not be wide enough to accommodate passage of two vehicles and additional safety concerns could result. As with Alternative B, Wyoming trail opportunities would be available for vehicles 50 inches or less. Please refer to the Engineering section of this document for further information on safety implications of the alternatives. Passenger type vehicles would not experience any change in access to developed sites or recreational trailheads.

Routes designated in South Dakota as trails open to all vehicles tend to be more rugged and rocky requiring higher clearance vehicles to traverse the ground. Some of these trails also include routes specifically suited for rock-crawling type vehicles. These route miles may provide a more challenging ride for people than a typical road-based system.

The increase in single-track (motorcycle) trails over Alternative B would provide additional trails for motorcyclists to travel. As with Alternative B, there would be a limited amount of looping opportunities for these trails requiring the rider to access other roads or trails or turn around and travel the same path. Similar experiences and conflicts would result for single-track trails as with Alternative B.

As with Alternative B, the designated system of Alternative C would consist mostly of roads that were originally designed for management activities. As the Forest continues to manage the resources of the land, the recreating public could be impacted by logging traffic, road equipment, fire equipment, etc. It is expected that some routes would be closed temporarily for public safety until management activities are completed. These temporary closures would displace motorized users to other locations, which could increase resource impacts and possible resource damage.

Under this alternative, opportunities for motorized travel would increase for highway-legal and non-highway-legal vehicles. In South Dakota, any route identified as open to all motorized use would be open to non-highway-legal vehicles. Wyoming would still require non-highway-legal vehicles to display an OHV sticker. State law would still apply for both states, in that vehicle operators would be required to carry a driver’s license when operating on public roads. Designated trails would offer the only opportunities for unlicensed drivers to travel. Families with unlicensed drivers would find this alternative more accommodating with the addition of more trails to explore with their children. This alternative would offer 771 miles of trails open to a variety of motorized use either yearlong or seasonally. While more trails would be available in South Dakota, less would be available in Wyoming with limited looping opportunities as compared with Alternative B. Families would need to plan their trips more under this alternative to avoid running into public roads that unlicensed children could not legally travel.

For private, State, and other Federal ownership lands, this alternative would have 500 miles of NFS roads, 32 miles of trails, and 523 miles of other jurisdiction roads (such as county or Federal highways) located within 300 feet of private property open to motorized use either seasonally or yearlong. Access to these properties would be maintained for highway-legal vehicles, but non-highway-legal vehicles may be restricted. Landowners with non-highway-legal vehicles or unlicensed children may be required to trailer to designated trailhead to access trails.

**Trailheads.** Thirty-four trailheads would be identified in this alternative to provide parking opportunities. Of these 34 trailheads, 11 would be within 3 miles of communities that offer
amenities such as hotels, gas stations, and restaurants. Additional trailheads may also be located within 3 miles of amenities along major highways that are outside communities.

**Recreation Opportunity Spectrum.** Alternative C would have more impacts to the nonmotorized ROS classes than Alternative B due to additional routes proposed for motorized access (Table 15). Some nonmotorized areas would see motorized use restricted on some routes while others would have increased motorized opportunities. The greatest new motorized access would occur in the Smith Draw, Lower Rapid Creek, and Pactola Spillway roaded natural nonmotorized areas; and the Sundance Burn semi-primitive nonmotorized area. Alternative C would open 2 miles of new routes to motorized use in areas designated as semi-primitive nonmotorized ROS; and 22 miles of new routes in areas designated as roaded natural nonmotorized.

<table>
<thead>
<tr>
<th>Table 15. Alternative C roads or trails open or closed to motorized use within semi-primitive nonmotorized or roaded natural nonmotorized areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles in SPNM</td>
</tr>
<tr>
<td>Roads or trails open to motorized activities</td>
</tr>
<tr>
<td>Roads or trails closed to motorized activities</td>
</tr>
<tr>
<td>Total route miles</td>
</tr>
</tbody>
</table>

* Alternative A mileages shown in parentheses

This alternative would not meet Forest Plan guideline 5101 for ROS designations because more motorized opportunities would be offered within, and would continue to impact areas with semi-primitive nonmotorized and roaded natural nonmotorized designations. The Forest Plan ROS standard for all five areas assigned as Management Area 2.2, Research Natural Areas, would be achieved. Two areas identified as primitive ROS setting, Black Elk Wilderness and Inyan Kara Inventoried Roadless Area would also meet the Forest Plan ROS guideline by restricting motorized access within their boundaries.

**Cross-country travel.** As with Alternative B, this alternative would close the Forest to cross-country travel. Users desiring off-road opportunities would be limited to designated routes. Those who desire challenging experiences typical of cross-country travel may find a road-based system dull and not challenging enough. The areas suitable for rock crawling could become over-run as users look to these areas to fulfill the challenging rides they once experienced through cross-country travel. The increased use of these areas may result in higher maintenance and eventually lead to closure if resource damage becomes too great.

To accommodate beginning motorized users, three areas would be provided as beginner practice areas. These areas would be small in scale, less than 3 acres, but would provide sufficient room to practice operating an off-highway vehicle in a controlled setting. Designating these three areas could create problems for managers if this activity is highly desired by the public, and users could soon overwhelm the small areas, resulting in conflicts between users and potential safety concerns. As use increased in these areas and track patterns become set, racetracks could ultimately develop.

**Dispersed camping.** Under this alternative, motorized dispersed camping would be restricted to 300 feet off of designated routes. Not all areas along designated routes may be suitable for dispersed camping due to topography and vegetation. The increased distance allowed off of
designated routes, as compared with Alternative B, would allow additional space for users to pull off the motorized road, and could reduce the incidence of dust and noise related to camping on the edge of a road. Most existing dispersed campsites in the Forest are within 300 feet of a designated motorized road. Those campsites that are further away would be closed for use and rehabilitated.

**Game retrieval.** During the initial scoping period for this project, South Dakota Game, Fish and Parks Department offered an alternative to the proposed action of designating a distance of up to one mile either side of any motorized road or trail for big game retrieval. The Forest Service reviewed this proposal, and determined it would result in little or no change from the current condition of the Forest, thus the proposal was eliminated from further consideration.

### Table 16. Analysis indicators for Alternative C

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles (motorized mixed use)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>2,878 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>922 miles</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>704 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>70 miles</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles, including rock crawlers</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>118 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>48 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width (WY only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>80 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>73 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width (SD only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>380 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>196 miles</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>134 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>25 miles</td>
</tr>
<tr>
<td>Beginner practice areas less than 5 acres</td>
<td>3 areas</td>
</tr>
<tr>
<td>Acres open to motorized cross-country travel</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval – designated area</td>
<td>385,500 acres</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping – 300 feet</td>
<td>184,000 acres</td>
</tr>
<tr>
<td>Number of trailheads</td>
<td>34 trailheads</td>
</tr>
<tr>
<td>Miles of roads converted to trail</td>
<td>205 miles</td>
</tr>
<tr>
<td>Miles of designated motorized routes within 300 feet of lands of other ownership</td>
<td>500 miles</td>
</tr>
<tr>
<td>Number of trailheads within 3 miles of a gateway community</td>
<td>11 trailheads</td>
</tr>
</tbody>
</table>

However, the Forest Service developed Alternative C, which would designate an area for off-road motorized game retrieval on approximately 385,500 acres (32 percent) of the Forest. This area is considerably smaller than currently allowed, but would allow unrestricted off-road game retrieval opportunities for the motorized hunter during elk and deer season (September to December) for South Dakota and Wyoming. The designated area proposed in this alternative has traditionally been open year-round to cross-country travel and would not likely create any new effects to the nonmotorized hunter. There is no data available to determine how many Black Hills hunters retrieve game by motorized means. It is possible that this smaller motorized game
retrieval area could be heavily impacted, creating the potential for an increase in resource damage. However, it is likely that the designated area would continue to see management complications in areas where roads are closed to motorized use, but the land area is open to off-road motorized game retrieval since this is the case with the current management (see Alternative A discussion under cross-country travel). Only hunters would be allowed to travel off-road for retrieval of harvested elk or deer. No recreational off-road travel would be allowed in this alternative.

Outside of the designated off-road motorized game retrieval area, the density of motorized routes proposed would be relatively high allowing good access to the Forest. This alternative would require that animals harvested be dragged to a designated motorized route from as little as a half-mile to two miles distant, depending on the hunt area.

Roadless. Please refer to Alternative A for discussion and description of the roadless areas. Proposed motorized routes are the same for this alternative as with Alternative B and the effects to the roadless characteristic, ROS settings and management area direction are also the same.

Alternative D
This alternative would designate a total of 3,197 miles of motorized opportunities on roads and trails yearlong and 767 miles seasonally for all types of vehicles. Motorcycle trails would account for 21 miles, while trails 50 inches or less in Wyoming would account for 31 miles and trails 65 inches or less in South Dakota would equal 150 miles. Trails open to all vehicles, which includes rock crawling opportunities totals 118 miles. Most seasonal designation of trails and roads would overlap with snowmobile trails or big game habitat areas. No motorized dispersed camping or game retrieval would be allowed under this alternative. Vehicles that are not highway legal would be restricted in South Dakota to designated routes; in Wyoming, operators of these vehicles would be required to purchase a State OHV sticker to ride designated roads and trails.

Motorized opportunities. Reduction of motorized access would concentrate motorized use into smaller areas, which could create additional environmental impacts and more conflicts between motorized users. The biggest reduction of motorized access would be seen on routes designated as trails less than 50 or 65-inches wide (depending on the State) for ATVs, UTVs, motorcycles, and rock crawlers. As with the above alternatives, passenger type vehicles would continue to have access to popular recreation places such as campgrounds and picnic areas.

With the reduction of motorized trail opportunities, users would share motorized routes similar to Alternative A. Highway-legal ATVs and UTVs would be able to travel the same routes as full size vehicles, thus creating the same conflicts between motorized user groups as the other alternatives. Motorcycle users would see their trail experience opportunity reduced to 21 miles. The repeated use of these 21 miles could create additional rutting and possible resource damage. As with Alternatives B and C, the single-track trails are not a looped experience, requiring the rider to traverse the same trail back to the starting point or circle around on other routes designed for wider vehicles. Thus, motorcyclists would not have the narrow trail experience, which is more challenging.

The smaller number of trail opportunities relative to other alternatives would concentrate the recreating public into smaller areas. Impacts from vehicle traffic associated with management activity could also increase road closures to the public for safety reasons and further concentrate motorized recreation, particularly for the non-highway legal vehicles, which could increase
resource impacts and resource damage. Additional closures to motorized use would be felt more with families with younger unlicensed drivers as they try to find places for their young to ride legally. The lesser number and mileage of trails available within South Dakota and Wyoming would diminish the opportunity for these motorized families to ride together. With this alternative, the designated trails may not be looped and could dead end at roads. The experience for families would be similar to single track by requiring the families with younger unlicensed drivers to traverse the same trail back to the starting point. Repeated use of short segment trails (less than 5 miles) could result in higher levels of resource damage through continued use.

For this alternative, public safety was given additional consideration. Vehicles that are not highway legal would be restricted in South Dakota to only trail systems and a few designated roads that connect the trails. As with Alternatives B and C, any route identified open to all motorized use would be open to highway-legal and non-highway-legal vehicles for South Dakota; Wyoming would still require non-highway-legal vehicles to display an OHV sticker. State law would still apply for both states, in that vehicle operators would be required to carry a driver’s license when operating on public roads. Designated trails would offer the only opportunities for unlicensed drivers to travel. This alternative would offer 320 miles of trails and 580 miles of roads open to a variety of motorized use either yearlong or seasonally.

For South Dakota, seven motorized trail systems were designed to provide non-highway-legal vehicles a place to recreate. Some areas would provide a good day’s ride (perhaps about 40 to 60 miles of interconnecting routes) while others are small (perhaps several miles to about 20 miles of routes). These smaller areas could provide beginners opportunities to practice; however, experienced riders might soon become bored with the short distances. There are also many dead end routes and trails that would require users to traverse back to the beginning. The increase in trail width for South Dakota (trails 65 inches or less in width) would allow UTVs and ATVs to recreate together. None of the motorized trail systems are linked together with trails or routes, which would obligate non-highway-legal motorized users to use trailers between the areas.

Not all the routes designated open to non-highway-legal vehicles have designated trailheads, so users would be required to park on the roadsides in order to access the route. Continual use of these routes could create resource damage from repeated roadside parking. Competition between users (highway legal and non-highway legal) to access this limited area is expected to be high since these areas offer trail opportunities rather than roads to ride. Trails may offer a more narrow experience than many motorized riders desire.

For private, State, and other Federal ownership lands, this alternative would have 423 miles of NFS roads, 22 miles of trails, and 523 miles of other jurisdiction roads (such as county or Federal highways) located within 300 feet of private property open to motorized use either seasonally or yearlong. Under this alternative, with more routes identified as open to highway legal only, landowners would be required to license their recreational vehicles to travel from their homes or trailer their non-highway-legal vehicles to designated trailheads. Access to these properties would be maintained for highway-legal vehicles, but non-highway legal vehicles may be restricted. Landowners with non-highway legal vehicles or younger unlicensed operators may be required to trailer to a designated trailhead to access trails.

**Trailheads.** Twenty-three trailheads would be identified for this alternative to provide parking opportunities. Of these, seven would be located within 3 miles of communities that offer amenities such as hotels, gas stations, and restaurants. In addition, since non-highway-legal vehicles would be restricted to trail areas, 14 trailheads would be connected to the designated trail system, while the others are connected to highway-legal-only roads. Additional trailheads
may also be located within 3 miles of amenities along major highways that are outside communities.

**Recreation Opportunity Spectrum.** Under this alternative, alignment of motorized travel with ROS nonmotorized classes would be improved considerably over Alternative A; however, where other jurisdiction roads or Forest Service maintenance level 3, 4, or 5 coincide with nonmotorized areas the potential for motorized conflict would still exist. As compared with Alternative A, no additional routes would be open for motorized use and restrictions on motorized use are proposed for 12 miles and 30 miles in semi-primitive nonmotorized and roaded natural nonmotorized, respectively (Table 17). In addition to closing some routes inside designated ROS nonmotorized classes, some roads outside these boundaries would also be closed to motorized use, thus providing more nonmotorized experience.

### Table 17. Alternative D roads or trails open or closed to motorized use within semi-primitive nonmotorized or roaded natural nonmotorized areas

<table>
<thead>
<tr>
<th>Roads or trails open to motorized activities</th>
<th>Miles in SPNM</th>
<th>Miles in RNNM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads or trails closed to motorized activities</td>
<td>24 (36)*</td>
<td>77 (107)*</td>
</tr>
<tr>
<td>Total route miles</td>
<td>108</td>
<td>440</td>
</tr>
</tbody>
</table>

* Alternative A mileages shown in parentheses

This alternative would not meet Forest Plan guideline 5101 for ROS designations because motorized opportunities would continue to impact areas with semi-primitive nonmotorized and roaded natural nonmotorized designations. However, this alternative if implemented would make progress toward meeting this guideline by making less route miles in these areas available to motorized use. The Forest Plan ROS standard for all five areas assigned as Management Area 2.2, Research Natural Areas, would be achieved. The two areas identified as primitive ROS setting, Black Elk Wilderness and Inyan Kara Inventoried Roadless Area would also be consistent with the Forest Plan ROS guideline by restricting motorized access within their boundaries. This alternative would offer more opportunities than any other alternative for the solitude experience desired by nonmotorized users, by making fewer routes available for motorized use both within and outside of many of the nonmotorized ROS classes.

**Cross-country travel, dispersed camping, and game retrieval.** This alternative would restrict motorized use to designated routes and would offer no off-road opportunities anywhere on the Black Hills for any recreation purpose. Cross-country travel effects are similar to above alternatives. Users desiring a more rugged means of travel may find the trails open to all vehicles a little more challenging than riding the road-based system. These trails include more rugged routes for higher clearance vehicles rather than passenger cars. However, the reduction in mileage of these trails under this alternative would tend to concentrate users, creating additional motorized conflicts as motorized users try to experience their desired activity.

The prohibition of motorized dispersed camping would be greatly felt during the fall hunting season within both states. The Black Hills has hundreds of dispersed campsites along roads that are currently open to motorized vehicles during deer and elk hunting seasons. These campsites allow hunters to camp closer to their desired hunting grounds. Without this dispersed camping opportunity, hunters might utilize developed campgrounds creating overflow situations and increases in maintenance and resource damage.
Dispersed camping by recreationists during the summer would be impacted more in Wyoming than South Dakota since the latter state has a ban on open fires. Many visitors who camp during the summer in Wyoming are in large groups of 4 to 8 campers, and tend to be families. The opportunity to dispersed camp currently allows these groups to be louder than would be acceptable in developed campgrounds, and to have a larger campfire for a group setting. Under this alternative, these groups might also seek out developed campgrounds, thus creating conflicts with other campers.

The prohibition on motorized off-road game retrieval would limit access for hunters. Hunters would have to use existing motorized roads and trails to retrieve harvested game, which could create more road hunting situations for game enforcement officers. Depending on the location of the hunt, hunters might have to drag their animal from one-half mile to two miles to the nearest motorized route. Hunters incapable of this physical activity might have to find alternative means, such as outfitters and horses to get their harvested animal to a motorized route.

Table 18. Analysis indicators for Alternative D

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles (motorized mixed use)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>580 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>265 miles</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>2,297 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>361 miles</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles, including rock crawlers</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>118 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>48 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width (WY only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>31 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>31 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width (SD only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>150 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>62 miles</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>21 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Beginner practice areas less than 5 acres</td>
<td>0 areas</td>
</tr>
<tr>
<td>Acres open to motorized cross-country travel</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping</td>
<td>0 acres</td>
</tr>
<tr>
<td>Number of trailheads</td>
<td>23 trailheads</td>
</tr>
<tr>
<td>Miles of roads converted to trail</td>
<td>146 miles</td>
</tr>
<tr>
<td>Miles of designated motorized routes within 300 feet of lands of other ownership</td>
<td>423 miles</td>
</tr>
<tr>
<td>Number of trailheads within 3 miles of a gateway community</td>
<td>7 trailheads</td>
</tr>
</tbody>
</table>

Roadless. Please refer to Alternative A for discussion and description of the roadless areas. This alternative would close to motorized use NFS roads that border both the Sand Creek and Beaver Park roadless areas. Near Sand Creek, NFS roads 866, 802.1A, and 864 would be closed to public motorized use and near Beaver Park, NFS road 139 would be closed to such use. This
could provide greater opportunity for solitude within both of these roadless areas. There would be no change for Inyan Kara Roadless Area from current management.

This alternative would meet Forest Plan guidelines for ROS settings and transportation and travel resources.

**Alternative E**

This alternative proposes the same designated motorized system as Alternative A, but would eliminate all motorized opportunities for dispersed camping and game retrieval. A total of 3,776 miles of motorized routes and trails, seasonally or yearlong, would be available for all types of vehicles. Of this, only 24 miles would be designated as trails open to vehicles 50 inches or less in width in Wyoming and 12 miles of trails for vehicles 65 inches or less in South Dakota, and no trails would be designated for motorcycle or other vehicles, including rock crawlers.

**Motorized opportunities and recreation opportunity spectrum.** Under Alternative E, since the motorized routes are the same as Alternative A, effects to motorized opportunities and ROS would be the same as those under Alternative A.

<table>
<thead>
<tr>
<th>Table 19. Analysis indicators for Alternative E</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles (motorized mixed use)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>160 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>12 miles</td>
</tr>
<tr>
<td>Miles of road open to highway legal vehicles only</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>3,580 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>656 miles</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles, including rock crawlers</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less in width (WY only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>24 miles</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less in width (SD only)</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>12 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of motorcycle trail</td>
<td></td>
</tr>
<tr>
<td>Yearlong</td>
<td>0 miles</td>
</tr>
<tr>
<td>Seasonally</td>
<td>0 miles</td>
</tr>
<tr>
<td>Beginner practice areas less than 5 acres</td>
<td>0 areas</td>
</tr>
<tr>
<td>Acres open to motorized cross-country travel</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized game retrieval</td>
<td>0 acres</td>
</tr>
<tr>
<td>Acres open to motorized dispersed camping</td>
<td>0 acres</td>
</tr>
<tr>
<td>Number of trailheads</td>
<td>7 trailheads</td>
</tr>
<tr>
<td>Miles of roads converted to trail</td>
<td>0 miles</td>
</tr>
<tr>
<td>Miles of designated motorized routes within 300 feet of lands of other ownership</td>
<td>504 miles</td>
</tr>
<tr>
<td>Number of trailheads within 3 miles of a gateway community</td>
<td>0 trailheads</td>
</tr>
</tbody>
</table>

**Cross-country travel and dispersed camping, and game retrieval, and roadless.** Alternative E proposes no cross-country travel, no motorized dispersed camping, and no off-road motorized...
game retrieval. Effects to these recreation opportunities would be the same as those under Alternative D.

The discussion for roadless effects would be similar to Alternative A. No changes from current management on these areas would occur under Alternative E.

**Comparison of Recreation Opportunities by Alternative**

**Table 20. Comparison of motorized recreation opportunities among alternatives**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Trails open to all, including 4x4's, jeeps, suvs, rock crawlers</td>
<td>No special designation</td>
<td>173 miles</td>
<td>176 miles</td>
<td>118 miles</td>
<td>No special designation</td>
</tr>
<tr>
<td>Trails &lt; 65-inches (SD only)</td>
<td>12 miles; no loops</td>
<td>319 miles; loops possible</td>
<td>380 miles; loops possible</td>
<td>150 miles; loops limited</td>
<td>12 miles; no loops</td>
</tr>
<tr>
<td>Trails &lt; 50-inches (WY - OHV sticker required)</td>
<td>24 miles; loops limited</td>
<td>95 miles; loops possible</td>
<td>80 miles; loops possible</td>
<td>31 miles; loops limited</td>
<td>24 miles; loops limited</td>
</tr>
<tr>
<td>Single track trails</td>
<td>0 miles</td>
<td>76 miles; loops limited</td>
<td>134 miles; loops limited</td>
<td>21 miles; loops limited</td>
<td>0 miles</td>
</tr>
<tr>
<td>Families with younger unlicensed drivers</td>
<td>Trails = 36 miles; or cross-country travel</td>
<td>Restricted to trails = 663 miles</td>
<td>Restricted to trails = 771 miles</td>
<td>Restricted to trails = 320 miles</td>
<td>Restricted to trails = 36 miles</td>
</tr>
<tr>
<td>Recreational cross-country travel</td>
<td>864,000 acres; including opportunities on unauthorized routes</td>
<td>0 acres; no unauthorized routes</td>
<td>10 acres; three small areas designated as beginner practice areas; no unauthorized routes</td>
<td>0 acres; no unauthorized routes</td>
<td>0 acres; no unauthorized routes</td>
</tr>
<tr>
<td>Game retrieval</td>
<td>864,000 acres; including opportunities on unauthorized routes</td>
<td>179,000 acres; restricted to 300 feet from designated routes</td>
<td>385,500 acres; restricted to designated area</td>
<td>0 acres</td>
<td>0 acres</td>
</tr>
<tr>
<td>Motorized dispersed camping</td>
<td>864,000 acres</td>
<td>63,500 acres; restricted to 100 feet from designated route</td>
<td>184,000 acres; restricted to 300 feet from designated route</td>
<td>0 acres</td>
<td>0 acres</td>
</tr>
</tbody>
</table>
Cumulative Effects

The cumulative effects area for the recreation resource includes other public lands, including those managed by the Bureau of Land Management, the States of South Dakota and Wyoming, National Park Service, Buffalo Gap National Grasslands, and Thunder Basin National Grasslands, and private properties within a 2-hour drive of the Forest.

As the Travel Management Rule is implemented on National Forest System lands, a reduction in cross-country motorized travel and motorized use of unauthorized routes would occur on these lands. New motor vehicle restrictions imposed on Thunder Basin and Buffalo Gap National Grasslands would also displace motorized users that desire this type of riding experience, adding to the effects that would occur under Alternatives B, C, D, and E. Areas that might be designated on these lands under future travel management decisions could become overrun with motorized users, increasing resource impacts and management concerns. Other Federal properties could also see an increase in motorized use if cross-country travel is made available. Users who till now have had the freedom to choose their own routes to ride could find it difficult to adapt to the new designated system. Some public lands could provide a small mileage of motorized trails or roads, causing motorized users to relocate to find more opportunities.

Under all alternatives, designated routes that dead-end may be points for creation of illegal trails, which would pose additional burdens on law enforcement and cause resource damage. These illegal trails could increase the need for additional restrictions or closures for motorized use, and thus reduce motorized opportunities even more over time. However, it is also likely that as any designated motorized system is implemented over the next several years, new routes could be added to connect these dead-end routes and improve looping opportunities for users, as well as to connect more trails to communities or destinations. Additional environmental analysis through vegetation management activities could provide more opportunities for motorized access and for improvements to the designated system.

Under Alternatives D and E, the prohibition on cross-country game retrieval could cause motorized users to choose to hunt on private property rather than Federal lands. This could result in an increased number of game animals on Federal lands, and create other management problems, such as more competition for forage.

In the future, demand for motorized opportunities is likely to continue to increase as OHV sales and the population increase in the Black Hills. More trail demands would occur as more families with young children utilize motorized travel as a form of recreation. Despite the fact that increases in fuel prices are not likely to reduce OHV recreation activities, more locals (those users living within a 2 to 3 hour drive) would utilize the Black Hills for their recreation preference. In addition, business opportunities could develop on private properties, within the cumulative effects analysis area, to provide cross-country areas for motorized users seeking opportunities to hill climb or mud-bog.
Engineering and Transportation

Introduction

Beginning in the 1880s, railroads and stagecoach lines were built to accommodate the thousands of people who were coming to the Black Hills in response to the discovery of gold. An extensive rail system was developed to haul mining timbers from the Forest to the mines. Large tracts of forest were cut in order to provide timber to the growing mining industry and to provide housing for the people living in the Black Hills. In 1897, the Black Hills Forest Reserve was established, and in 1898, the first Federal timber sale was sold to Homestake Mining Company. By the 1920s, a major highway system was developed and a Forest road system was initiated. Tourism also justified the construction of a transportation system that was adequate for automobiles, which during the 1930s was augmented by the Civilian Conservation Corps (CCC). Subsequent years have seen further augmentation providing a well-spaced, efficient system of roads of all maintenance levels for many different users.

Within the 1.5 million acres encompassed by the Forest boundary lie some 300,000 acres of other ownerships, most of which are in private ownership. The wide distribution of these parcels has a strong influence today on road system characteristics. Private and local jurisdictions continue to request additional access roads as development proceeds.

The transportation system currently in place within the Forest is a result of early settlement patterns and the historic uses described above, as well as the public’s expectation that the Forest is available for their use through an extensive road system. The area has since been extensively managed for timber production, livestock grazing, mining activities, big game hunting, wildlife, insect and disease risk, fuels; and for recreational activities along roads and trails that include hiking, horseback riding, mountain bike riding, off-road vehicle use and snowmobile riding.

Use of ATVs, OHVs, SUVs and other four-wheel-drive vehicles boomed nationwide in the late 1980s and early 1990s and has continued to grow. The physical characteristics of these vehicles have changed as well towards larger, more powerful machines. The increased flexibility of these new machines and increased marketing emphasis from industry has resulted in an increased popularity for recreational riding and access, and for utilitarian purposes such as livestock management. As use of these machines has increased, there has been a corresponding increase in conflicts with other motorized and nonmotorized users, and an increase in resource impacts.

Concerns nationally over the high level of conflicts and resource impacts led to the creation of the Forest Service 2005 Travel Management Rule requiring the Forest Service to address these issues in a standard fashion nationwide. This analysis and subsequent decision will result in a Travel Management Plan for the Black Hills. The Travel Management Plan by regulation will concentrate on motorized travel opportunities while considering nonmotorized activities and will close all nondesignated, cross-country motorized travel. The engineering and transportation aspects analyzed here are centered on the criteria identified in 36 CFR 212.5.

There are currently 9,985 miles of inventoried roads and routes that are within or cross the Forest boundary. These routes fall under three categories as listed in Table 21 and include other public roads, engineered/constructed roads, reclaimed timber skid trails, temp roads that were never intended for long term use, and user created routes.
Table 21. Miles of inventoried routes by category for the Black Hills National Forest

<table>
<thead>
<tr>
<th>Category</th>
<th>Miles of routes</th>
<th>Density (miles/square mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Forest System roads</td>
<td>5,056</td>
<td>2.11</td>
</tr>
<tr>
<td>County, State and Federal roads (other public roads)</td>
<td>820</td>
<td>0.34</td>
</tr>
<tr>
<td>Nonsystem – unauthorized roads / routes</td>
<td>4,109</td>
<td>1.72</td>
</tr>
<tr>
<td>Total</td>
<td>9,985</td>
<td>4.18</td>
</tr>
</tbody>
</table>

Note: These figures were taken from the Forest Service Infrastructure GIS database. The analysis area encompasses 2,391 square miles within the Forest Boundary.

Forest System Road Density

The average density of all Forest System and other public roads within the Forest boundary was calculated to be 2.45 miles/square mile. For comparison, the density of unauthorized routes was 1.72 miles/square mile.

National Forest System roads within the Black Hills National Forest generally display an even distribution with pockets of higher density around cities and major points of interest. Road densities for the NFS roads network have been calculated at several scales. Results at the levels of the management area, ranger district, Forest, and range allotments and maps showing road density polygons by system type are shown in the Appendix of the 2007 Black Hills Travel Analysis Report (USDA Forest Service 2007a).

Regional Connectivity

The Forest is highly connected to the wider region by 12 Forest highways designated under the Public Lands Highways Program of the Transportation Equity Act for the 21st Century (TEA21). These roads are owned by the State, County, or Forest Service, and qualify for Federal funding for improvement or enhancement. Interstate 90 skirts the periphery of the Forest crossing South Dakota from west to east and passes along the east central and northeastern edges of the Black Hills. I-90 serves as a major access corridor to the Forest.

National Forest System Roads

The roads that are maintained and used for Forest management and other uses are referred to as National Forest System roads. These roads are maintained to various standards depending on their function, level of use, and management. Of the approximately 9,985 miles of inventoried motorized routes on the Forest, there are 5,056 miles of NFS roads. Roads across the Forest fall within multiple jurisdictions as described in the following paragraphs.

The 5,056 miles of NFS roads are under the jurisdiction of the Forest Service and are identified with a NFS road number. The Forest Service has direct maintenance and repair responsibilities for NFS roads. Roads across Forest land but under other jurisdictions such as private or other agency such as county are numbered, maintained and repaired by that specific jurisdiction. Several of the longer, cross-forest roads have sections that are Forest Service jurisdiction and sections that are county jurisdiction. The county sections primarily serve portions of the Forest with high private land density and or high public traffic volumes. Some high-speed arterial roads, such as Deerfield Road and Sheridan Lake Road (both paved), are entirely under the jurisdiction of the counties. County and Forest Service representatives meet periodically to discuss issues related to county and Forest Service-jurisdiction roads that are of joint interest particularly if a major change such as realignment or a surfacing change is planned for a road.
Road jurisdictions are periodically transferred as situations change. Roads across Forest land but under State jurisdiction are maintained and repaired by the State and have State road numbers. Similar meetings are held with State representatives on issues of joint interest.

Roads within the National Forest System network are categorized into three functional classes: arterial, collector, and local roads. Arterial roads are the primary roads of the Forest, providing connections between human populations, major recreation sites, highways, and collector routes. Collector roads are those that collect and distribute traffic to multiple access points or local roads. Local roads provide access to smaller and specific sites and form a network within the Forest to provide administrative, commercial, and recreation access. The local roads can also be single-purpose roads (e.g., used for timber, recreation or mineral extraction access) that are designed for intermittent use and are generally closed to vehicular traffic when not in use.

**Maintenance Levels**

Forest Service policy establishes five maintenance levels, which define the level of service provided by and maintenance required for a specific road.

ML 1 roads have been closed to vehicular traffic for periods of over 1 year. Resource protection measures have been performed if necessary, usually resulting in a grassed-over roadbed (i.e., these roads are ‘put in storage’ until the time they are needed again for resource management).

ML 2 roads are primarily one lane, native surface roads for high-clearance vehicles. They are usually very low speed with minimal traffic volumes. They are used for activities such as hiking, biking, OHV riding, forest management, and resource extraction.

ML 3, 4, and 5 roads are typically crowned, bordered with vegetated ditches, and have cross drains that are generally appropriately spaced for erosion control purposes. ML 3 roads are typically single-lane with aggregate surfacing. ML 4 roads provide a moderate level of user comfort, can be single- or double-lane, and have mostly aggregate (gravel) surfacing. ML 5 roads provide the highest standard of maintenance, are generally two lanes, and paved.

**Table 22. Miles of existing road by maintenance level for Forest Service-jurisdiction roads within the Black Hills National Forest**

<table>
<thead>
<tr>
<th>Maintenance level</th>
<th>Miles</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,316</td>
<td>26.0</td>
</tr>
<tr>
<td>2</td>
<td>3,083</td>
<td>61.0</td>
</tr>
<tr>
<td>3</td>
<td>510</td>
<td>10.1</td>
</tr>
<tr>
<td>4</td>
<td>143</td>
<td>2.8</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>5,056</td>
<td></td>
</tr>
</tbody>
</table>

Unauthorized Routes

The 4,109 miles of nonsystem motorized routes in the Forest are not maintained by the Forest Service. A large number of the nonsystem routes are also temporary roads that were constructed for vegetation or timber management, and mining and homestead access. They have a road template but they have been closed, revegetated, and not put on the system. They are referred to in the Travel Management Rule as unauthorized roads and routes because they are not part of the
Forest transportation system and are not officially recognized by the Forest Service. This statistic represents 41 percent of all inventoried roads and routes and is a number equivalent to 81 percent of all NFS roads in the Forest inventory. The nature of these roads varies, but they are primarily two-track roads that came into being by vehicles leaving NFS roads. The routes were traveled with sufficient frequency to leave an easily noticeable traveled way. Many of these routes are relatively short. Because they are unplanned, they are more likely to be poorly located on the landscape and more likely to have higher erosion potential. The positions of these routes were obtained primarily from interpretation of aerial photographs and input from users. Many of them have not been ground verified. Attempts are made to close problem routes when possible; however, funding and physical location of the routes often limit these efforts.

National Forest System Trails

The trails that are maintained and used for forest management and other uses are referred to as National Forest System trails. There are 35 hiking trails that are maintained to various standards depending on their function, level of use, and management. There are 323 miles of inventoried hiking trails on the Forest; 14 miles of these on the Centennial trail are designated for motorized use. Mountain bikes are prohibited from using trails that are located in the Black Elk Wilderness. There are 22 miles of roads on the Bearlodge Ranger District that are currently managed as motorized trails for vehicles less than or equal to 50 inches in width.

Cross-Country Travel

Cross-country travel on the Forest increased over time as off-highway vehicles, all-terrain vehicles and motorcycles became more popular as forms of recreational travel. Public utilized routes were created from timber sales or mining activities to traverse the countryside and avoid the main road systems. These routes were closed after management activities using vegetation or transportation needs for the Forest. They are referred to as unauthorized routes. As off-highway travel became more popular, these unauthorized routes were discovered and “adopted” by the public. These routes may not be associated with any road template, but formed as a motorized vehicle continuously traversed the ground creating tire ruts or “two tracks”.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

Travel Management Rule – 2005

The Travel Management Rule (the Rule -- Federal Register, Vol. 70 No. 216, see Appendix A) amended regulations at 36 CFR 212, 251 and 261, and removed obsolete direction at 36 CFR 295. This rule specifically requires the designation of any roads, trails, and areas that are to be open to motor vehicle use on a National Forest. The rule also directs that designations be made by class of vehicle and by season of use, where appropriate and necessary. Motor vehicle use would be prohibited on routes and areas not designated open to use.

The decision resulting from this EIS will be used to generate a motor vehicle use map that provides the designation information. The modes of travel categories that can be designated are listed below. The designation “Roads Open to All Vehicles” includes smaller off-highway vehicles that may or may not be licensed for highway use, or highway-legal (motorized mixed use).
Modes of travel

- Roads open to all vehicles
- Roads open to all vehicles - seasonally
- Roads open to highway legal vehicle only
- Roads open to highway legal vehicles only – seasonally
- Trails open to all vehicles
- Trails open to all vehicles - seasonally
- Trails open to vehicles less than or equal to 50 inches
- Trails open to vehicles less than or equal to 50 inches - seasonally
- Trails open to motorcycles only – single track
- Special designations (such as vehicles 65 inches wide or less)

State Laws Concerning Vehicle and Operator Licensing

South Dakota and Wyoming State Laws describe the legal requirements for motorized vehicles and operators using public highways in the Black Hills. These laws currently require that motorized vehicles operating on public highways be registered and licensed by the State (or be highway-legal), and that operators have a valid state driver’s license. National Forest System roads open to the public for motorized use (MLs 2-5) in the Black Hills are considered public highways. Wyoming has an additional statute that allows unlicensed or non-highway-legal vehicles to drive on selected “enrolled” roads if they display a Wyoming OHV sticker. The Travel Management Rule allows the Forest to make designations under 36 CFR 212.55 concerning motor vehicles that are not in accordance with State law under appropriate circumstances. State traffic laws do not apply to National Forest System trails; therefore, non-highway-legal vehicles and unlicensed operators are allowed on designated Forest Service motorized trails. Also, State traffic laws do not apply to cross-country travel.

Applicable South Dakota laws are SDCL 32-20-2 Driver License; SDCL 32-20-12 Operation; and SDCL 32-20-13 Licensing. Wyoming Statute 311-101 resulted in establishment of the OHV program, which includes enrolled roads and a sticker program.


The Forest Service works with the Federal Highways Administration under the authority of the Highway Safety Act of 1966 (P.L. 89-564) to make travel on National Forest System roads as safe as practicable. This Federal law authorizes State and local governments and participating Federal agencies to identify and survey accident locations, design, construct, and maintain roads in accordance with safety standards; to apply sound traffic control principles and standards; and to promote pedestrian safety. Forest Service policy (FSM 7733.03) is to operate and maintain NFS roads that are managed as public roads to provide for safe passage by prudent drivers in standard passenger cars (NFS ML 3, 4 and 5 roads).

Forest Plan Direction

Listed below are some of the current Forest Plan Goals that are applicable to transportation. See Appendix F for a more complete listing of recommended amendments to the Forest Plan.
Goal 3, Discussion Section:
“The density of the Forest Development Road system where timber will be harvested will generally range between two and five miles per square mile, with the average density around 2.6 miles per square mile.”

Goal 4, Objective 416:
“Maintain and construct trails as displayed in the following table:”

<table>
<thead>
<tr>
<th>Trail Type</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonmotorized trails (1996)</td>
<td>293 miles</td>
</tr>
<tr>
<td>Motorized trails (1996)</td>
<td>14 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, or conversion</td>
<td>15 miles</td>
</tr>
<tr>
<td>from road to motorized trail</td>
<td>(per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>526 miles</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>100 miles</td>
</tr>
</tbody>
</table>

Goal 4, Objective 421:
“Provide the following road system:”

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads (By the end of the first decade)</td>
<td></td>
</tr>
<tr>
<td>Suitable for public use</td>
<td>4,700 miles</td>
</tr>
<tr>
<td>Passenger car -1,200</td>
<td></td>
</tr>
<tr>
<td>High clearance vehicles – 3,500</td>
<td></td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>500 miles</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,200 miles</td>
</tr>
</tbody>
</table>

Guideline 9205:
When maintaining all roads, use the following requirements:

a. All arterial and collector roads – maintenance levels 3, 4, 5;
b. Local roads open to low-clearance vehicles – maintenance levels 3, 4, 5;
c. Local roads open to high-clearance vehicles – maintenance level 2; and,
d. Local roads closed between resource management activities – maintenance level 1.

Methodology
The Forest Service identified public concerns with the proposed action during scoping. Those concerns were summarized as general issues. Characteristics of the travel management systems were identified to help define and evaluate the alternatives. The characteristics were summarized as indicators and were used to evaluate the effects of implementing each alternative. The following issues and their indicators apply to the engineering and transportation analysis:

Issue 3 - Effects of transportation system design on management capabilities. The alternatives considered in the EIS may have effects on the Forest’s ability to proactively designate and manage system roads and trails, while assessing public safety and optimizing recreation experiences. The alternatives considered will have different effects on how the transportation system is able to address management concerns (such as law enforcement, fire
access, private access, grazing permittee access, user education, signing, and maintenance) while reducing management costs and focusing limited resources. Addressing many of the management concerns will be dependent on available funding sources, which will most likely be limited. The transportation system design can also affect public safety depending on the miles of motorized-mixed-use roads. Any roads identified for motorized-mixed use will be reviewed in a mixed-use roads analysis that includes mitigation to make reasonable accommodations for the public’s safety. The following are the indicators used to analyze this issue.

**Indicators**
- Miles of road open to all vehicles
- Miles of road open to highway-legal vehicles only
- Miles of trail open to all vehicles
- Miles of trail open to vehicles 50 inches or less (Wyoming)
- Miles of trail open to vehicles 65 inches or less (South Dakota)
- Miles of motorcycle trail
- Number of trailheads
- Number of perennial stream crossings
- Miles of open roads to be closed
- Miles of closed roads to be reopened
- Miles of road converted to trails
- Miles of new routes to be converted from unauthorized.
- Number of dead-end spurs
- Miles of motorized-mixed-use roads open yearlong
- Miles of motorized-mixed-use roads open seasonally
- Total miles of motorized-mixed-use roads
- Miles of roads at maintenance levels 3, 4, and 5

**Issue 4 - Social and Economic Concerns.** The alternatives considered in the EIS may affect the economic sustainability of local businesses and communities. Effects may be related to sound level (noise), dust (air quality), trespass and access to private property, distance from motorized routes to private land, traffic levels, and miles of routes open to motorized use. The following are the indicators used to analyze this issue:

**Indicators**
- Miles of motorized routes within 0.5 miles of a nonmotorized trail
- Miles of National Forest System motorized routes through or within 300 feet of lands of other ownerships
- Number of motorized trailheads within 3 miles of a gateway community
- Miles of motorized routes

**Assumptions**
- Current Forest funding resources would be augmented to the extent necessary to develop and maintain a resulting transportation system by fees, grants, partnerships, and cooperative agreements.
- A sound emission limit for ATVs and motorcycles would be established and enforced at 96 DB(A) using the SAE J-1287 measurement standard.
- Law enforcement activity, voluntary compliance, and active public information efforts would result in the recreating public complying for the most part with the modes of travel designations to be established by this decision and as published on the upcoming motor vehicle use map.
- Forest roads or trails that are being actively used for timber hauling would be temporarily closed to OHV use even if they have been officially designated for use on the motor vehicle use map.
- Roads and trails would be adequately signed.

**Affected Environment**

**Safety – Mixed-Use Analysis**

In the 2005 Travel Management Rule, the Forest Service acknowledges the need or option to mix highway-legal and non-highway-legal traffic on some National Forest System roads. These designation decisions will be advised by professional engineering studies and will include design features deemed appropriate by engineering studies. Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads (USDA Forest Service 2005) outlines the procedures to be undertaken and factors to consider while analyzing the safety risks of authorizing highway-legal vehicles (licensed) and non-highway-legal vehicles (unlicensed OHV) to operate on the same road (motorized mixed use). Safety and engineering considerations are to be evaluated while conducting the motorized mixed-use studies.

In 2009, motorized mixed-use analyses (professional engineering studies) were conducted selected ML 2 – ML 4 roads by the Forest’s engineering department. These roads are the Forest’s arterials and collectors and the main access routes that the public uses to get to the Forest. Professional engineering analysis and judgment were used to evaluate the potential for a crash as well as the severity of an accident should a crash occur. The crash potential rating is based on roadway factors such as traffic volume and type, surface type and condition, sight distances, driving speeds, and roadway alignment (horizontal and vertical curves). Crash severity ratings were based on roadside conditions (natural ground slopes, slope/height of embankments, and large unyielding features next to the road), speed, and traffic types (the larger the difference in size of vehicles, the greater the severity). The final decision on designation of motorized mixed-use roads will be informed by these studies (USDA Forest Service 2009i).

**South Dakota State Law Considerations**

South Dakota State Law permits properly outfitted OHVs to be licensed as highway legal and, when operated by a licensed driver with proof of insurance, they can be driven on public roads and highways (except the interstate).

National Forest System roads that are open to (not necessarily maintained for) passenger car traffic are considered public highways, which include maintenance level 2 - 5 roads. It is the opinion of the South Dakota Attorney General’s Office that unlicensed (non-highway-legal) OHVs are prohibited from using National Forest System road maintenance level 2 - 5 roads, where passenger car travel is allowed (letter from the Assistant Attorney General of South Dakota, December 7, 2007). Allowing unlicensed (non-highway-legal) vehicles on National Forest System roads that allow for passenger car travel would therefore not be in accordance with South Dakota State law.
“Given the foregoing, it is my opinion that, absent any court opinion to the contrary, the Forest Service can designate particular Level 2 roads as either open or closed to the public for passenger car traffic. If it designates a particular Level 2 road as closed to passenger car traffic generally, then the road would not be a “public highway” for state law purposes and off-road vehicles may be used on the road consistent with SDCL 32-20-12. If it opens a road to passenger car traffic generally, off-road vehicles may not be used on the roads.” (Letter from the Assistant Attorney General of South Dakota, December 7, 2007.)

Alternatives B, C, and D contain roads that are proposed to be designated for motorized-mixed use. Such a designation would allow mixing of highway-legal and non-highway-legal vehicles on designated National Forest System roads. The Travel Management rule provides that:

“Traffic on roads is subject to State traffic laws where applicable except when in conflict with designations established under subpart B of the part or with the rules at 36 CFR part 261.” (36 CFR 212.5(a)(1)).

The departure from State law in South Dakota in this case relates only to the portion of the law defining which OHVs are highway legal, determined by how they are outfitted, registered, and licensed. All other provisions of the State law defining the legal use of public highways such as valid driver’s license, liability insurance, age requirements and helmets for those under 18 would still be in effect on National Forest System roads.

**Wyoming State Law Considerations**

Wyoming also allows utility terrain vehicles (UTVs, referred to in Wyoming State law as multi-purpose vehicles) to be outfitted, licensed, and ridden as highway-legal vehicles on roads. Unlike South Dakota, motorized mixed use of MPVs in Wyoming on public highways is allowed under a special program. The State of Wyoming has implemented an Off-road Recreational Vehicle (ORRV) Program to help manage MPVs in Wyoming. The program describes vehicle requirements, operator licensing, and road types and includes a registration sticker program to help fund the program. Roads and trails that have been designated by land managers for non-highway-legal vehicle travel are referred to as “enrolled”. The ORRV program has no specific safety evaluations necessary to enroll a road. Designating motorized-mixed use on a public highway in Wyoming that is not enrolled would not be in accordance with Wyoming State law.

As in South Dakota, roads in Wyoming designated as “open to highway-legal only” will allow highway-legal OHVs to mix with cars and trucks on public highways. Roads designated as “open to all vehicles” (motorized-mixed use) will allow non-highway-legal MPVs to mix with highway-legal MPVs and cars and trucks. The difference between highway legal and non-highway legal is how the vehicle is outfitted with lights, horns, mirrors, etc. All other requirements to operate a vehicle, such as driver’s license, liability insurance, helmets under 18, etc., remain in place. A summary of the current State law requirements for both states is in Table 23.

**Safety – Motorized-mixed-use Indicator Measures**

By the State laws in effect, South Dakota and Wyoming have determined that OHVs that are properly outfitted and ridden are safe enough to be on roads with full-sized vehicles in most cases (see Table 23). This situation is common to all alternatives. The difference between the alternatives is in the miles of roads of each maintenance level that are proposed for motorized-mixed use. The decision on this proposal will be informed by the mixed-use study described.
earlier. In general, roads with motorized-mixed use will likely have a higher safety risk than those without mixing because there may be OHVs present that do not have all of the equipment required for highway-legal vehicles. Miles of road where mixed use is proposed can be used to compare alternatives.

Table 23. Summary of State law requirements

<table>
<thead>
<tr>
<th></th>
<th>South Dakota</th>
<th>Wyoming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads ML 2, 3, 4, 5</td>
<td>Highway-legal machine</td>
<td>Highway-legal machine</td>
</tr>
<tr>
<td></td>
<td>Drivers license (16)</td>
<td>drivers license (17)</td>
</tr>
<tr>
<td></td>
<td>Insurance</td>
<td>insurance</td>
</tr>
<tr>
<td></td>
<td>Minimum age 14 (restricted)</td>
<td>Minimum age 14 (restricted)</td>
</tr>
<tr>
<td></td>
<td>Ditches – Min 12 years</td>
<td></td>
</tr>
<tr>
<td>Enrolled roads</td>
<td>NA</td>
<td>WY sticker</td>
</tr>
<tr>
<td></td>
<td></td>
<td>drivers license</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WY license plate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>drivers license</td>
</tr>
<tr>
<td></td>
<td></td>
<td>proof of insurance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>need lights at night</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t need horn or mirror</td>
</tr>
<tr>
<td>Mixed-use roads</td>
<td>Everything required by SD State law except a Highway-legal machine</td>
<td>Roads must be enrolled in the Wyoming ORV</td>
</tr>
<tr>
<td></td>
<td>(Includes a drivers license)</td>
<td>program</td>
</tr>
<tr>
<td></td>
<td>Is similar to WY enrolled roads</td>
<td></td>
</tr>
<tr>
<td>Trails</td>
<td>Non-highway-legal machine</td>
<td>Trails must be enrolled in the Wyoming ORV</td>
</tr>
<tr>
<td></td>
<td>No age limit</td>
<td>program</td>
</tr>
<tr>
<td>Enrolled trails</td>
<td>NA</td>
<td>Non-highway-legal machine allowed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No age limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WY sticker</td>
</tr>
</tbody>
</table>

**Enforcement**

The enforcement of motorized-travel restrictions is an important part of the successful implementation of the Travel Management Rule. Current law enforcement has been limited by scarce resources, an uninformed public, and a complex matrix of closure orders. Enforcement of the recent mixed-use opinion from the South Dakota State Attorney General’s Office would have immediate impacts on out-of-state riders without license plates and local individuals who do not have a driver’s license or who ride machines that are not highway legal in South Dakota. Limited enforcement success has likely contributed to increased road and area use violations, user conflicts, and resource damage.

In some respects, enforcement of the new travel management rules would likely be more efficient and effective after implementation. A motor vehicle use map would be available. Route identification signs corresponding to which roads are designated for travel should be on the ground. Off-route motorized travel in nondesignated areas would be prohibited. There are a large percentage of motorized users, including individuals, motorized and nonmotorized groups, landowners and businesses that are knowledgeable and concerned that the Forest is protected and that access to the Forest be preserved. The conscious efforts of this large group may aid significantly in informing the relatively small group that is either uninformed or unwilling to recreate in a manner that is legal and responsible.
**Signs**

The 2005 Travel Management Rule reduces reliance on signing on the ground somewhat with the requirement of the production and use of a motor vehicle use map. The motor vehicle use map describes the vehicle types that are legal on designated roads and trails, the seasons in which use is allowed, and places the burden on the user to know their own location. With the availability of the motor vehicle use map to the Forest user, the simple presence of motorized vehicles where such use is prohibited would be all that is required for a citation to be upheld; however, a current and effective system of signs could be very helpful in reducing citations.

Clearly marked roads and trails aid all users in knowing what to expect on the route ahead. Trails can be signed for user restrictions, difficulty levels, distance, connections, etc. A properly signed trail is important to the success of the trail system. Installation and maintenance costs for trail signing must be considered when designing the sign plan for a trail system. Signs would be an important mitigation tool if roads are designated as open to all vehicles to inform the public of the potential presence of non-highway legal OHVs.

It is possible that vandalism of Forest signs would decrease after implementation of the rule if Forest users recognize that destroying a sign that locates a route that is open to motorized travel will reduce the usability of the system overall. A road and trail system map would be available but the loss of signs would make it more difficult for users to determine where travel is legal. New or increased funding sources would likely be necessary to provide signs for a new trail system. Future signing efforts would likely reflect a selective process based on monitoring and evaluation of need.

**Sound Levels**

An increasingly important issue in the Black Hills and across the nation is the sound level associated with off-highway vehicles especially in otherwise quiet areas. Feedback resulting from requests for comments here in the Black Hills has indicated serious concerns from nonmotorized users and adjacent landowners about sound levels as OHV motorized recreation escalates. The effect of high sound levels on wildlife is also of concern. The Forest Service does not currently have a stationary sound limit for the Black Hills.

There is an industry standard applied to many OHVs for the sound level produced by the machines when manufactured. However, because of aftermarket changes and deterioration of mufflers with use, many of those machines exceed the original equipment manufacturer (OEM) levels. The sound level of some machines has produced a negative attitude toward some OHV recreation and has likely contributed to the loss of OHV riding areas across the country.

Land management agencies, including the Forest Service, and some states across the country have started establishing legal limits for sound emissions from OHVs including motorcycles. It has been proposed that this decision would establish a 96 DB(A) sound emission limit for OHVs on Black Hill National Forest roads and trails. This limit is common to all alternatives. Limiting the allowable sound level for OHVs to a level of 96 DB(A) would very likely help mitigate some of the user conflicts on the Forest. The Black Hills National Forest is planning to adopt a 96 dB(A) sound limit based on the Society of Automotive Engineers (SAE) J1287 Stationary Test. This limit has been selected because 96 dB(A) is the lowest limit that does not prohibit the use of OHVs meeting EPA sound limits. EPA standards will pre-empt the adoption of more stringent state standards. Most vehicles able to pass the 96 dB(A) stationary test meet or exceed the EPA test. The SAE J1287 Stationary Test is the most practical for the field and for enforcement testing. Using the OEM standard sound level would also help reduce the costs to the motorized
users if they purchase a machine that complies with the standard, maintain the mufflers and spark arrestors, and avoid replacing the original equipment with equipment at a higher sound level. Recreationists who currently use machines that exceed the limit would have to make the necessary modifications. Equipment that meets the sound limits is available for most machines in use today.

Sound limits and sound measurements are being used successfully in other forests and natural resource areas. Enforcement of the sound level limit is key to the success of those programs. A simple sound measuring instrument is available at a reasonable cost. Testing using the SAE standard J-1287 is relatively fast and straightforward; however, proper equipment and training is necessary. Testing could be performed by dealers, cooperators, volunteers, and Forest Service law enforcement officers. Testing could be conducted at dealerships, trailheads, and spot checkpoints to assist OHV users in determining if they are within the limit.

Indicator measures that allow determining the differences between alternatives relating to sound level conflicts have been developed. The first indicator measure is the distance that a designated route is away from private land. Many private landowners value quiet, natural landscapes and privacy, and close proximity would present a risk of conflict with those values. A secondary risk would be presented by the opportunity close proximity would present for unauthorized incursion onto private land. A distance of 300 feet from private land was selected as an indicator because it is the approximate distance at which the sound emitted from a motorized vehicle at a sound level of 96 DB(A) would attenuate to approximately 50 DB(A) which is the sound level of an average office. This ending sound level assumes normal attenuation based on distance only; however, it is probable that there would be additional attenuation in most situations based on interference from topography and vegetation. The expected resulting sound level would not equate to a forest setting on a quiet night; however, it would not be expected to be much higher than ambient noise during the day with normal human activity and the wind blowing.

The second indicator measure is the distance that a designated route is away from nonmotorized trails. Many nonmotorized users of the Forest value quiet, wildlife viewing, and natural landscapes, and close proximity with motorized users and high sound levels would present a risk of conflict with those values. Again, a secondary risk would be presented by the opportunity close proximity would present for unauthorized incursion onto nonmotorized trails. A distance of 0.5 mile from nonmotorized trails was selected as an indicator because it is the approximate distance at which the sound emitted from a motorized vehicle at a sound level of 96 DB(A) would attenuate to approximately 30 DB(A) which is the sound level of a whisper. This ending sound level assumes normal attenuation based on distance only; however, again it is probable that there would be additional attenuation in most situations based on interference from topography and vegetation. The expected resulting sound level would not equate to a forest setting on a quiet night; however, it would not be expected to be much higher than ambient noise during the day with normal human activity and the wind blowing.

Air Quality
Air quality components that will be evaluated in this analysis are fugitive dust emissions, exhaust emissions, and the potential for ozone production.

The Federal Clean Air Act as amended is the principal framework for air quality regulation in the United States. The Clean Air Act grants each state primary responsibility for assuring that air quality within the state is consistent with national ambient air quality standards established by the U.S. Environmental Protection Agency (EPA). This is achieved through establishment of
source-specific limitations on discharges of air pollutants. The EPA retains oversight authority, approves state air quality programs, and reviews and approves all major air quality permits issued by the states. In South Dakota, the Department of Environment and Natural Resources (DENR) is the administrative authority for the Clean Air Act.

Air quality within Black Hills National Forest is addressed in the Forest Plan Environmental Impact Statement. Overall, air quality within Black Hll National Forest is very good. Air quality is better than national ambient air quality standards (NAAQs) for all pollutants.

Air pollution in the form of PM10, particulate matter smaller than 10 microns diameter, has been an issue in the Rapid City area. The Forest Plan EIS notes that the Rapid City area had been classified as an area that is not attaining the national ambient air quality standards for PM10 particulates. In September, 2005, DENR submitted a letter to EPA requesting that the Rapid City area be reclassified as an area attaining the PM10 national ambient air quality standard. EPA agreed, and a notice was published in the Federal Register on Dec 9, 2005, providing public notice of the reclassification.

**Dust**

Fugitive dust emissions on National Forest System roads are associated with traffic on unpaved roads. These emissions typically are localized and temporary, and their extent depends on weather conditions, the road surface material, moisture levels, vehicle speeds, vehicle weights, and the amount of traffic. Most of the unpaved ML 3 and 4 roads under Forest jurisdiction are located in unpopulated areas with relatively low traffic volumes. Dust issues on ML 2 roads typically are less severe. Dust abatement is a relatively expensive activity and is dependent on budget levels and priorities. Historical budgets have not been sufficient to support other than minimal abatement activities on roads with high logging truck activity.

Concentrating motorized use on roads and trails and developing trailheads can potentially increase the amount of dust created in some areas. Converting roads to trails or otherwise creating new motorized trails will create an opportunity to route trails through materials that are less likely to give off dust; to bring in stable, low-dust, surfacing materials; and to try new surface stabilization chemicals. A new or increased source of trail-related funding would likely have to be found to do this.

An indicator measure that is used to determine the differences between alternatives related to unwanted dust emissions is the miles of routes within 300 feet of lands of other ownerships.

**Ozone**

Motor vehicle exhaust and industrial emissions, gasoline vapors, chemical solvents, and natural emissions of some tree species are some of the sources of nitrogen oxides (NOx) and volatile organic compounds (VOC) that help to form ozone in the presence of sunlight. Because ozone is a secondary pollutant formed in the atmosphere, ozone concentrations at any one location are influenced by larger regional air quality conditions. The EPA is currently evaluating a new primary and secondary ambient air quality standard for ozone. At this time, all areas within the Black Hills National Forest remain in compliance with the NAAQS for ozone. It is possible that some areas such as Custer County may be designated as nonattainment areas for both the primary and secondary ozone standards at some time in the future; however, until EPA sets the new standard, changes in attainment status remain speculative.
Costs

Economic Feasibility

The monetary costs associated with the road system in the Black Hills are substantial to the Forest Service, the counties and the State and Federal highway organizations. The estimated costs to the Forest Service to manage NFS roads to standard, for the long term, are calculated using the Forest Service Infrastructure (INFRA) database. The INFRA database summarizes annual and deferred maintenance costs and overhead. Annual maintenance costs include such things as routine road surface blading and culvert cleaning, and the annualized cost of replacing signs and road surfaces, mostly gravel. Deferred maintenance costs reflect maintenance that was not performed when it was scheduled and was delayed for a future period. These costs could include aggregate replacement, and culvert and sign replacement. The estimated costs for ML 1, 2, 3, 4, and 5 roads for annual and deferred maintenance are shown below.

Table 24. Annual and deferred maintenance costs for existing National Forest System roads on the Black Hills (2007 figures)

<table>
<thead>
<tr>
<th>Maintenance level</th>
<th>Miles</th>
<th>Annual maintenance cost</th>
<th>Deferred maintenance cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,310</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>2</td>
<td>3,117</td>
<td>***218,260+</td>
<td>**</td>
</tr>
<tr>
<td>3</td>
<td>510</td>
<td>6,408,940</td>
<td>11,712,273</td>
</tr>
<tr>
<td>4</td>
<td>143</td>
<td>1,539,646</td>
<td>4,210,111</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>73,544</td>
<td>750,097</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,084</td>
<td><strong>8,240,390+</strong></td>
<td><strong>16,672,481+</strong></td>
</tr>
</tbody>
</table>

* These roads are closed to motorized traffic. They are left to revegetate and are typically not maintained unless monitoring efforts have identified a need to prevent or mitigate erosion damage.

** There is not sufficient data in INFRA to formulate an accurate estimate for deferred maintenance on these roads.

*** The INFRA data is not complete for these roads. This estimate was based on local estimated blading costs per mile and maintaining each road once every five years. It does not include the maintenance costs of gates, signs and culverts, which if known would add to the total.

The historical resources expended to perform the reconstruction, maintenance, and repair of all Forest Service roads and trails are shown in Table 25.

The congressional appropriation budget for planning, construction, capital improvement, and maintenance of Forest roads and trails on the Black Hills National Forest has fluctuated noticeably in the 6 years detailed above (Table 25). The road funding decreased from $3.2 million in 2003 to $2.1 million in 2006, a 34 percent decrease. Much of that decrease rebounded in 2007 and 2008; however, the long-term trend is down, especially if inflation is considered. Trail funding followed a similar trend but did not recover substantially. Future allocations are based on political priorities that are based only partially on the need and are difficult to predict.

Road and trail deposits (10% Fund) are 10 percent of Black Hills National Forest timber receipts that are returned to the Forest Service. The amount of this fund that is available for road and trail maintenance varies directly with the amount and value of timber sold and with internal Forest allocation priorities. Large variations in the amount and value of timber sold would have an impact on this source of funds.
Table 25. Road and trail management funding sources

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Road construction / maintenance fund</td>
<td>$3,244,000</td>
<td>$2,934,600</td>
<td>$2,324,784</td>
<td>$2,132,596</td>
<td>$3,085,900</td>
<td>$2,818,400</td>
</tr>
<tr>
<td></td>
<td>Trail construction / maintenance fund</td>
<td>$270,900</td>
<td>$236,700</td>
<td>$209,700</td>
<td>$148,000</td>
<td>$174,000</td>
<td>$161,400</td>
</tr>
<tr>
<td></td>
<td>10% Fund (LG)</td>
<td>$400,000</td>
<td>$77,100</td>
<td>$45,000</td>
<td>$243,733</td>
<td>$211,800</td>
<td>$304,400</td>
</tr>
<tr>
<td></td>
<td>Forest Service total</td>
<td>$4,033,400</td>
<td>$3,248,400</td>
<td>$2,579,484</td>
<td>$2,524,329</td>
<td>$3,645,000</td>
<td>$3,284,200</td>
</tr>
<tr>
<td>Timber sale (TS)</td>
<td>Timber sale road reconstruction</td>
<td>$496,265</td>
<td>$839,280</td>
<td>$182,560</td>
<td>$413,308</td>
<td>$258,968</td>
<td>$265,829</td>
</tr>
<tr>
<td>purchasers direct</td>
<td>Timber sale road maintenance</td>
<td>$67,200</td>
<td>$55,055</td>
<td>$72,124</td>
<td>$115,884</td>
<td>$95,528</td>
<td>$158,129</td>
</tr>
<tr>
<td></td>
<td>Maintenance deposits</td>
<td>$4,928</td>
<td>$6,111</td>
<td>$8,068</td>
<td>$0</td>
<td>0</td>
<td>$1,228</td>
</tr>
<tr>
<td></td>
<td>Surface rock replacement</td>
<td>$120,169</td>
<td>$75,491</td>
<td>$89,464</td>
<td>$42,175</td>
<td>$37,621</td>
<td>$179,240</td>
</tr>
<tr>
<td></td>
<td>Reconstruction deposits</td>
<td>$201,358</td>
<td>$100,834</td>
<td>$141,372</td>
<td>$95,682</td>
<td>$56,654</td>
<td>$74,285</td>
</tr>
<tr>
<td></td>
<td>Timber purchasers total</td>
<td>$889,920</td>
<td>$1,076,771</td>
<td>$493,588</td>
<td>$667,049</td>
<td>$448,717</td>
<td>$678,711</td>
</tr>
<tr>
<td>Total funding</td>
<td></td>
<td>$4,923,320</td>
<td>$4,325,171</td>
<td>$3,073,072</td>
<td>$3,191,378</td>
<td>$4,093,717</td>
<td>$3,962,911</td>
</tr>
</tbody>
</table>

Capital improvement funds acquired to conduct trail and road improvement work necessary to bring the system up to the desired objective have been sporadic and minimal in past years. However, the Forest has benefited from a regional bridge program that has funded 11 bridge replacements in the last 7 years.

A portion of the road maintenance on Forest roads is performed by timber purchasers and fuels treatment contractors on roads where timber products are being transported. The cost of road maintenance work performed by the purchasers is shown in Table 25. The level of expenditure is linked to the volume of timber, number of sales, and the miles of road needed to remove the timber from the Forest. Road maintenance needed due to impacts from timber sales is funded by the purchasers in two ways. The first is road-maintenance work performed by the purchasers directly. The second is payments for maintenance and surface rock replacement that are made to the Forest Service, who then contracts or performs the work. In addition, timber sale receipts are used for road reconstruction deposits that fund engineering services necessary to design the reconstruction elements of the timber sale road specifications. These road reconstruction funds are collected based on the actual cost to the Forest Service for these services.

The overall level of Federal funding and timber purchaser expenditures is not sufficient to perform the short- and long-term maintenance needs identified for NFS roads in general. The annual road maintenance resources are approximately 50 percent of what is needed based on the INFRA database. The Federal portion of that funding is trending downward. This is not a new
situation and requires the Forest to prioritize annual and deferred maintenance needs each year. The increased use of roads, particularly the ML 2 roads, subsequent to the implementation of the rule could put increased pressure on limited maintenance resources.

**Maintenance Costs – Motorized OHV Routes**

Maintenance of Forest Service routes can be described in two categories, annual and deferred. Costs of maintenance will vary widely based on physical location of the work, amount of use on the route, route surface type and condition, economic climate, and whether the work is performed by agency employees or contractors.

Annual maintenance consists of minor route work that is done on a cyclical basis. Annual maintenance costs for local roads can range from $250 per mile for maintenance of dips and outlet ditches (minimal ML 2 requirements) to $500 per mile for light reconditioning of a local road. Light reconditioning includes the blading and shaping of the road and ditch, minor roadside clearing and brushing, cleaning corrugated metal pipe (culvert) inlets and outlets, and cleaning rolling dips, grade dips, and outlet ditches. The current maintenance goals for ML 2 roads are to check them once every 5 years and address maintenance issues if necessary. That would equate to project maintenance costs of $1,250 to $2,500 per mile of road maintained. Deferred maintenance refers to route work that goes beyond the scope of annual maintenance. This work may be required to repair routes that have deteriorated or to address events such as landslides, flooding, or heavy spring runoff, which have affected the route condition.

Deferred maintenance costs range higher than those for annual maintenance. Costs may include acquisition and installation of gates, cattleguards, signs, aggregate surfacing, culverts, and stream crossing improvements, pit development, and equipment mobilization. Depending on the amount of work, these costs can add up quickly. For example, route gates and cattleguards can range from $1,800 to $3,000 each.

**Environmental Effects Analysis**

A roads analysis was conducted on Black Hills National Forest high-speed roads resulting in a Roads Analysis Report published in October 2005. A travel analysis was conducted on high-clearance roads, trails, and unauthorized routes resulting in a Travel Analysis Process Report published in September 2007 (USDA Forest Service 2007a). These reports provide a technical, science-based review of the Black Hills National Forest transportation system. The objective of these reports was to provide information to assist managers in making decisions concerning the environmental sustainability, socially acceptability, and economic feasibility of the Forest transportation system. Both the Roads Analysis Report and the Travel Analysis Process Report are hereby incorporated by reference in this analysis. The information in these reports was used in varying degrees in developing the environmental analysis here and throughout the specialist’s reports for this EIS. Refer to the recreation section for a greater discussion on the motorized opportunities on the Forest.

The number and uncertainty of the variables involved makes it very difficult to estimate projected costs of implementing the action alternatives. Given these difficulties, the Forest Service acknowledges the results may not prove accurate over time. Rather, the purpose of the cost analysis that follows is to present a reasonable estimate based on the best information available, including experienced costs where applicable and assumptions as noted. It is believed this information is sufficient to evaluate system costs against a business plan, as well as to reliably compare the levels of costs that could be experienced under the alternatives.
A 10-year period was selected for analysis for several reasons. First, the initial business plan assumed a 10-year period. Second, 10 years can provide enough time for reasonable implementation of a program of work and identification of costs involving construction, reconstruction, and maintenance. Also, a period longer than this time would require speculation on changing costs, new technology, and changes in management direction. The expected maintenance and development work that would be conducted under the alternatives, and the costs used in the analysis, are explained in the Action Alternatives section below.

Alternative A - No Action

Direct Effects
If implemented, this alternative would result in little change from the current situation. Users would likely continue to create unauthorized routes. Mixed use and use of roads by unlicensed operators would likely continue on all Forest roads unless there is an effective public information campaign and the restrictions on non-highway-legal vehicles on all Forest roads are enforced.

User conflicts over excessive sound levels would likely continue at the current level or increase. This would likely be most serious near private property in or near the Forest. Certain users would likely continue to modify stock exhaust systems to increase sound emissions.

Citizen complaints concerning dust levels created primarily from ATVs would likely continue at the present rate or increase with the projected increase in ATVs.

Funding for maintenance and repair of roads and trails would likely continue to vary subject to changing Federal budgetary priorities. The material condition of the road and trail system would likely deteriorate over the long term. The costs to repair damage caused by unauthorized routes would likely increase. Estimated costs of implementing this alternative are shown in the tables below under the Action Alternatives section.

Indirect Effects
In the absence of any outside changes at the state and county level that would affect the operation of non-highway-legal vehicles, the overall risk to the safety of non-highway-legal operators on the Forest could increase. Projects to close and repair resource damage related to unauthorized routes would likely compete with other worthwhile projects for funding.

User conflicts between motorized and nonmotorized advocates and the resultant animosity that is sometimes demonstrated would likely increase. The backlash from nonmotorized users would be likely to continue or increase.

Action Alternatives

Direct and Indirect Effects

Roads Open to All Vehicles (Motorized-Mixed Use)

Direct Effects - If implemented, Alternative E would likely present the safest overall system of the action alternatives based solely on the lower number of miles open to all vehicles. It is similar to the no action alternative in the amount of mixed-use designated; however, its restricting of OHV traffic to roads and trails should result in less accidents because the travel would be on roads with less steep grades than the off-road topography that would be allowed under A. This assumes that public information and enforcement activities are successful in restricting the majority of the OHV traffic to the Forest roads. Alternative D would be the next
safest alternative based on the number of miles and that the mixed use should occur in more limited areas. Alternatives B and C, with the high number of miles of mixed-use roads would be the least safe of the alternatives with B being slightly safer.

Table 26. Miles of roads open to all vehicles (motorized-mixed use) by alternative

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</thead>
<tbody>
<tr>
<td>Roads open to all vehicles - yearlong</td>
<td>148</td>
<td>1,638</td>
<td>1,956</td>
<td>315</td>
<td>148</td>
</tr>
<tr>
<td>Roads open to all vehicles - seasonally</td>
<td>12</td>
<td>588</td>
<td>922</td>
<td>265</td>
<td>12</td>
</tr>
<tr>
<td>Total roads open to all vehicles</td>
<td>160</td>
<td>2,226</td>
<td>2,878</td>
<td>580</td>
<td>160</td>
</tr>
</tbody>
</table>

The small number of miles for Alternatives A and E reflect the roads enrolled in the Wyoming Off-Road Recreational Vehicle (ORRV) Program. They are the only roads where motorized-mixed use is currently legal under State law.

**Indirect Effects** - The implementation of any of the action alternatives could reduce the risk of accidents involving non-highway-legal vehicles and operators by effectively reducing that traffic on Forest. This assumes that enforcement of applicable State laws and the resultant Travel Management Decision are advertised and enforced at an adequate level.

**Sound Levels**

**Direct Effects** - All of the action alternatives contain the proposal to establish a sound level restriction of 96 DB(A) as measured by SAE standard J-1287. This restriction alone, if effective, should reduce the number of user conflicts and complaints that are based on sound. It would establish a framework for testing vehicles for sound emission and allow law enforcement to issue citations.

Concerning the indicator designed to approximate the effect of sound levels on conflicts and complaints from private landowners in the Forest (miles within 300 feet), implementation of Alternative D should provide the best results. Alternatives B, C, and E are relatively equal in the number of miles of routes that are near private land.

Table 27. Miles of National Forest System routes near lands of other ownership and nonmotorized trails by alternative

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Miles of routes within 300 feet of lands of other ownership</td>
<td>504*</td>
<td>490</td>
<td>500</td>
<td>423</td>
<td>504</td>
</tr>
<tr>
<td>Miles of routes within 0.5 mile of a nonmotorized trail</td>
<td>318**</td>
<td>358</td>
<td>382</td>
<td>211</td>
<td>318</td>
</tr>
</tbody>
</table>

* In addition, 250 miles of inventoried unauthorized (nonsystem) routes currently exist here, for a total of 754 miles of routes within 300 feet of lands of other ownership.

** In addition, 250 miles of inventoried unauthorized (nonsystem) routes currently exist here, for a total of 568 miles of routes within 0.5 mile of a nonmotorized trail.

The indicator designed to compare the relative quiet experienced by users on nonmotorized trails is the number of miles of motorized routes within 0.5 miles of nonmotorized trails. If implemented, Alternative D should be significantly more effective in this area. Alternative C, B, and E would be less effective in that order.
**Indirect Effects** - The establishment of maximum sound emission levels could sensitize the general public to the importance of the issue and could have impacts outside the Forest as well. It is possible that moving existing cross-county traffic onto designated roads and trails would increase the average sound levels in some areas.

**Air Quality**

**Direct Effects** - Direct effects primarily include vehicle exhaust and fugitive dust from roads and trails. To determine potential impacts to air quality by alternative, a relevant indicator is vehicle miles traveled. It is difficult to determine if changes in vehicle miles traveled would occur under any of the action alternatives. One possible proxy for this indicator could be miles of open NFS roads. From the existing condition (Alternative A – 3,740 miles), the greatest reduction is seen under Alternative D (2,877 miles). This is a difference of 863 miles. If total vehicle miles traveled were to decrease accordingly, vehicle exhaust and fugitive dust levels would also decrease. However, the change in open miles does not necessarily equate to a change in use or vehicle miles traveled. Each of the action alternatives would also reduce the current pattern of dispersed cross-country motorized travel to varying degrees, and would focus this use on designated routes. Direct effects to air quality, therefore, are expected to be similar for all alternatives with a possibility of increased emissions among the action alternatives that have more miles of open roads.

**Vehicle Exhaust** - The EPA, through the implementation of standards for new vehicles, regulates vehicle exhaust emissions. States may also impose vehicle-emissions testing programs for vehicles registered in their state. Vehicle traffic and associated emissions may increase slightly for alternatives with more miles of open roads. Emissions associated with vehicle traffic would include nitrogen oxides (NOx) and carbon monoxide (CO) emissions from vehicle tailpipes. Diesel-fueled vehicles would also emit small amounts of sulfur oxides (SOx). Forest visitors could reduce exhaust emissions by ensuring good maintenance of engines and exhaust systems and the use of appropriate fuels.

Direct effects to air quality from vehicle exhaust emissions are expected to be similar for all alternatives with a possibility of increased emissions among the action alternatives that have more miles of open roads.

**Dust** – Please refer to Table 28 for a display of miles of National Forest System routes near lands of other ownerships. This indicator was selected to compare the possible dust levels experienced by owners of private land in or near the Forest. All action alternatives would reduce mileages from the current level by eliminating unauthorized routes within 300 feet of lands of other ownerships. Alternative D should be more effective in this area since it has the lowest number of miles in this category. Alternatives B, C, and E would be less effective and are relatively equal in the number of miles of routes that are near private land.

**Table 28. Miles of National Forest System routes near lands of other ownership and nonmotorized trails by alternative**

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</tr>
</thead>
<tbody>
<tr>
<td>Miles of routes within 300 feet of lands of other ownership</td>
<td>504*</td>
<td>490</td>
<td>500</td>
<td>423</td>
<td>504</td>
</tr>
</tbody>
</table>

* In addition, 250 miles of inventoried unauthorized (non-system) routes currently exist here, for a total of 754 miles of routes within 300 feet of lands of other ownership.
**Indirect Effects** - It is possible that moving existing cross-country traffic onto designated roads would increase the engine exhaust and dust levels in some areas, and decrease it in others.

**Cost**

**Direct Effects** - It is difficult to estimate all costs due to the uncertainty of a number of variables including OHV motorized use on trails. Therefore, it is necessary to make some assumptions to compare costs between alternatives. The exact, long-term effect of increased use of OHVs (mostly ATVs) on ML 2 roads on the Black Hills National Forest is unknown although it is expected to increase the need for maintenance activities. The cost to create and maintain new trails 65 inches or less in width, and motorcycle single-track trails would vary significantly based on many factors. The cost of implementing design features at perennial stream crossings would depend on the size of the streams and the type of crossings. The final size, location, and complexity of trailheads would have a significant impact on the cost. The engineering design work has not yet been completed on which to base detailed cost estimates for the above indicators for each alternative.

Concerning annual maintenance, it is expected that motorized trails would require work similar to that experienced on a ML2 road, and costs would be similar. For the purpose of this analysis, an average cost of $350/route mile will be used.

Deferred maintenance costs would include work required to address perennial stream crossings. Design criteria for these crossings could include concrete mats, culverts, and trail bridges, depending on conditions. The costs would be associated with the size of the crossing, soils on the site, topography, and type of crossing. Estimates of costs for materials that might be required at a typical crossing include:

- Trail Bridge - $10,000 to $15,000
- Concrete mats (improve stream crossing, size 4 x 16 feet) - $700
- Culvert (30 inch diameter) - $600

Based on past experience, most crossings would only require hardening or culvert installation. For this analysis, a cost of $1,000 per perennial stream crossing will be used. This cost will be applied to those stream crossings identified in Appendix B as requiring remediation or monitoring.

Deferred maintenance could also include reconstruction or limited construction necessary to bring a route to Forest Service standards or address safety and resource concerns. As previously stated, these costs would vary based on the equipment used, route surface type and condition, physical location and topography, amount of use, economic climate, and whether the work is performed by agency personnel or contractors. Estimates to construct a new OHV route under contract, both on the Black Hills National Forest and on other Region 2 national forests have ranged up to $20,000 per mile. Constructing an OHV route on or near a previous road template may result in lower costs. It is estimated that route reconstruction costs on the Forest could range from $5,000 to $20,000 per mile. For this analysis, a reconstruction/construction cost of $10,000/route mile will be used.

Based on these estimates, projected costs under each alternative are shown in the tables below.
Table 29. Estimated annual maintenance costs for motorized OHV system

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Miles of road open to all vehicles</td>
<td>160</td>
<td>2,226</td>
<td>2,877</td>
<td>580</td>
<td>160</td>
</tr>
<tr>
<td>Miles of trail open to all vehicles</td>
<td>0</td>
<td>173</td>
<td>176</td>
<td>118</td>
<td>0</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 50 inches or less (WY)</td>
<td>24</td>
<td>95</td>
<td>80</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Miles of trail open to vehicles 65 inches or less (SD)</td>
<td>12</td>
<td>319</td>
<td>380</td>
<td>150</td>
<td>12</td>
</tr>
<tr>
<td>Miles of motorcycle (single-track) trail</td>
<td>0</td>
<td>76</td>
<td>134</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>Total OHV system mileage</td>
<td>196</td>
<td>2,589</td>
<td>3,647</td>
<td>900</td>
<td>196</td>
</tr>
<tr>
<td>Annual maintenance cost ($350/mile)</td>
<td>$68,600</td>
<td>$906,150</td>
<td>$1,276,450</td>
<td>$315,000</td>
<td>$68,600</td>
</tr>
<tr>
<td>Adjusted annual maintenance cost*</td>
<td>$83,462</td>
<td>$1,102,470</td>
<td>$1,552,997</td>
<td>$383,246</td>
<td>$83,462</td>
</tr>
</tbody>
</table>

*Adjusted annual maintenance cost based on a 10-year implementation period. Annual maintenance cost was inflated to the term mid-point (5 years) at 4 percent per year, to derive the values shown on this line. Multiplied by 10, these estimate the total program costs over the period by alternative.

Table 30. Estimated deferred maintenance costs for motorized OHV system

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of perennial stream crossings requiring remediation*</td>
<td>0</td>
<td>16</td>
<td>21</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Stream crossing cost (@$1,000)</td>
<td>$0</td>
<td>$16,000</td>
<td>$21,000</td>
<td>$7,000</td>
<td>$0</td>
</tr>
<tr>
<td>Number of new trailheads to be constructed (7 existing)</td>
<td>0</td>
<td>24</td>
<td>27</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Trailhead cost (@$20,000)</td>
<td>$0</td>
<td>$480,000</td>
<td>$540,000</td>
<td>$320,000</td>
<td>$0</td>
</tr>
<tr>
<td>Miles of new routes to be converted from unauthorized (citizen routes and district routes)</td>
<td>0</td>
<td>210</td>
<td>284</td>
<td>70</td>
<td>0</td>
</tr>
<tr>
<td>Construction/reconstruction cost ($10,000/mile)</td>
<td>$0</td>
<td>$2,100,000</td>
<td>$2,840,000</td>
<td>$700,000</td>
<td>$0</td>
</tr>
<tr>
<td>Total deferred maintenance cost</td>
<td>$0</td>
<td>$2,596,000</td>
<td>$3,401,000</td>
<td>$1,027,000</td>
<td>$0</td>
</tr>
<tr>
<td>Annual deferred maintenance cost**</td>
<td>$0</td>
<td>$315,843</td>
<td>$413,784</td>
<td>$102,700</td>
<td>$0</td>
</tr>
</tbody>
</table>

* See Appendix B for a complete list of stream crossings that would require remediation or monitoring.
**Annual deferred maintenance cost based on a 10-year implementation period. Total cost was inflated to the term mid-point (5 years) at 4 percent per year and then divided by 10 to produce this value.

Alternatives B, C and D would add varying mileages of routes identified by citizens, and routes defined by ranger districts to complete loops or otherwise complement the motorized route system. These routes are the ones most likely to require reconstruction or limited new construction to provide recreation opportunity in an environmentally sustainable manner.

Table 31. Estimated motorized OHV system annual cost – first 10 years

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual maintenance cost</td>
<td>$83,462</td>
<td>$1,102,470</td>
<td>$1,552,997</td>
<td>$383,246</td>
<td>$83,462</td>
</tr>
<tr>
<td>Annual deferred maintenance cost</td>
<td>$0</td>
<td>$315,843</td>
<td>$413,784</td>
<td>$102,700</td>
<td>$0</td>
</tr>
<tr>
<td>Total annual cost – first 10 years</td>
<td>$83,462</td>
<td>$1,418,313</td>
<td>$1,966,781</td>
<td>$485,946</td>
<td>$83,462</td>
</tr>
</tbody>
</table>
To fully implement Alternative B, C or D would be quite costly and beyond the reach of any funding currently available, thus it would likely require user fees to construct and maintain the system. If implemented, Alternative E would not create a motorized trail system outside of using existing roads and would be the most supportable with current funding. Additional resources through partnerships, grants, and fees to implement and maintain a system would be needed. The success of those efforts will determine in large part how quickly such a system could be implemented and its long-term size. Any alternative based solely on allocations for roads and trails may not be able to meet the purpose and need to identify and designate an official transportation system that balances the physical, biological, and social values of the forest. Many opportunities for the public to access the Forest could be shut down.

Table 29 provides a relative cost comparison of projected annual maintenance needs for Alternatives B, C, and D. Table 30 shows annual deferred maintenance costs over a 10-year period. Table 31 displays total annual costs of the alternatives, and shows that Alternative D would have significantly lower annual costs than Alternatives B and C. Alternative C would be the most costly, with Alternative B a close second.

**Indirect Effects** - The successful implementation and financing of an appropriately sized OHV recreational system in the Black Hills could increase local involvement in the direct support of the system in the form of individual and user group volunteer efforts, partnerships, and co-op programs. It could increase the level of voluntary compliance with the rules, thus augmenting law enforcement efforts. A viable system could also have significant long-term economic benefit to local businesses and communities from steady or increased motorized recreation users from local areas and out of state. Successful implementation could also serve as an example that could be emulated statewide. The need for funding of a successful system may also have an influence on State legislation in the long term.

**Cumulative Effects**

**Past, Present, and Foreseeable Actions**

The cumulative effects area for engineering and transportation includes the area within and immediately adjacent to the Black Hills National Forest boundary. A time scale of 2 to 5 years is based on the time over which one can expect to predict reasonably foreseeable actions.

As local communities continue to grow and as tourism continues to increase, more people may come to the Forest to visit and recreate. The easier it is for people to visit and recreate on the Forest, the greater the demand that would be placed on the transportation system. The increased demand would likely lead to increased maintenance needs.

Over time, and as funding permits, the travel management plan would be implemented on the ground. Travel management and motorized mixed-use signage would allow the public to easily identify which modes of travel are allowed on which roads and trails. Rehabilitation of system and unauthorized routes would reduce the on-the-ground transportation system and actual route miles, as well as the associated maintenance costs. System and unauthorized routes that are converted to other uses (roads or trails) would further reduce the system miles and the environmental impacts.

The enforcement of State laws concerning the use of highway-legal vehicles and licensed operators on NFS roads should improve the safety environment involving OHV recreation. The enforcement of the new sound limit on OHVs could reduce animosity from nonmotorized users of the Forest.
The transportation system would continue to evolve in an effort to meet future access needs for commodities and recreational opportunities across the Forest. The size of the transportation system would also change to respond to any negative environmental effects of certain routes discovered during monitoring efforts and any fluctuations to available resources. The designation of roads and trails for OHV use would continue to evolve guided by environmental analysis conducted for vegetation management projects.

Implementation and enforcement of policies outlined in the Travel Management Decision could have an effect on the policies of surrounding city, county, and State governments.

Regarding effects to air quality, the cumulative effects boundary for analysis of fugitive dust is the project area, because these emissions are typically temporary and localized. The boundary for analysis of criteria pollutant concentrations including ozone extends from the Forest boundary some 250 miles to the north, west, and south. The intent is to recognize other regional emissions sources including those in eastern Wyoming, and parts of Montana and North Dakota. The time bound for effects analysis extends from the past five years to ten years in the future.

Existing point and area sources of air pollution within the project area and surrounding region include the following:

- gasoline and diesel-fueled vehicle tailpipe emissions of VOCs, NOx, CO, SO2, and particulate matter in the size ranges of less than 10 microns in diameter (PM10), and less than 2.5 microns in diameter (PM2.5);
- oxides of sulfur (SOx), NOx, VOCs, PM10, PM2.5, and fugitive dust emissions from coal-fired power plants and coal mining and processing;
- fugitive dust (in the form of PM10 and PM2.5) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months;
- exhaust emissions, primarily CO, NOx, PM2.5, and formaldehyde, from existing natural gas fired compressor engines used in production of natural gas;
- natural gas dehydrator still-vent emissions of NOx, CO, BTEX and n-hexane; and
- long-range transport of pollutants from distant sources contributing to regional haze.

Projects contributing fugitive dust emissions in the project area include motorized travel on unpaved roads, construction projects and mine and quarry operations. It is expected that implementation of this project would contribute to fugitive dust levels in some areas within the project area, but since fugitive dust generally does not travel very far it is not expected to contribute to measurable levels on a project area basis. Fugitive dust from any alternative is expected to be temporary and highly localized; therefore, the project would contribute minimally to cumulative ambient particulate matter concentrations.

It is difficult to estimate the contributions of ozone-precursor compounds that might occur from implementation of any of the alternatives, but it is expected that the incremental contributions to the total atmospheric load of such compounds from this project will be negligible under any of the alternatives.

**Implementation and Monitoring**

The transportation system that could be designated by this decision has the potential to be very large and complex. The selection of any of the action alternatives would bring numerous changes to the existing system. Implementation of a fully developed motorized trail system would have to be a staged process. Roads and trails whose existing condition are adequate to hold up under the
designated traffic could be shown on the first edition of the motor vehicle use map and be
available for use immediately. Trails that need to be constructed or reconstructed from roads
would not be opened until resources are available and construction or reconstruction and signing
are complete. The timetable for implementing this part of the system would depend directly on
the rate at which resources become available.

The road and trail system would have to be monitored on a continuing basis to evaluate how
each section is holding up to the designated use. Maintenance schedules would be set based on
wear related to use, location, trail or road surface materials, availability of resources, etc. Some
routes that are not sustainable would have to be rerouted or closed. Any conditions that result in
significant user conflicts would also have to be monitored and modified as necessary.

**Socio-Economics**

*Introduction*

Socio-economic concerns are an important consideration for Forest Service management of
public lands. The study area for the socio-economic discussion focuses on public lands managed
by the Black Hills National Forest, which include portions of northeastern Wyoming and
southwestern South Dakota. The social and economic discussion attempts to identify potential
effects that Forest Service travel management decisions may have on people using and valuing
the natural resources that the Black Hills National Forest provides and on local, county, and
regional economic systems.

User conflicts are primarily related to social values among motorized and nonmotorized users of
the Forest. Some of the conflict is “related to the rate of speed at which their preferred
recreational activities take place and the noise generated by recreational machines” (Thompson
et al. 2007). Travel management decisions are most likely to affect tourism-related sectors.
Direct economic impacts in the Black Hills region derive from users who purchase services and
goods associated with their motorized activities on the Forest.

The effects of the proposed project on social and economic resources were incorporated into the
development of key issues. This section addresses the potential social and economic effects of
the alternatives.

*Background*

Preliminary public involvement was initiated in 2003 in an effort to familiarize the public and
stakeholders throughout the Black Hills region with the objectives of travel management.
Between 2003 and 2007, the Black Hills National Forest hosted and participated in numerous
public meetings and workshops in Wyoming and South Dakota.

Between 2004 and 2006, the Off-highway Vehicle and Travel Management subcommittees of
the Black Hills National Forest Advisory Board conducted a number of public meetings to solicit
general comments on travel management. The meetings were held in South Dakota and
Wyoming. The purpose of these meetings was to gather input to help develop recommendations
for future OHV policy planning.

The Travel Management subcommittee also distributed a User Needs Assessment Questionnaire
to solicit comments from both OHV and non-OHV users to evaluate the potential for
establishing a designated OHV trail system on the Black Hills National Forest. The 559
comments submitted helped the subcommittee define opportunities for an OHV trail system and understand potential conflicts with other users.

The National Off-highway Vehicle Conservation Council (NOHVCC), in cooperation with the Black Hills National Forest, conducted an OHV Route Designation Workshop in October 2006 for agency personnel and the public. The purpose of this workshop was to further public understanding of the Travel Management Rule.

Four “Travelways” Workshops were conducted by the Forest during November, 2006. The purpose of these workshops was to gather public input and ideas for the development of a proposed action. A product from these workshops was a collection of site-specific information from participants about the Forest after they completed a mapping exercise.

The public was also asked to provide input to Forest staff on routes they wanted to remain open and/or those routes that may be in conflict with other desired conditions sought by the public on National Forest System lands. This initial public involvement effort resulted in the agency receiving numerous comments on individual routes, a large number of general comments, and some areawide comments. This preliminary public input helped the Forest develop a proposed action. In response to the proposed action and public meeting, 756 comments were received.

Based on the public scoping comments, along with resource-related input from the interdisciplinary team, a set of key issues were developed to carry forward into the environmental analysis process. The effects of the proposed project on social and economic resources were also incorporated into key issues during the EIS development process. That issue (Issue 4) is discussed below.

**Applicable Laws, Regulations, Policy, and Forest Plan Direction**

A number of laws, regulations, and policies provide regulatory and agency guidance for the preparation of social and economic analyses, such as:

- Executive Order 12898 (February 11, 1994), Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations.

There are also Forest Service handbooks and manuals that include social and economic analysis requirements based on other resource direction.

**Forest Plan Direction**

The following Forest Plan goals and objectives are relevant to the social and economic aspects of the Black Hills National Forest management strategy.

**Forest Plan Goal 8.** Promote Rural Development Opportunities. “Rural development” is the management of human, natural, technical, and financial resources needed to improve living conditions, provide employment opportunities, enrich the cultural life, and enhance the environment of rural America. In the Forest Service, rural development will be accomplished through partnerships.
Forest Plan Objective 801. Through the Forest Service’s “Strategic Plan for the 90s,” provide leadership in working with rural people and communities to develop natural resource-based opportunities and enterprises that contribute to the economic and social vitality of rural communities.

Forest Plan Objective 802. Promote sustainable development in cooperation with local, county, State, and American Indian partners.

Forest Plan Objective 803. Recognize the nature and extent of local economic dependencies on National Forest activities. Give special attention to resource programs that help diversify rural economies.

Forest Plan Objective 804. Coordinate with local communities to recognize local goals to maintain desired life styles and social values to participate with and provide appropriate assistance to development groups, and to be a reliable partner in giving sufficient advance notice about potential changes that may affect local economies.

Forest Plan Objective 805. Utilize human resource programs to achieve employment opportunities while meeting natural resource objectives. Provide human resource programs for 208 enrollee-years each year including the Job Corps and the Senior Community Service Employment Program.

Issues and Indicators

This analysis focuses on Issue 4 related to the travel management proposal:

Issue 4: Social and Economic Concerns. The alternatives considered may affect the economic sustainability of local businesses and communities. Effects may be related to sound level (noise), dust (air quality), trespass and access to private property, distance from motorized routes to private land, traffic levels, and miles of routes open to motorized use. The following are indicators used to analyze this issue (also see recreation and transportation sections for additional discussion).

Indicators

- Miles of motorized routes within 0.5 mile of a nonmotorized trail
- Miles of National Forest System motorized routes through or within 300 feet of lands of other ownerships
- Number of motorized trailheads within 3 miles of a gateway community
- Miles of motorized routes

In addition to these indicators, this section also examines the potential for employment and labor income effects as well as qualitative discussions of public values or interest categories. Economic impacts analysis concentrates on motorized and nonmotorized recreational uses of roads and routes. It is recognized that roads are used for other motorized purposes such as timber, grazing, and access for vegetation and fuel treatments that can affect local economies and social conditions. However, motorized access is allowed in restricted areas or on restricted roads for administrative purposes, which include fire suppression, weed control, vegetative treatments, range developments, administration of allotments, and associated management of livestock. The analysis and discussion of social and economic effects focuses primarily on recreation.
Assumptions

- A sound emission limit for ATVs and motorcycles will be established and enforced at 96 DB(A) using the SAE J-1287 measurement standard. Implementation of this feature may require a Forest special order.
- Current Forest funding resources will be augmented to the extent necessary to develop and maintain a resulting transportation system by fees, grants, partnerships, and cooperative agreements.
- Roads and trails will be adequately signed to show their designated use and be in accordance with the motor vehicle use map.
- Law enforcement activity, voluntary compliance, and active public information efforts will result in the recreating public complying for the most part with the modes of travel designations to be established by this decision and as published on the upcoming motor vehicle use map.

Data Sources
As part of the current analysis, previous Forest Service travel management NEPA analyses, Forest Service technical references, and internal and external research reports were reviewed. A limited range of trend estimates exist for the study area and are included or referenced in this section.

In addition to economic and social profile information contained within the Final EIS for the Phase II Amendment to the 1997 Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 2005a), this section relies upon and summarizes information and analytical results presented in the Black Hills National Forest Travel Management Plan: Supplementary Specialist Report – Social and Economic Effects (USDA Forest Service 2009c); the reader is referred to that report for a more detailed discussion of the information, analysis, assumptions, and results summarized below.

Affected Environment

Study Area
The social and economic analysis includes seven counties within the study area: Crook and Weston Counties in northeastern Wyoming; and Custer, Fall River, Lawrence, Meade, and Pennington Counties in southwestern South Dakota. This resource report summarizes community information presented in the Final EIS for the Phase II Amendment to the 1997 Revised Land and Resource Management Plan for the Black Hills National Forest (USDA Forest Service 2005a).

Population, Demographics, and Diversity
In general, the population within the seven-county area of the Forest has been increasing from approximately 120,000 in 1970 to almost 170,000 by 2006 (Figure 5). The early 1990s saw rapid growth while more recently, the rate of growth has leveled off, but the population is still increasing as a whole. Over the period 1970-2006, population growth in the study area was somewhat more rapid than the aggregate population growth for South Dakota and Wyoming but similar to that of the nation, particularly since the late 1980s (Bureau of Economic Analysis – Regional Economic Information System (2006)).
As of 2000, the largest age category is 40 to 44 years, and the age group that has grown the fastest, as a share of the total, is 45 to 49 years. The age groups that have grown the slowest are 30 to 34 and 25 to 29 (U.S. 2000 Census).

The counties in the study area demonstrate low diversity with the exception of Meade and Pennington Counties. In Meade County, the Air Force base provides a greater degree of diversity than seen in the general population. Rapid City, located in Pennington County, also has a greater level of diversity, often associated with larger cities and universities. Rapid City has a large population of American Indians who move to and from the reservations in South Dakota, depending on current economic conditions and employment opportunities. There are people outside the seven-county area who use the Forest and are interested in future management of the forest resources, especially members of Indian tribes who have historically used the area. Approximately 15,000 Native Americans live in Rapid City and within the seven counties of concern considered in this social analysis (USDA Forest Service 2005a).

The estimated percentage of the population, age 5 and greater, that is considered disabled within the seven-county Black Hills area as of 2000 (16.9 percent) is lower than that of the nation (19 percent) and only slightly higher than that of Wyoming (15.4 percent) or South Dakota (16.3 percent). The percent of the population considered disabled is somewhat correlated with the percentage of the population that is over 65 years of age – 14.3 percent for the seven-county area versus 14.4 percent for South Dakota, 12.3 percent for Wyoming, and 12.8 percent for the nation (EPS 2009).

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1 Individuals were classified as having a disability if any of the following three conditions was true: (1) They were 5 years old and over and reported a long-lasting sensory, physical, mental or self-care disability; (2) They were 16 years old and over and reported difficulty going outside the home because of a physical, mental, or emotional condition lasting 6 months or more; or (3) They were 16 to 64 years old and reported difficulty working at a job or business because of a physical, mental, or emotional condition lasting 6 months or more. U. S. Census Bureau, 2000 Census of Population and Housing, Demographic Profile. Updated every 10 years. [http://factfinder.census.gov](http://factfinder.census.gov)
Information on age, race, and ethnicity specific to visitors of the Black Hills National Forest is available from the Forest Service National Visitor Use Monitoring (NVUM) effort. The percentage of visitors who were 60 and older (as of 2003 based on NVUM data) was approximately 19 percent, which is comparable to the estimated percentage of the area population that is 60 years of age or older as of 2000 (17 percent; U.S. Census, as cited in EPS 2009). The percentage of Forest visitors identified with minority populations (Table 32) are within the range of minority population percentages associated with the counties within the Black Hills area.

Table 32. Estimated percent of Black Hills National Forest visits, by race (2003)

<table>
<thead>
<tr>
<th>Race</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>1.2</td>
</tr>
<tr>
<td>Asian</td>
<td>1.2</td>
</tr>
<tr>
<td>Black/African</td>
<td>0.3</td>
</tr>
<tr>
<td>Hawaiian/Pacific</td>
<td>0.1</td>
</tr>
<tr>
<td>Islander</td>
<td>1.2</td>
</tr>
<tr>
<td>Hispanic/Latino1</td>
<td>96.3</td>
</tr>
<tr>
<td>White</td>
<td>0.0</td>
</tr>
<tr>
<td>Other</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Source: USDA Forest Service, 2004d – National Visitor Use Monitoring Database (Version 1.5)

1 Spanish, Hispanic, or Latino was asked as a separate question from other groups and was not mutually exclusive so race may total more than 100%

Economic and Social Elements

Economic and social elements are summarized in the Economic Affected Environment section in the Phase II FEIS (USDA Forest Service 2005a), which includes a description of employment, income, recreation, and tourism. In addition to the information included in the Phase II FEIS, several additional area trends are relevant to this assessment of travel management.

The Black Hills region is becoming an attractive place to retire. The State of South Dakota has several programs in place to encourage retirees to settle. Retirees can bring in outside money, have time and energy for volunteer activities, and local health care and other services often increase to meet retiree needs, thus increasing opportunities for the rest of the community.

A second trend in the Black Hills area is a decline in manufacturing employment, which is consistent with national declines of manufacturing industries. Often, as manufacturing leaves a community, tourism-related businesses grow to fill the hole in the economy. Many tourism-related jobs are seasonal and do not pay a wage or have benefits that would attract families. As families move on, school enrollment is reduced.

Tourism has become a large part of the region’s lifestyle in that local residents prepare for summer tourist traffic by altering their travel routes and activities or opening businesses to capture visitor spending. Residents are aware of the natural resources and beauty by which they are surrounded and are protective of their area while generally agreeing that some active management is also compatible with their lifestyles.

There are uses of motorized routes, other than recreation (e.g., timber, vegetation management, grazing, fire suppression), that can have economic impacts; however, motorized access would be allowed in restricted areas or on restricted roads for administrative purposes under all alternatives. Consequently, many of the subsequent social and economic sections focus on impacts related to recreational uses of roads and trails.

OHV Demographic Characteristics

This section briefly describes the demographic characteristics of OHV recreation in the study area. In February of 2008, a research report (USDA Forest Service 2008b) in the Internet
Research Information Series (IRIS), titled Off-highway Vehicle Recreation in the United States and its Regions and States: An Update National Report from the National Survey on Recreation and the Environment (NSRE), was published to provide statistics describing OHV recreational use and users in the United States.

The IRIS report describes the “population size, percent of U.S. population, sample size, OHV participation rate, estimated number of OHV participants, and the proportion that each state contributes to the national total of 43 million OHV users.” Of special interest to the Black Hills study area, Wyoming has the highest participation rate by percentage (34.3 percent) of population in the nation. South Dakota has the 8th highest participation rate (27.0 percent).

The user demographic characteristics were divided into five major regions of the country, described as North, South, Midwest, West, and Pacific. South Dakota was considered to be in the Midwest region. The IRIS report states, “Twenty-one percent, or 3.2 million of the Midwest’s 15.4 million residents, participated in OHV recreation.” Wyoming was included in the West region, which was described as having the highest OHV participation rate (28 percent) of all the regions.

The IRIS report further indicates that OHV users participated in 47 other outdoor recreation activities. As a whole, OHV users were found to be more active in other outdoor recreation activities than OHV riding, relative to the general population, age 16 and older. For some activities, OHV users were reported to participate at more than twice the national rate. In particular, OHV users were about three times more likely to participate in the three types of hunting (big game, small game, and migratory bird) than was the general public. The 2008 update to the National Visitor Use Monitoring project reflects that only 1.9 percent of National Forest recreational visitors listed their primary activity as OHV use (USDA Forest Service 2008d).

Within the study area, only Wyoming has completed a statewide survey and economic assessment project focusing on what the study refers to as off-road vehicle (ORV) use (Foulke 2006). OHV use has profound implications for public land managers, small businesses, and rural homeowners. The intent of the Wyoming survey was to provide a better understanding of the impacts associated with ORV use and assist land managers in future ORV-related planning.

Wyoming instituted an ORV permit program in 2002. In order to better serve trail users, Wyoming provided project funding to the University of Wyoming to conduct a broad-based economic survey and assessment of ORV use in Wyoming. The survey results indicate that ORV use in the State of Wyoming is widespread and virtually a year-round activity. Based on the approximately 150,000 ORVs in the state, residents spent over $189 million on ORVs and related expenses in a 12-month period. During the same period, nonresident ORV users spent an estimated $8.4 million in the state. The project results also show that an estimated 679 new jobs and almost $18 million in potential earnings are contributed to the state’s economy by nonresident ORV users. State and local government also benefit from ORV expenditures of approximately $18.5 million in sales tax, gasoline tax, lodging tax, and permit fees.

Another interesting aspect of the survey focused on the multi-use nature of ORVs that lends them to use in other activities. The primary activity was not necessarily riding ORVs solely for

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2 The State of Wyoming has used the term ORV in its Off-Road Recreational Vehicle Act and program. This document may use the term ORV in those contexts, but for purposes of consistency will generally use the term off-highway vehicle (OHV) to describe all such vehicles. The terms are synonymous.
that experience, but rather as part of participation in hunting, fishing, and other recreational activities.

The Wyoming study also indicates that 45 percent of respondents who are residents of Wyoming would “increase participation in other outdoor activities” within the State if told they would be unable to ride ORVs in Wyoming; 60 percent of resident respondents traveled more than 50 miles from home to participate in ORV activities. In contrast, only 21 percent of nonresident respondents indicated they would “increase participation in other outdoor activities” if unable to ride ORVs in Wyoming; a large majority of nonresident respondents (95 percent) traveled more than 50 miles from home. The resident and nonresident results for Wyoming suggest that some ORV riders are indeed willing to seek alternative or substitute recreational activities within the State, in the event they are unable to participate in ORV activities; however, this willingness likely decreases with distance traveled.

Analysis of National Visitor Use Monitoring results shows that the primary factor determining the amount spent by visitors was the type of trip (e.g., day vs. overnight), not the type of activity or National Forest visited (Stynes and White 2005). When asked what they would do if for some reason they were unable to visit the Black Hills National Forest, a slight majority (54 percent) of Black Hills National Forest visitors stated that they “would go elsewhere for the same activity”. Approximately 22 percent would have come back another time while 10 percent would have gone elsewhere for a different activity (USDA Forest Service 2004c). More recent National Visitor Use Monitoring survey efforts and results, summarized by National Forest for the nation (USDA Forest Service 2008c), reveal that approximately 65 percent of visitors who “would go elsewhere for the same activity” would travel 50 miles or less to an alternative location. Though these responses are not specific to nonlocal motorized use visitors, the results still suggest that alternative or substitute sites for recreation opportunities exist and are recognized by visitors to the Black Hills National Forest. Some of these substitute sites are also likely to be located within the same “local” area (i.e., within 50 miles), thereby helping retain a portion of the benefits derived from recreational spending.

Together, the National Visitor Use Monitoring and Wyoming studies do not provide conclusive evidence to quantify the probability that nonlocal motorized visitors to the Black Hills National Forest, who feel displaced by travel management restrictions, would continue to visit the Black Hills area. However, the results from these studies still suggest that some nonlocal “displaced” Black Hills ORV users are expected to seek out alternative or substitute sites for motorized use and/or alternative recreational activities within the Black Hills area, thereby retaining some nonlocal spending and partially offsetting the adverse economic impacts associated with potential cumulative effects from motorized access restrictions.

It is uncertain if the Wyoming ORV survey and economic assessment project results can be applied to the entire Black Hills study area, which also includes Forest land in South Dakota. An economic assessment survey similar to the one conducted in Wyoming is in the planning stages for South Dakota, but as of the date of this FEIS, it has not been completed.

Much of the information noted above is useful in characterizing large-scale market conditions and trends; however, the analysis completed for this final EIS focuses on describing the level of motorized and nonmotorized recreation specifically affiliated with the Black Hills National Forest.

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3 6.6% and 4.6% of WY resident and non-resident respondents visited the Black Hills are respectively. Approximately 36 to 37% of all visits were on National Forest System land/
For the seven-county Black Hills area, annual licenses purchased for motorcycles, ATVs, and mopeds increased by 44 percent between 1990 (6,475 licenses) and 2000 (11,220 licenses) and jumped by an additional 98 percent by 2008 (18,414 licenses). These results suggest an increasing attraction to and use of motorized vehicles by local residents in the Black Hills region. However, a comparison of National Visitor Use Monitoring data for Region 2 National Forests indicates that the percent of National Forest visits involving OHV use as a main (or primary) activity has decreased from approximately 3 percent to 2 percent between 2003 and 2007 while total numbers of recreational visits has remained relatively unchanged (USDA Forest Service 2008c; USDA Forest Service 2004d).

Recreational Participation and Spending

During 2003, the Black Hills National Forest participated in the National Visitor Use Monitoring survey process to better understand recreational use on the Forest. The number of visitors sampled on the Black Hills National Forest that reported a zip code was 460 survey respondents, and approximately 34 percent of that sample was from Pennington County, SD. The state with the greatest representation in the National Visitor Use Monitoring survey sample for the Black Hills was South Dakota (49 percent), followed by Minnesota (8 percent), Colorado (5 percent) and Wisconsin (4 percent). Visitors from Wyoming accounted for 1.7 percent of the sample.

Based on National Visitor Use Monitoring sampling results, approximately 1,425,982 visits occurred on the Black Hills during the survey period. The top five primary activities were fishing, driving for pleasure, hiking/walking, relaxing, and motorized water activities. In terms of total participation (i.e., primary plus secondary participation), the top five activities were wildlife viewing, relaxing viewing natural features, driving for pleasure, and fishing. The main activity rates were used to estimate visitor use according to activity emphasis. Roughly 18 percent of main activity participation (254,000 visits) involved motorized activities, with a similar percentage (17 percent) involved in nonmotorized activities (248,000 visits) that used roads and trails by foot or nonmotorized transportation (e.g., bikes, skis). Approximately 3 percent of primary activities are associated with OHV use on the Black Hills National Forest, compared to approximately 2 percent of all visitors to national forests nationwide (USDA Forest Service 2008a). “All other activities” accounted for approximately 68 percent of main activity participation. In terms of both total and main activity participation, the most popular nonmotorized activity was hiking and walking, while the most popular motorized activity was driving for pleasure.

Almost 10 percent of Black Hills National Forest visitors participated in OHV use as a primary or secondary activity, while approximately 50 percent engaged in motorized activities of all types (including driving for pleasure, in addition to OHV use, but excluding snowmobiling), suggesting that changes in motorized activity opportunities are likely to have effects on participation in other activities and corresponding economic impacts. Similarly, 46 percent of Black Hills National Forest visitors participated, to some degree, in nonmotorized activities, implying that changes in participation in these activities are also likely to have ripple effects in

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1 Licenses are purchased for more than one year and vehicles are not limited to recreational use (e.g., commercial use). Source: South Dakota Department of Revenue and Regulation, Motor Vehicles Division (http://www.state.sd.us/drr2/motorvehicle/title/history_of_titles12.htm).
2 Activities include driving for pleasure, OHV use, snowmobiling, and “other motorized activity”.
3 Activities include hiking/walking, bicycling, other nonmotorized activity, backpacking, horseback riding, and cross-country skiing.
4 Activities include 15 activity areas including fishing, hunting, picnicking, viewing wildlife, relaxing, camping, visiting historic sites, water activities, nature study, etc.
other activity areas. It is therefore difficult to clearly separate social or economic impacts according to motorized or nonmotorized user groups.

The primary factor determining the amount spent by visitors was the type of trip (e.g., day vs. overnight), not the type of activity or forest visited (Stynes and White 2005). Only nonlocal visitors (i.e., visitors who report living more than 50 miles from the Black Hills National Forest, according to the definition adopted by National Visitor Use Monitoring) bring “new” money into the local communities and therefore have a direct economic impact on the local area. Local visitors tend to substitute other local recreational activities or change the time and place for continuing the same activity rather than traveling long distances and incurring additional costs to do the same activity. Approximately 31 percent of visitors were nonlocal, 64 percent were local, and 5 percent were classified as non-primary visitors (indicated that recreating on the Forest was not their primary purpose; USDA Forest Service 2009a). Local and nonlocal visitors were further divided by those staying overnight on and off the Forest.

The Black Hills National Forest is an above-average spending Forest, as concerns visitors (Stynes and White 2006). Spending by nonlocals is highest for overnight snowmobiling ($168 per visitor per trip, snowmobiling accounted for 2.7 percent of primary activity visits), followed closely by overnight cross-country skiing ($156), hunting ($151), and hiking/biking ($137). The lowest spending by nonlocals for overnight trips was estimated for primitive camping/backpacking ($50), followed by OHV use ($84), and driving ($87). Non-local expenditures for day trips ranged from $22 (hiking/biking, driving) to $36 (OHV use) to $62 per visitor per trip (snowmobiling). A Wyoming survey of ORV users revealed that residents and nonresidents spend an average of $27.04 and $31.07 per person per day on ORV trips (2004$) (Foulke 2006) which is similar to National Visitor Use Monitoring data on expenditures for local and nonlocal day values ($22 and $36, respectively). While spending gives some comparison between activities, the economic impact of these activities depends on the amount of use in each of these activities and the economic structure of the local area (e.g., types of industries located within the area; types of goods and services produced in the area).

**Employment and Income**

In this section, general employment and income trends are outlined along with specific trends occurring in those sectors, primarily in recreation and tourism, likely to be most affected by changes in Forest Service management.

The majority of employment and income in South Dakota and Wyoming is nonagricultural. Wyoming’s total job growth rate of over 5 percent, recorded in December 2006, was the highest in the country. The energy industry contributed approximately one third of both the state’s total earnings growth and job growth (Lui 2007). Wyoming’s per capita income growth rate of 9 percent recorded in 2006 was the highest in the nation. The $40,655 of per capita income in 2006 also earned Wyoming a rank of 6th in the nation. With a growth rate of 6.3 percent between 2006 and 2007, Wyoming is still ranked 6th in the nation with a per capita income of $43,226 (BEA 2008). In 2006, South Dakota ranked 38th, with a per capita income of $32,030. With a growth rate of 5.9 percent between 2006 and 2007, South Dakota’s rank increased to 34th with a per capita income of $33,905.

Employment (and the economy) for the local seven county Black Hills area is relatively diverse and therefore less vulnerable to economic disruptions. The area is less reliant on manufacturing and professional/technical services and somewhat more reliant on agriculture and resource commodities, as well as accommodation and food services (e.g., tourism).
Job growth in the study area has outpaced growth in the two-state area as well as the nation since 1982, with the exception of a brief period between 2000 and 2002 (EPS, 2009). The largest growth within the seven-county study area was in the finance, insurance, real estate, and construction sectors. These sectors are associated with increasing population and overall growth of the area, residential and commercial building construction and sales, and the development of infrastructure required to accommodate population increases. In several counties, the growth in vacation and second homes also increased the demand for the finance, insurance, real estate, and construction sectors. In association with population growth of the study area, employment in the retail trade and service sectors has grown over the 10-year period. Much of this growth is in health care services and tourism (EPS 2009).

Real per capita income during the period 1970 to 2006 increased by a total of 84 percent (EPS 2009), while earnings per job rose by only 2 percent, demonstrating the significant impact of nonlabor sources of income (e.g., dividends, interest, transfer payments from government such as Medicare and social security) which grew by more than 300 percent. These conditions are explained in large part by the income sources and services demanded by changing area demographics, and in many cases, retired population, as well as changes in government facilities (e.g., air force bases). Non-labor income sources may serve as a buffer against local economic downturns by providing a source of income separated from the fluctuations of the local economy. The drawback of these changing demographics is that the wages associated with increasing numbers of jobs involved in the service industry may be lower relative to other industry sectors. Correspondingly, services provide a smaller percentage of total earnings compared to total employment, in contrast to government and manufacturing. Recreation and tourism activities are an important part of the study area economy. Defining tourism is a difficult task as the outputs associated with the industry are more abstract than extraction or manufacturing industries. Tourism is not a single sector that can be looked at for trends – activity occurs in many sectors, often the same sectors in which local residents purchase goods and services for their own use, adding to the complexity of the evaluation.

The study area employed 5,076 people in the travel and tourism industry, or 7.4 percent of total jobs (excluding proprietors and government) in 2006 (U.S. Census – 2008 County Business Patterns (CBP 2008), as cited in EPS 2009a). By comparison, this industry accounted for 4.9 percent of national jobs – demonstrating the relative importance of travel and tourism in the study area. Nationwide, Lawrence and Custer Counties rank, respectively, in the top 3 percent and 6 percent of all counties with respect to percentage of the economy accounted for by travel and tourism (CBP 2008, as cited in EPSA 2009).

Travel and tourism’s share of employment has remained somewhat stable, ranging from 7.2 percent to 7.6 percent between 1998 and 2006. While stable, this sector has experienced slightly greater volatility compared to employment in other sectors within the study area.

Forest Contributions to Communities and Lifestyles

The Black Hills National Forest Advisory Board is currently working with the Forest to develop recommendations and a business plan for a new OHV user fee proposal. Fees would be reinvested in the OHV system as guided by the Recreation Enhancement Act. Grants and limited appropriated funding would be invested in the OHV system. In addition, the Forest is currently

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1 Travel and tourism-related jobs are defined as the proportion of an area’s jobs that are in industries likely to be closely associated with travel and tourism, as defined by the BEA’s U.S. Travel and Tourism Satellite Accounts methodology (www.bea.gov/industry/iedguide.htm#ttsa).
studying the feasibility of initiating a Trail Ranger Volunteer Program to assist in the management on an OHV trail system.

**Acceptable Uses**

The Forest Service strives to offer multiple uses on National Forest System lands. Not every acre is available or suitable for every use, but there is a place for many if not most recreational uses to occur. In some cases, the Forest Service has determined that private lands are the most appropriate places for some specific activities, such as motocross tracks; however, with management and resource protection, many recreational uses can be acceptable and encouraged on National Forest System lands. Juxtaposition of various uses can create some social values conflicts because not everyone values or is tolerant of recreational activities they may perceive as inappropriate or undesirable. These conflicts would persist unless and until the current and future uses of the Forest are tolerated and accepted by all user groups.

**Sound Levels (Noise)**

An increasingly important issue in the Black Hills and across the nation is the sound level associated with off-highway vehicles. Nonmotorized users and adjacent landowners have expressed concerns about sound levels as OHV motorized recreation use grows. The Black Hills National Forest does not currently have a stationary sound limit. There is an industry standard applied to many OHVs for the sound level produced by the machines when manufactured. However, because of aftermarket changes and deterioration of mufflers with use, many of those machines exceed the original equipment manufacturer (OEM) levels. The sound level of some machines has produced a negative attitude among some toward some OHV recreation. See the Engineering and Transportation section for further discussion on this topic.

**Air Quality**

Air quality impacts from National Forest System roads are associated with vehicle emissions and dust from traffic on unpaved roads. Fugitive dust effects typically are localized and temporary, and their extent depends on the road surface types, moisture levels and the amount of traffic. Most of the unpaved ML 3 and 4 roads under Forest jurisdiction are located in unpopulated areas with relatively low traffic volumes. Dust issues on ML 2 roads typically are less severe. Dust abatement is a relatively expensive activity and is dependent on budget levels and priorities. Historical budgets have not been sufficient to support other than minimal abatement activities on roads with high logging truck activity. Concentrating motorized use on roads and trails, and developing trailheads could potentially increase the amount of dust created in some areas. See the Engineering and Transportation section for further discussion on this topic.

**Trespass and Access**

According to the Travel Management Rule, areas and routes not designated on the motor vehicle use map would be closed to motorized use. This would be a change from the current situation on the Black Hills National Forest, which allows motorized use unless designated as closed.

Problems related to OHV use that have developed or intensified over the last several years include noise disturbance to nearby residences, proliferation of trash on the land, traffic through residential neighborhoods, trespass onto adjacent ownerships, no legal public right-of-way access to some areas of the Forest, and damage to sensitive plant communities and riparian areas.
Environmental Effects Analysis

Direct and Indirect Effects: Methodology

Economic Impacts

Travel management decisions are likely to affect tourism-related sectors in the Black Hills. Direct economic impact on surrounding areas is based on users who purchase goods and services on their way to or returning from an activity on the Black Hills National Forest. The economic impact of access for mining, oil and gas, livestock grazing, and wood products activities should not be affected by the decision on this project (see earlier section: Affected Environment: Economic and Social Elements).

Economic impact analysis is used to evaluate potential direct, indirect, and induced effects of recreational activity (i.e., visits) on the local economy. Economic impacts are estimated using region-specific multipliers derived from input-output models. Input-output analysis is a means of examining relationships within an economy, both between businesses and between businesses and final consumers.

The IMPLAN (Minnesota IMPLAN Group 2003) model used in this analysis translate changes in final demand for goods and services into resulting changes in economic effects, such as labor income and employment of the affected area’s economy. The IMPLAN modeling system allows the user to build regional economic models of one or more counties for a particular year. The regional model for this analysis uses the 2007 IMPLAN data for the seven-county Black Hills area. The data are compliant with the Data Quality Act (Section 515 of Public Law 106-554). IMPLAN multipliers are derived from a specific set of cross-sectional data regarding employment, output, and expenditures from a single point in time (i.e., year).

The expenditures reported by visitors who responded to the 2003 National Visitor Use Monitoring survey have been used to develop spending profiles by activity type (see Stynes and White 2005). Expenditures acknowledge the variable costs of using recreational equipment (e.g., gasoline to operate motorized vehicles) but do not account for large capital expenditures associated with the purchase of items such as motorized vehicles and trailers; there is no evidence to suggest that travel management planning decisions are likely to have a significant impact on this level of purchase behavior. Expenditures\textsuperscript{9} are allocated to the appropriate industry sectors (e.g., retail; accommodations and food services, entertainment) within the IMPLAN model. The total employment and labor income impacts, aggregated for all industry sectors, for each activity type (e.g., hiking, hunting, etc) provide response coefficients (e.g., numbers of jobs generated per 1,000 visits). Response coefficients are combined with estimates of numbers of visitors based on National Visitor Use Monitoring data to calculate the economic impacts associated with motorized, nonmotorized, and “all other” recreational activities on the Black Hills National Forest.

Evaluations of jobs and income do not address the public benefits derived from recreation and other uses of National Forest System trails and roads. These benefits are largely based on nonmarket values, such as the value of recreational experiences and ecological services. By their

\textsuperscript{9} Labor income results are adjusted to 2008 dollars using GDP deflators.

\textsuperscript{10} Expenditure categories provided to respondents during the 2003 NVUM survey include lodging (motels, cabin, BandB), camping, restaurants and bars, gasoline and oil, groceries, local transportation (bus, shuttle, etc), recreation and entertainment (guide fees, equipment rentals, etc), entry/parking/recreation use fees, souvenirs/clothing etc., and sporting goods (Stynes and White, 2005)
very nature, these types of benefits are difficult to quantify and monetize. Direction in 40 CFR 1502.23 and the Forest Service Handbook 1909.15 and 22.35 provides for the use of qualitative analysis to evaluate nonmarket effects, and the nonmarket aspects of each alternative are therefore discussed and assessed in other resource sections of the EIS and other resource specialist reports.

Social Effects

People may hold multiple values for the same resource, or may hold very separate values for specific places or experiences. The same route, as well as the conditions of that route, would have different values to different people.

For this analysis, the values and interests included are based on the comments the public has provided during the comment period for the proposed Black Hills National Forest Travel Management Plan and DEIS (USDA Forest Service 2009b). This is not a random sample; people who choose to respond to any Forest Service comment period are self-selected. However, the public’s responses provide valid information about the range of values, attitudes, and beliefs regarding the proposed action. Based on public comments, this analysis centers on the broad groups of categories of values and interests listed in Table 33. Note that individuals often have values that range across more than one category below.

Table 33. Value and interest categories associated with travel management on the BHN

<table>
<thead>
<tr>
<th>Value/interest category</th>
<th>Preferences based on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan reliability</td>
<td>Belief that the agency can provide sufficient funding, enforcement, administration, and other resources to implement the option/alternative in an efficient and equitable manner.</td>
</tr>
<tr>
<td>Access</td>
<td>Beliefs and attitudes about public rights to access National Forest System land, including access by all members of the public (e.g., all age groups, families).</td>
</tr>
<tr>
<td>Motorized (recreation) experience</td>
<td>Values for management plan attributes that affect the quality of motorized recreation experience such as concentrated use, trailheads, loop routes, cross-country travel for hunting, and dispersed camping.</td>
</tr>
<tr>
<td>Motorized use capacity</td>
<td>Values for motorized use capacity on National Forest System lands that acknowledge potential changes in the supply and demand for motorized use.</td>
</tr>
<tr>
<td>Nonmotorized (recreation) experience</td>
<td>Values for management plan attributes that improve the perceived quality of nonmotorized recreation experience such as reduced conflicts/encounters with motorized users, limits on cross-country motorized travel, “active” (closed unless open) designations, and mitigation of motorized impacts on resources.</td>
</tr>
<tr>
<td>Preservation/conservation</td>
<td>Values for natural ecosystems, processes, and ecosystem services, as well as efforts to adopt sustainable management strategies that address cultural, historic, and spiritual values.</td>
</tr>
<tr>
<td>Multiple use</td>
<td>Values for conditions favoring multiple and equitable use of National Forest System lands.</td>
</tr>
<tr>
<td>Local economy</td>
<td>Values associated with local economic impacts (e.g., businesses, jobs, income).</td>
</tr>
<tr>
<td>Community effects/safety</td>
<td>Values for improved safety, reduced dust, noise, and other measures to reduce adverse impacts to adjacent communities and private landowners.</td>
</tr>
</tbody>
</table>
Direct and Indirect Effects: Results
For details about the results presented below, see the Supplementary Specialist Report: Social and Economic Effects (USDA Forest Service 2009c).

Alternative A – No Action
Alternative A reflects the current situation of the Forest transportation system. No additional management or changes would be implemented.

Economic Impacts (Current Employment and Income Contributions of Alternative A)
In total, recreational activities associated with primary visits to the Black Hills National Forest are estimated to contribute 832 annual jobs and approximately $22 million in labor income to the local seven-county area (Table 34). These results are based on estimates of current recreational visits, as reported by the National Visitor Use Monitoring data, and are therefore assumed to represent conditions under Alternative A. These contributions make up less than 1 percent of total employment and labor income associated with the seven-county area (see Table 35), but may be important contributions to individual communities within the seven-county study area.

Local and nonlocal visits associated with nonmotorized recreation (as a primary activity) are estimated to be responsible for approximately 70 jobs (8.4 percent of all jobs and income contributed by primary Forest visits) and $1.8 million in labor income annually in the seven county study area. Local and nonlocal visits associated with motorized activities are responsible for similar contribution estimates - approximately 65 jobs and $1.7 million in labor income annually, or approximately 8 percent of all jobs and income contributed by recreation. The motorized use with the largest economic impact is driving for pleasure, which contributes almost 5 percent of jobs and labor income from all local and nonlocal visits. OHV use accounted for 1.8 percent of jobs and income from all activities.

Activities included in the “All other activities” category (e.g., hunting, fishing, camping, viewing wildlife, relaxing, etc.) are responsible for a large portion of economic contributors - 697 jobs and $18.1 million labor income which is 84 percent to 85 percent of all employment and income generated from all local and nonlocal visits analyzed. Hunting, which is included in “all other activities” is estimated to account for 8 percent of primary activity visits, contributing 14 full or part-time jobs each year to the local area, a relatively small component of total employment (18,040 jobs) engaged in the economic sectors most affected by recreation in the seven-county area. A percentage of the primary visits associated with hunting are likely to involve motorized vehicle use based on data for OHV user activities (USDA Forest Service 2008a).

When estimating economic impacts (e.g., jobs and labor income), it is important to note that only nonlocal visitors bring ‘new money’ into the local communities and therefore have a direct economic impact. Visitors who reside in the local area tend to substitute other local recreational activities or change the time and place for continuing the same activity rather than traveling long distances and incurring additional costs to do the same activity.

Non-local visits are responsible for 504 of the 832 jobs estimated to be contributed by all types of primary visits (see Table 34). Similarly, nonlocal activities account for $12.8 of the $21.6 million in estimated labor income generated by all recreational activities. Non-local motorized use, as a primary activity, is responsible for contributing 30 jobs or 6 percent of employment impacts associated with nonlocal visitors and approximately $750,000 in labor income. In contrast, nonmotorized use is estimated to contribute 52 jobs or 10 percent of aggregate employment impacts, accounting for approximately $1.3 million in income. “All other use”
activities account for the remaining 84 percent of job and income contributions by nonlocal visitors.

Table 34. Employment and labor income contributed by current recreational activity (representing economic contributions under Alternative A)\(^1\)

<table>
<thead>
<tr>
<th>Nonmotorized Use</th>
<th>Employment (No. of full and part-time jobs)</th>
<th>Labor income (2008 dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect and induced</td>
</tr>
<tr>
<td>Backpacking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Non-local</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Hiking/walking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>8.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Non-local</td>
<td>26.6</td>
<td>9.0</td>
</tr>
<tr>
<td>Horseback riding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>0.6</td>
<td>0.2</td>
</tr>
<tr>
<td>Non-local</td>
<td>1.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Bicycling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>2.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Non-local</td>
<td>6.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Cross-country skiing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Non-local</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Other Nonmotorized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Non-local</td>
<td>3.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Total nonmotorized</td>
<td>52.0</td>
<td>17.9</td>
</tr>
<tr>
<td>Subtotal</td>
<td>70</td>
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<table>
<thead>
<tr>
<th>Motorized use</th>
<th>Employment (No. of full and part-time jobs)</th>
<th>Labor income (2008 dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect and induced</td>
</tr>
<tr>
<td>OHV use</td>
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<td></td>
</tr>
<tr>
<td>Local</td>
<td>4.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Non-local</td>
<td>5.8</td>
<td>2.2</td>
</tr>
<tr>
<td>Driving for pleasure</td>
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<td></td>
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<tr>
<td>Local</td>
<td>15.8</td>
<td>5.7</td>
</tr>
<tr>
<td>Non-local</td>
<td>11.4</td>
<td>3.8</td>
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<tr>
<td>Snowmobiling</td>
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<tr>
<td>Local</td>
<td>5.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Non-local</td>
<td>4.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Other motorized</td>
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<td></td>
</tr>
<tr>
<td>Local</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Non-local</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Total motorized</td>
<td>48.2</td>
<td>17.2</td>
</tr>
<tr>
<td>Subtotal</td>
<td>65</td>
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<table>
<thead>
<tr>
<th>All other use</th>
<th>Employment (No. of full and part-time jobs)</th>
<th>Labor income (2008 dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect and induced</td>
</tr>
<tr>
<td>All other activities</td>
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<tr>
<td>Local</td>
<td>200</td>
<td>74</td>
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<tr>
<td>Non-local</td>
<td>313</td>
<td>110</td>
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<td>Total Other</td>
<td>513</td>
<td>184</td>
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<tr>
<td>Subtotal</td>
<td>697</td>
<td></td>
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<tr>
<td>Grand total</td>
<td>613</td>
<td>219</td>
</tr>
<tr>
<td>Grand subtotal</td>
<td>832</td>
<td></td>
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\(^1\) Does not include non-primary visits; totals may be off slightly due to rounding
Table 35. Current contributions of Forest-related recreational activity to the local economy, by local and nonlocal visits (representing economic contributions under Alternative A)\(^1\)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Employment (No. of jobs)</th>
<th>Labor income (millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area totals</td>
<td>National Forest-related</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3,998</td>
<td>13</td>
</tr>
<tr>
<td>Mining</td>
<td>1,249</td>
<td>5</td>
</tr>
<tr>
<td>Utilities</td>
<td>632</td>
<td>2</td>
</tr>
<tr>
<td>Construction</td>
<td>8,827</td>
<td>7</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5,476</td>
<td>20</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>2,538</td>
<td>58</td>
</tr>
<tr>
<td>Transportation and warehousing</td>
<td>14,081</td>
<td>25</td>
</tr>
<tr>
<td>Retail trade</td>
<td>2,822</td>
<td>104</td>
</tr>
<tr>
<td>Information</td>
<td>1,680</td>
<td>7</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>4,871</td>
<td>13</td>
</tr>
<tr>
<td>Real estate, rental and leasing</td>
<td>1,913</td>
<td>9</td>
</tr>
<tr>
<td>Professional, scientific, and technical services</td>
<td>4,378</td>
<td>15</td>
</tr>
<tr>
<td>Management of companies</td>
<td>411</td>
<td>4</td>
</tr>
<tr>
<td>Administration, waste management and removal services</td>
<td>3,696</td>
<td>32</td>
</tr>
<tr>
<td>Educational services</td>
<td>1,285</td>
<td>9</td>
</tr>
<tr>
<td>Health care and social assistance</td>
<td>10,697</td>
<td>28</td>
</tr>
<tr>
<td>Arts, entertainment and recreation</td>
<td>3,924</td>
<td>199</td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td>11,294</td>
<td>270</td>
</tr>
<tr>
<td>Other services</td>
<td>7,564</td>
<td>19</td>
</tr>
<tr>
<td>Government</td>
<td>19,287</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>110,624</td>
<td>852</td>
</tr>
<tr>
<td>Forest Service as % of total</td>
<td>---</td>
<td>0.77%</td>
</tr>
</tbody>
</table>

\(^1\) Totals may be off slightly due to rounding

The total jobs that are estimated to be contributed annually as a result of current nonlocal visits (504 jobs) are expected to continue under the No Action Alternative. These job impacts, as well as corresponding labor income (approximately $12.8 million) are important annual contributions to relevant sectors of the local economy, however, the total job contributions from nonlocal recreation are less than 1 percent of the total labor force (110,624 jobs) and approximately 1.7 percent of the labor force associated with the sectors that are most affected by Black Hills recreation (i.e., retail trade, accommodations and food services, and entertainment) for the seven-county area. It is likely that travel management would have a significant effect only on a subset of the jobs affiliated with nonlocal visits, namely those jobs contributed by nonlocal motorized and nonmotorized activities (82 jobs); potential economic impacts are therefore expected to be very small (e.g., less than 0.1 percent of total labor force and less than 0.3 percent of labor associated with recreational industry sectors). It is recognized that Forest-related motorized and
nonmotorized recreation has a substantial impact on the lifestyles and culture of the Black Hills area, including the attractiveness of the area from the perspective of a variety of Forest users and local residents, however, these results suggest that the economic contributions to the local economy are relatively small, even when considering that additional jobs are expected to be contributed by other nonlocal visits engaged in motorized and nonmotorized use as a secondary activity. Jobs and income contributed by these recreational activities may be an important contribution to individual communities, but, as noted below, changes in these contributions as a consequence of travel management alternatives are expected to be too small to accurately project.

Social Effects of Alternative A
Approximately 864,000 acres of the Forest would remain open to motorized cross-country travel. Because some trails do not allow motorized vehicle use or are not allowed on some trails, there is some level of separation of uses. However, no additional separation of uses would be implemented. Those conflicts that currently exist would likely continue under this alternative.

Under no action, there would be no trailheads within 3 miles of a potential gateway community; however, slightly more miles of authorized motorized routes through or within 300 feet of lands outside of National Forest suggests a higher potential for noise and dust impacts to neighboring landowners and residents. With no action, 318 miles of motorized routes are within ½ mile of nonmotorized routes suggesting some potential for user conflict compared to other alternatives (range from 382 miles under Alternative C to 211 miles under Alternative D). However, the presence of relatively unrestricted cross-country travel over 864,000 acres suggests increased potential for user conflict between motorized and nonmotorized users, in addition to the continuation of many of the adverse effects from user-adopted unauthorized routes associated with unrestricted travel.

Alternative A is likely to rank somewhat low with respect to those who are concerned about plan reliability due to ongoing concerns about the impacts of motorized travel that may continue unmitigated. Individuals holding values related to motorized recreational experience, access, and capacity may be have the greatest preference for Alternative A because cross-country motorized travel would continue with fewest restrictions. Preferences for Alternative A are expected to be low for the “Nonmotorized (recreation) experience” and “Preservation/conservation interest” categories due to the absence of efforts to mitigate the impacts of motorized travel. Preferences for Alternative A may be lower with respect to individuals or groups with multiple use interests due to perceptions about inequitable accounting for nonmotorized and motorized needs respectively. Individuals or groups with interests in community effects may perceive benefits as being low for Alternative A due to the feeling that current adverse impacts affecting adjacent landowners and nearby residents would continue unmitigated.

Effects Common to All Action Alternatives (B, C, D, and E)
Impacts to communities from motorized access would continue under all alternatives. The lack of any large areas open to motorized cross-country travel may cause some OHV users to feel displaced. This feeling of displacement on the part of OHV users may result in increased trespass on lands outside of National Forest and a tendency for noncompliance with motor vehicle use map designations. The reduction in current motorized recreation opportunities and the concentration of OHV use on the designated transportation system could intensify conflicts between motorized and nonmotorized trail users, as well as private and other public landowners, due to such things as increased dust and noise. However, prohibiting motorized cross-country
travel on approximately 864,000 acres may significantly decrease user conflict, especially with hunters and other nonmotorized recreational users.

It is expected that active management of OHV use could be costly (see Engineering and Transportation section). The construction of new trails and trailheads, maintenance of trails and related facilities, education and enforcement, and the need for increased staff would likely strain already declining Forest Service budgets. The long-term successful management of the transportation system under any of the action alternatives would require user support in terms of volunteer services and user fees.

Motorized and nonmotorized recreation activities support jobs in the local communities and contribute to the attractiveness, lifestyles, and customs of residents and visitors, as noted in the previous discussion of conditions under Alternative A. However, based on the inability to project changes in motorized and nonmotorized visits under the action alternatives, as well as the relatively small impacts noted above, changes in jobs and income resulting from Alternatives B, C, D, and E are expected to be too small to accurately project or detect.

There may be some decrease in motorized visits to the Black Hills as a consequence of constraints on motorized travel under the various alternatives; these constraints may be more pronounced under Alternatives D and E. However, potential job losses associated with these constraints may be offset under Alternatives B and C, in part, by (1) increases in visitors associated with nonmotorized activities as conditions contributing to the quality of their experience improve, (2) improved long-term management and maintenance of a planned travel system and enhanced OHV trail system opportunities, and (3) the potential for some portion of displaced motorized users to visit substitute sites and/or participate in alternative outdoor recreational activities within the area. Under Alternatives D and E, there may be greater potential for offsets due to jobs contributed by increases in visitors associated with nonmotorized activities but reduced potential for offsets due to enhancements of motorized travel systems and OHV opportunities (relative to Alternatives B and C). The direction of any net changes in jobs and income contributed by recreation under action Alternatives B through E are therefore difficult to predict.

**Alternatives B and C**

Implementation of either Alternative B or C would allow for the addition of a large number of new OHV trails and roads open to both highway-legal and non-highway-legal vehicles (motorized mixed use). Some areas would remain open to motorized travel, but only for the limited purposes of dispersed camping and game retrieval. These alternatives would separate motorized and nonmotorized uses. Alternative C also considers adding additional motorized routes that may be necessary for creating higher quality OHV user experiences than may be found under Alternative B.

There is an attempt to separate some uses by designing an OHV trail system to meet the desires of certain user types. The OHV trail system proposed in both alternatives includes a number of motorized trail systems. These motorized trail systems would be connected by a series of motorized-mixed-use roads. However, given the finite transportation system and lack of any areas open to motorized cross-country travel, some OHV users may feel displaced. Others would enjoy the experience if the OHV trail system adequately accommodates their preferred uses. Because the system would have limits, and resource values must be maintained, many locations would have to be shared by different user types, and conflict could occur in these areas.
The attempt to balance all uses, reduce conflict, and minimize impacts to resources leads to a need to balance the volume of use with how much recreational opportunity is available. The routes with heavier use would tend to see more conflicts between users. Those areas also tend to be easier to access and are often close to the urban interface. These alternatives attempt to clearly define user expectations for experiences by showing recreationists where the various uses would be allowed or prohibited.

Under Alternative B and C, the greatest number of motorized trailheads (10 and 11 respectively) would be located within 3 miles of a potential gateway community, thereby providing access points in areas where additional services are available. The number of miles of motorized routes through or within 300 feet of lands of other ownerships (490 and 500 for Alternatives B and C respectively) suggests that the potential for noise and dust impacts to neighboring landowners and residents is higher (but similar to Alternatives A and E). There are similar miles of motorized routes within ½ mile of nonmotorized routes under Alternative B and C when compared to A and E, suggesting similar potential for user conflict compared to these alternatives. The potential for motorized safety is somewhat lower under Alternative B (as well as C) relative to D and E given the greater number of miles of Forest roads open to motorized mixed use.

Alternatives B and C are likely to rank somewhat low with respect to those who are concerned about plan reliability, due in part to expectations that current funding levels are unlikely to be able to fully support the expense of implementing alternatives B and C. Effective management of the OHV trail systems represented in Alternatives B and C would require higher levels of user support (e.g., volunteer services, user fees) than management under Alternatives D and E. Preferences for Alternatives B and C may be moderate, particularly in comparison to Alternatives D and E, for individuals who value motorized recreational experience, access, and capacity. However, as implied above, it is difficult to predict final effects due to uncertainty about the degree to which improved management and designations of mixed-use roads and motorized trail systems for OHV use would help offset perceived losses in recreational experience associated with restrictions on cross-country travel.

Given that the age distribution within the seven-county Black Hills area is slightly skewed toward older age groups, particularly in Custer, Fall River, and Weston Counties, Alternatives B and C may be favored (compared to Alternatives D and E) by certain OHV user segments that are somewhat more prevalent in the Black Hills area. These segments include “middle age actives” (average age = 43, more affluent, interest in wide variety of activities), “seniors” (average age = 70), and “upper middle class nature lovers” (average age = 54, interest in viewing/learning) as defined by a review of OHV users on National Forests (USDA Forest Service 2008a). The broad activity interests of these OHV user segments suggest that a number of motorized vehicle users are likely to hold values related to preservation/conservation interests that are also preferred by nonmotorized and other types of recreational visitors.

Preferences for Alternatives B and C are expected to be lower or moderate for population segments who value nonmotorized (recreation) experience and preservation/conservation due to presence of fewer constraints on and efforts to mitigate the impacts of motorized travel. Individuals and groups with multiple use interests may have moderated preferences for Alternatives B and C because of the attempts being made to account for increasing motorized recreation demand, mitigate past damages associated with unrestricted motorized use, and adhere to the requirements of the Travel Management Rule. Individuals or groups with interests in community effects may have moderate preferences for Alternatives B and C due to perceived attempts to mitigated impacts affecting adjacent landowners and nearby residents.
Though there may be some prevailing perceptions about the economic impact of motorized recreation that could influence preferences for some of the active management alternatives, actual changes in jobs and income resulting from Alternatives B and C are projected to be too small to accurately project or detect, as noted in the section regarding economic impacts for Alternative A above. It is also noted that potential job losses associated with motorized travel constraints under Alternatives B and C may be offset, in part, by (1) increases in visitors associated with nonmotorized activities as conditions contributing to the quality of their experience improve, (2) improved long-term management and maintenance of a planned travel system and enhanced OHV trail system opportunities, and (3) the potential for some portion of displaced motorized users to visit substitute sites and/or participate in alternative outdoor recreational activities within the area.

**Alternative D**

This alternative would implement a more limited OHV trail system to meet transportation and social recreation needs. Alternative D would allow more separation of uses, but would also reduce the opportunities for users of non-highway-legal vehicles, and would concentrate areas where these vehicles would be allowed. This would likely affect the recreation experience of those who are accustomed to using National Forest System roads and currently open areas.

Under Alternative D, there are a reduced number of motorized trailheads located within 3 miles of a potential gateway community, thereby providing reduced access points in closer proximity to areas with services, compared to Alternatives B or C. The number of miles of motorized routes through or within 300 feet of lands of other ownerships (423) suggests that the potential for noise and dust impacts to neighboring landowners and residents is lower compared to the other alternatives. There are also reduced miles of motorized routes within ½ mile of nonmotorized routes under Alternative D (211 miles) compared to A, B, and C, suggesting the potential for some reductions in user conflict compared to the other alternatives. Potential for motorized safety is somewhat higher under Alternative D, relative to B and C given the reduced number of miles of Forest roads open to motorized mixed use.

Perceptions about plan reliability may be somewhat improved for Alternative D because of the reduced number of trails and roads to be maintained. Effective management of the OHV trail systems represented in Alternative D would require higher levels of user support (e.g., volunteer services, user fees) than Alternative A, though potentially lower levels compared to management under Alternatives B and C. Preferences for Alternative D are expected to be low for individuals valuing motorized recreational experience, access, and capacity, though it is difficult to predict final effects due to uncertainty about the degree to which improved route management and designations would help offset perceived losses in recreational experience, as noted for Alternatives B and C above. Preferences for Alternative D are expected to be higher for individuals or groups holding values for nonmotorized (recreation) experience and preservation/conservation due to greater constraints on and efforts to mitigate the impacts of motorized travel.

Individuals and groups with multiple use interests may have moderated preferences for Alternative D, (similar to Alternatives B and C), as a consequence of the attempts being made to account for diverse recreational demand and mitigate past damages associated with unrestricted motorized use; some perceptions about inequitable accounting for motorized needs may affect these preferences. The reduced number of motorized routes within 300 feet of lands of other ownerships may result in somewhat higher preferences for Alternative D by those with values based on community effects.
As with Alternatives B and C, there may be some prevailing perceptions about the potential for adverse economic impacts related to potential job losses associated with motorized travel constraints that could influence preferences for Alternative D, but actual changes in jobs and income are projected to be too small to accurately project or detect (as discussed in the section above regarding economic impacts for Alternative A). Under Alternative D, there may be greater likelihood that potential job losses would be offset by increases in visitors associated with nonmotorized activities as conditions contributing to the quality of their experience improve, but less of an offset from improved long-term management and maintenance of a planned travel system and enhanced OHV trail system opportunities.

**Alternative E**

Alternative E reflects the current Forest transportation system, without any areas open to motorized vehicles or adding any user-created routes. There would be a significant increase in the separation of uses due to implementation of the travel management rule, primarily due to prohibiting the use of motorized vehicles in areas currently open to such use. Conflicts between users could continue, especially in areas of the Forest that have shared uses or in areas where user solitude would be disrupted by neighboring motorized activities. This alternative would also designate roads in the South Dakota portion of the Forest as open to highway-legal vehicles only.

Under Alternative E, there would be no motorized trailheads located within 3 miles of a potential gateway community, implying a reduced number of access points in close proximity to areas with services, compared to Alternatives B, C, or D. The number of miles of motorized routes through or within 300 feet of lands of other ownerships (504) suggests that the potential for noise and dust impacts to neighboring landowners and residents is similar to impacts associated with the other alternatives, with the exception of Alternative D (423 miles). There are 318 miles of motorized routes within ½ mile of nonmotorized routes under Alternative E suggesting a similar potential for user conflict compared to other alternatives, with the exception of Alternative D. Potential for motorized safety is higher under Alternative E, relative to B, C, and D given the reduced number of miles of Forest roads open to motorized mixed use (160 miles).

Perceptions of plan reliability may be highest for Alternative E where there is greater potential for current funding levels to cover agency expenses while still meeting the requirements of the Travel Management Rule. Effective management of the OHV trail systems represented in Alternative E would require higher levels of user support (e.g., volunteer services, user fees) than Alternative A, though potentially lower levels compared to management under Alternatives B and C. Preferences for Alternative E are expected to be lowest for individuals with interests in motorized recreational experience, access, and capacity. Preferences for Alternative E are expected to be higher for individuals or groups holding values for nonmotorized (recreation) experience and preservation/conservation due to greater constraints on and mitigation of the impacts of motorized travel.

Preferences for Alternative E may be lower with respect to individuals or groups with multiple use interests due to perceptions about inequitable accounting for motorized and nonmotorized recreational activities. Individuals and groups with multiple use interests may have moderated preferences for Alternative E, (similar to Alternative B, C, and D), as a consequence of the attempts being made to account for diverse recreational demand and mitigate past damages associated with unrestricted motorized use, though some perceptions about inequitable accounting for motorized needs may affect these preferences.
Individuals or groups with interests in community effects may have moderate preferences for Alternative E due to perceived attempts to mitigate impacts affecting adjacent landowners and nearby residents. As noted for Alternatives B, C, and D, prevailing perceptions about the potential for adverse economic impacts may exist, but actual changes in jobs and income resulting from Alternatives B, C, D, and E are projected to be too small to accurately project or detect. Similar to Alternative D, there may be greater likelihood that potential job losses would be offset by increases in visitors associated with nonmotorized activities as conditions contributing to the quality of their experience improve, but less of an offset from improved long-term management and maintenance of a planned travel system and enhanced OHV trail system opportunities.

Cumulative Effects

The economy can be affected by a variety of factors including population growth, recessions, growth of new sectors, tax and economic policy, and others. The management of travel and recreation on National Forest lands has a relatively small effect compared to the effects of these variables. It should also be noted that IMPLAN models are aggregate representations of the cumulative effects of all economic sectors and therefore represent cumulative effects within the context of economic conditions.

As local communities continue to grow and as tourism continues to increase, more people will come to the Forest to visit and recreate. The easier it is for people to visit and recreate on the Forest, the greater will be the potential social and economic impacts. Changes based on economy, age distribution, and population can affect how people recreate. The population in the study area is expected to continue to grow and Forest use will likely increase. The state of the economy, gas prices, food prices, and housing costs can affect how much discretionary income people have for recreation. As the population ages, some uses may increase in popularity while others may taper. Technological advances in equipment and trends also can affect the activities in which people choose to participate.

The loss of OHV recreational opportunities by limiting or prohibiting cross-country motorized travel would be partially offset by enhanced OHV trail system opportunities under Alternatives B, C, and to a limited extent, D. In addition, commercial opportunities could develop on adjacent private properties to provide cross-country areas for OHV users seeking hill-climb, motocross, mud-bogging, or rock-crawling activities.

Increasing populations, changing demographics, and increasing emphasis on OHV participation may place additional strains on the motorized route system within the Black Hills National Forest; however, the effort to adapt to these changing travel and recreation conditions is, in part, responsible for the implementation of the Travel Management Planning rule in the first place. A range of alternatives in this FEIS presents varying levels of motorized and motorized-mixed-use opportunities (i.e., road and trail miles, area open to cross-country travel), thereby recognizing issues related to the changes in recreational activity demand and trends. Increasing demand and participation may place stress on the route system proposed under each alternative; however, efforts to improve long-term management of motorized use under a travel management plan is expected to help adapt to and mitigate adverse effects associated with changing recreational demands (see cumulative effects for Engineering and Transportation section).

Some concerns have been raised about the cumulative impact of motorized access restrictions on other national forests and/or lands of other ownerships and the resulting effect on overall supply of motorized access. As noted in the cumulative effects discussion in the Recreation section
(p. 73), new motor vehicle restrictions on other lands (e.g., Thunder Basin, Buffalo Gap) may displace visitors and further concentrate use in permitted areas, thereby creating potential for increased resource impacts and management concerns. However, results from a survey of Wyoming ORV users (see OHV Demographic Characteristics discussion in this section) suggest that some ORV riders would be willing to seek alternative or substitute recreational activities within the State if they were told that they would be unable to participate in ORV activities in Wyoming; as stated earlier, this willingness likely decreases with distance traveled. Similarly, National Visitor Use Monitoring survey results suggest that alternative or substitute sites for recreation opportunities exist and are recognized by visitors to the Black Hills National Forest, though these responses are not specific to nonlocal motorized use visitors (USDA Forest Service 2004c). Some of these substitute sites are also likely to be located within the same “local” area (i.e., within 50 miles). Together, the National Visitor Use Monitoring and Wyoming studies do not provide conclusive evidence to quantify the likelihood that nonlocal motorized visitors to the Black Hills, who might feel displaced by travel management restrictions, would continue to visit the Black Hills area. However, the results from these studies suggest that there is potential for some nonlocal “displaced” Black Hills ORV users to seek out alternative or substitute sites for motorized use and/or alternative recreational activities within the Black Hills area, thereby retaining some nonlocal spending and partially offsetting the adverse economic impacts associated with potential cumulative effects from motorized access restrictions.

Civil Rights Impact Assessment

The Civil Rights Policy for the USDA, Departmental Regulation 4300-4, dated May 30, 2003, states that the following are among the civil rights strategic goals; (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities. The travel management planning process is designed to prevent disparate treatment and minimize discrimination against minorities, women and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

The travel management plan would not discriminate towards persons with disabilities, because it (e.g., restrictions) would apply equally to all groups. Under Section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. However, there is no legal requirement to allow people with disabilities use of motor vehicles on roads, trails, or other areas that are closed to motor vehicles. Restrictions on motor vehicle use that are applied consistently to everyone are deemed not to be discriminatory. The effects of actions outlined under this plan would be distributed evenly among the population since access on routes designated as closed to motorized use would not prohibit or inhibit use on the basis of race, color, sex, national origin, religion, age, disability or marital or familial status. See discussion earlier in this section (Population, Demographics, and Diversity) concerning the distribution of visitors by age, disability, and minority status; existing information indicates that visitor demographics are similar to that of the State and regional populations in general.

Environmental Justice

Executive Order 12898 directs Federal agencies to focus attention on human health and environmental conditions in minority communities and low-income communities. The purpose of the executive order is to identify and address, as appropriate, disproportionately high and
adverse human health or environmental effects on minority populations and low-income populations.

In the Phase II FEIS, Tables 3-59 and 3-60 highlight the demographic statistics for identifying potential communities of concern (USDA Forest Service 2005a). None of the counties in the study area contain low-income or minority populations as defined by Executive Order 12898. No additional outreach or analysis has been performed, as there would be no disproportionate negative effect on such communities under any of the alternatives.

Additional evaluations of minority and low-income population data (USDA Forest Service 2009c) show no evidence to suggest that the proposed action would have a disproportionate adverse effect on low-income populations. Evaluations also show that minority populations for the counties in the study area are unlikely to meet the Environmental Justice criterion for a minority population and would be unlikely to experience disproportionate adverse effects from implementation of any alternative.

Soils

Introduction

Soils of the Black Hills National Forest (the analysis area) have generally been mapped and described at an Order 3 (USDA Forest Service 1991) level, which is the level of data generally mapped for various Forest uses, such as range planning. General background soil resource information for the Forest is available in the Final Environmental Impact Statement for the Revised Land and Resource Management Plan for the Forest (USDA Forest Service 1996a), and in the Final Environmental Impact Statement for the Phase II Amendment to the 1997 Revised Land and Resource Management Plan for the Black Forest (Phase II FEIS; USDA Forest Service 2005a). Information on various specific components for Forest soil map unit resources have been and are periodically updated (such as through the 2007 update to the Lawrence County Soil Survey) by the Natural Resources Conservation Service (NRCS) and have become available to the public through an NRCS website located at http://soils.usda.gov/. Soil information was available for the 2007 Travel Analysis Process Report for the District route selection process and is not presented again for this Forestwide document.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

The primary law that applies to the soil resource is the National Forest Management Act of 1976 (16USC 1600-1602, 1604, 1606, 1608-1614), which directs that management prescriptions conserve the soil resource and not allow significant or permanent impairment of land productivity.

Forest Plan Objectives, Standards, and Guidelines. Standards, guidelines, and management directives set forth in the Revised Forest Plan as amended (USDA Forest Service 2006a) include measures for the conservation and protection of the soil resource on National Forest System lands. Forest Plan standards and guidelines for the soil resource considered applicable to the travel management plan include:

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1. Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15 percent of any land unit (standard 1103; see similar worded Region 2 Soil Management Handbook and Region 2 Watershed Conservation Practices Handbook direction below).

2. Minimize soil compaction by reducing off-road vehicle passes, by skidding on snow, frozen or dry soil condition or by off-ground logging systems (guideline 1104).

3. Stabilize and maintain roads and other disturbed sites during and after construction to control erosion. (standard 1106)

4. Maintain or improve long-term levels of organic matter and nutrients on all lands. (standard 1109)

No soil resource specific direction exists in Forest Plan management area direction. Forest Plan standards and guidelines for the conservation and protection of soil resource productivity apply to all management areas.

Region 2 Soil Management Direction

The Soil Management Handbook (FSH 2509.18, Region 2 Supplement) provides standards to ensure soil quality maintenance. The following standard applies:

“2.23. No more than 15 percent of an activity area will be left in a detrimentally compacted, displaced, puddled, severely burned and/or eroded condition. This does not include the permanent transportation system.”

Region 2 Watershed Conservation Practices Handbook Direction

The Region 2 Watershed Conservation Practices Handbook also provides direction with similar wording to Forest Plan standard 1103 and the Region 2 Soil Management Handbook. The following Management Measure 13 from that handbook applies:

“Manage land treatments to limit the sum of severely burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15 percent of an activity area 12 (commonly a timber sale cutting unit, prescribed fire burn unit or an allotment pasture).”

Methodology

The USDA Forest Service Region 2 Soil Management Handbook (USDA Forest Service 1992) contains direction targeted at protecting soil resources and soil productivity, which includes the inherent capacity of a soil under management to generally support the growth of specified plants, plant communities, or a sequence of plant communities. The Region 2 Soil Management Handbook and the WO Amendment to FSH 2509.18 Soil Management Handbook (USDA Forest Service 1991) include information that applies to areas where vegetation management prescriptions are being applied, including timber production sites and livestock forage production areas within allotments. The Region 2 Watershed Conservation Practices Handbook (USDA Forest Service 2006c) reiterates that the National Soil Handbook (FSH 2509.18) soil quality standards are intended for areas where management prescriptions are being applied, such

12 An activity area is defined as an area of land impacted by a management activity or activities. It can range from a few acres to an entire watershed depending on the type of monitoring being conducted. It is commonly a timber sale cutting unit, a prescribed fire burn unit, or an allotment pasture. Soil quality standards do not apply to administrative sites or other areas with dedicated uses, including the permanent Forest Transportation System.
as timber harvest areas and range allotments. They are not intended to apply to administrative sites or other areas with dedicated uses such as the designated permanent Forest transportation system. Roads, trails, trailheads, the concentrated cross-county areas less than 5 acres (see Table 7, designated high-intensity motorized use sites that will occupy previously disturbed sites, such as gravel pits), and specified parking zones along routes are dedicated to a specific management use that precludes other uses of the land (such as for growing trees for harvest or forage for wildlife or livestock) and removes the majority of the productive capability of soils at the specific location where they occur. Therefore, the soils analysis is primarily focused at the various land areas in action alternatives that are designated open to cross-country motorized travel. Alternatives that contain land areas open to cross-country motorized travel off of designated transportation facilities include Alternatives A (existing condition), B, and C. Alternatives D and E restrict motorized travel to the designated transportation system facilities with no areas open for motorized cross-country travel.

The following indicators were used to measure the effects to the soil resource across the range of alternatives:

**Indicators**
- Acres open to unlimited motorized cross-country travel
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping).

Potential effects of the alternatives to the soils resource was part of Issue 1. These effects are considered in the EIS to compare how well each alternative meets soil protection requirements. The acres open to motorized cross-country travel and the amount and timing of that use can potentially alter surface vegetation or soil conditions to a level that soil productivity at specific locations could be expected to be impacted.

**Assumptions**

Based on the information available in Chapters 1 and 2 of the EIS, a number of assumptions were made for the soils analysis.

- For comparing alternatives, designated Forest transportation facilities for each of the alternatives are considered to cause equal amounts of disturbance to the adjacent soil resources that are not allocated to the transportation facility. While it is recognized that not all of the transportation facilities cause equal amounts of disturbance (it can vary based on slope gradients, intensity of use, timing and volume of precipitation, etc.), designated transportation facilities can be designed to meet Forest Plan standards and guidelines and Region 2 Watershed Conservation Practices (see Design Criteria in Appendix B and the management strategies list in the Implementation section of Chapter 2). Implementation of such measures would be expected to limit any potential effects to those within an acceptable level to continue protecting and maintaining soil productivity conditions.

- Not designating routes that currently have less than desired condition elements would likely remove from the public transportation system those routes that would be expected to require the greatest amount of maintenance. Since the motor vehicle use map is to be updated annually (see motor vehicle use map management strategy identified under the Implementation section in Chapter 2), an annual update would require periodic documented route and other transportation facility reviews or inspections, as well as timely maintenance throughout the year to address and correct identified resource impacts, including any to
adjacent soil resources. In addition, if inspections or reviews identified that a designated route or cross-country motorized use area could not be managed to standard (see Chapter 2, Features Shared by All Alternatives, Emergency Closure item), action would be taken to close the specific transportation facility or area, such as through a road closure or area closure order until a new motor vehicle use map would take effect, and the original facility or area would be reclaimed or rehabilitated.

- Administrative access (see Chapter 2, Features Common to All Alternatives) would be limited in nature and would generally be expected to retain vegetative cover or allow for regrowth to the level that water runoff velocity would be at significantly lower levels as compared to a designated open transportation facility that experiences multiple passes during the same day. It is understood that access needs increase when implementing ground-disturbing projects and the effects of access are disclosed in environmental analysis for those projects. While administrative access for fire generally results in significant soil disturbance and removal of vegetative cover associated with fire suppression activities (such as during dozer line construction) suppression rehabilitation activities are generally implemented to meet Water Conservation Practices Handbook Management Measure (design criteria h) (USDA Forest Service 2006c) to limit the extent and duration of effects. Part of the burned area rehabilitation process and direction could also be expected to include an area or route closure period, as needed, to allow vegetation of the general area to establish prior to reinitiating any OHV use.

**Design Criteria**

No additional design criteria specific to the soil resource were included for the action alternatives. Dedication of sites to designated routes and trailheads that incorporate the design criteria for protecting water resources and limiting the number of acres and the number of opportunities (reduced number of trips) for cross-country travel generally addresses design criteria that would have been included for meeting the Forest Plan standards and guidelines and Region 2 soil quality standards listed above.

**Field information and Other Analysis Information**

The soil resource evaluation was developed using information presented to the extended team (soils was a component of the extended team) from the core transportation management interdisciplinary team specialists, background information from existing knowledge of the Black Hills and professional judgment.

For this analysis, effects were discussed for the Forest soil resource as a whole rather than addressed by each soil map unit across the Forest because 1) the analysis covers such a large area (Forestwide) containing a large number of soil map units, 2) we are assuming that sustainable and safe travel would be limited to specific slopes with a limited amount of use, and 3) the motor vehicle use map could change use areas on an annual basis.

Since specific research is not known to be available for the general Black Hills area, some of the most recent literature (Ouren et al. 2007) and other Forest travel management analysis documents were reviewed to understand impacts associated with OHV use in other areas. Acreage and mileage figures provided are and should be considered approximate since information included in Chapters 1 and 2 indicate that motor vehicle use maps are likely to be changed as necessary to address resource protection and conservation needs.
**Affected Environment**

As described in Chapter 1, approximately 4,109 miles of unauthorized OHV routes (not currently part of the designated Forest transportation facilities) currently exist on the Forest (see Alternative A map in Appendix I, map packet). These routes are generally associated with the extensive area of the Forest that is currently open to unlimited cross-country motorized travel. As indicated above, these generally were not planned routes with engineering design specified for Forest projects; therefore, effects to soil productivity were generally never analyzed. OHV trails and use areas currently occur at various concentrations and intensity of use levels throughout the Forest. In comparison to designed native surfaced roads, these unauthorized routes are generally narrower (65 inches in width or less) than roads, tend to lack drainage structures, and some have been observed to occur on steep gradients (for additional information see the Transportation section of this chapter). Based on mostly undocumented observations, impacts to soil resources currently exist at various levels and locations along unauthorized routes in the open cross-country motorized use areas. In these areas, vegetative ground cover has been removed, surface soil layers have become eroded, soil structure has been altered, surface soil layers have become mixed with subsurface layers, or tracks have extended to the bedrock layer. Some trails have been observed to contribute to the concentration of water runoff associated with snowmelt or precipitation events and have contributed to erosional features (ruts and gullies) at track locations (see some of these effects featured in some of the photos located throughout the FEIS). The public can readily observe some of these motorized use areas and associated erosional features when traveling on some of the main roads or highways located throughout the Forest. Past Forest documents have included information regarding impacts to soil resources associated with OHV use on Forest lands and closure orders have been issued to reduce impacts to a variety of resources. Local newspaper articles in recent years have also reported on and included pictures of various OHV effects that have occurred on the Forest and the actions taken to address those effects. Some limited funds have become available periodically, which have been used to attempt to reclaim some areas, primarily focused at sites near to, or that cross perennial streams (to restore some level of vegetation with the intent to reduce sedimentation).

**Environmental Effects Analysis**

It is important to clearly understand that reclamation or rehabilitation of previously used unauthorized user-created routes or OHV-disturbed areas across the Forest is not included as part of any of the action alternatives or as part of the decision to be made for this project (see the Decision Framework section in Chapter 1); therefore, this is not addressed in the effects analysis for any of the alternatives. Those activities would only occur if proposed through other project planning processes and decisions.

The decision to allow or prohibit the use of motorized OHV on designated open routes (the Forest transportation facility) would generally be expected to have limited effects on adjacent soil resources. A route designation decision does have the potential to affect soils indirectly to the extent that it may affect the concentration of use on roads and trails. For example, increased use in some areas may result in greater levels of OHV parking on the edge of the trail, prompting the need for the implementation of more routine maintenance, and affecting the potential for impacted areas to recover. In general, more motorized routes and motorized use on National Forest System lands could be expected to contribute more potential site disturbances that could impact Forest soil resources.

Based on the assumptions listed near the beginning of this section and the sites to be designated on the Forest transportation system, the greatest potential for effects to soils from motorized
recreation are likely to be associated with potential disturbances from areas used for dispersed camping, followed by areas open to game retrieval. While expected to be very limited, the potential increase in water runoff velocities from designated facilities can potentially contribute to erosion of soil resources located immediately adjacent to transportation facility components. Therefore, the amount of area open to motorized cross-country travel is the overriding indicator used to evaluate the level of effects to soils, with some minor considerations given to designated transportation facilities.

Direct and Indirect Effects

*Alternative A - No Action*

**Indicators**

- Acres open to unlimited motorized cross-country travel: 864,000
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping): 864,000 (approximately 72 percent of total National Forest System acreage--1.2 million acres--identified in Chapter 1)

This alternative retains the current 864,000 acres open to motorized unlimited cross-country travel, which occurs throughout the entire year. While 864,000 acres is what is “mapped” it is somewhat misleading regarding what can be expected for potential site and soil disturbances created by OHV use. OHV use would likely occur on less than 864,000 acres because accessibility is restricted due to natural or human-developed barriers (vegetation, steep slopes, rock outcrops, private land and Forest fences, lakes or other water features, etc.) No changes to cross-country motorized dispersed camping and motorized game retrieval would be expected.

This alternative would be expected to have direct and indirect effects similar to some conditions that have been observed on the Forest to date (see those discussed in the Affected Environment section above) and what has been documented from elsewhere (Ouren et al. 2007). Unregulated off-road motorized activities can contribute to disturbed conditions that can result resulting in unacceptable levels of soil degradation. A variety of effects associated with OHVs, including those to the soil resource, has been compiled and published (Ouren et al. 2007). Abrasion removes surface vegetation and roots, which can further contribute to water runoff and erosion. Compaction reduces soil voids to various degrees, which can result in limitations to various site productivity factors such as the water-holding capacity of the soil or restricting or altering vegetative root growth (USDA Forest Service 2006c). Any potentially new or existing unauthorized roads and trails in Alternative A would likely continue to contribute to the spread of invasive weed species (see the Noxious Weeds section). Various invasive non-native competitive plant species including cheatgrass are generally recognized to be less valuable at preventing or limiting soil erosion than plant species native to an area.

Depending on the level of use and various site conditions that exist along routes, uncontrolled motorized vehicle use off roads and trails can alter soil conditions in areas that are not part of the permanent transportation system and contribute to a lowered soil productivity condition than what would generally occur naturally at a site. As compared to a designed or designated open system, unauthorized roads and trails have greater potential for more impacts to soils due to lack of design and placement in a specified location.

While direct and indirect effects would be expected to continue under the no action alternative, closure orders would still be a tool for closing areas where resource damage occurs.
Effects Common to all Action Alternatives

As indicated previously, the Region 2 Watershed Conservation Practices Handbook Management Measure 13 addresses soil quality as follows:

“Manage land treatments to limit the sum of severely burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15 percent of an activity area (commonly a timber sale cutting unit, prescribed fire burn unit or an allotment pasture).”

While slightly different (since it was based on a previous version of the Region 2 Watershed Conservation Practices Handbook), Forest Plan standard 1103 has similar wording:

“Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded and displaced land to no more than 15 percent of any land unit.”

Although the Region 2 Watershed Conservation Practices Handbook management measure, the Region 2 soil quality standard and Forest Plan standard 1103 are primarily targeted at timber, prescribed fire, and range activities, it is also applicable to other human disturbance activities on Forest land. Components of the action alternatives can be expected to benefit or potentially contribute to reducing detrimental soil quality conditions that currently exist and would continue under Alternative A. The action alternatives would significantly limit or eliminate all acres open to motorized cross-country travel; but quantitative benefits are immeasurable at a Forest scale. However, the decrease or elimination of areas available for motorized cross-country travel and the designation of specific routes open for public motor-vehicle use would concentrate use to designated sites and would comply with design criteria 1 (a) of Management Measure 13 (USDA Forest Service 2006c):

“Restrict roads, landings, skid trails, concentrated-use sites, and similar soil disturbances to designated sites.”

Designating the greatest amount of OHV use to Forest transportation facilities and to specific use areas would implement the design criteria listed above. While concentrated use along designated transportation routes could contribute to some effects (such as increasing water runoff velocities that could contribute to or result in some level of erosion on adjacent soils), specifying designated routes, trailheads, concentrated cross-county areas less than 5 acres (see Table 7)and associated route parking/passing zones, could lead to sustainable maintenance for transportation facilities (see Chapter 2 of the FEIS) and increased benefits for adjacent soil resources. At this time, the amount of maintenance an open route would require and receive in the future is unknown; however, an increase in annual maintenance opportunities and levels would generally be expected to address and limit effects of concentrated use and keep it within a manageable level.

The designation of trailhead facilities (estimated at up to five acres in size for this analysis) would further implement that design criteria. Trailheads are generally expected to occur on slopes of five percent or less to provide for ease of parking trailers and the loading and unloading of OHVs. The numbers of trailheads are 34 in Alternative C, 31 in Alternative B, 23 in Alternative D, and 7 each in Alternatives A and E. Even at five acres, the total acreage trailhead designation would be less than 200 acres that could contribute to water runoff or to any effects to adjacent soil resources. By actually designating such transportation facilities, concentrated OHV loading and unloading can be limited to specific locations with the expectation that the facilities can be routinely inspected and maintained to specific standards (see Design Criteria in Appendix...
B and the management strategies identified under the Implementation section in Chapter 2) with a greater likelihood of preventing impacts to adjacent soil resources.

Mass movement of land surfaces have occurred on the Forest with generally the greatest potential for occurrence in the Bear Lodge Mountains. The geology of some areas in the Bear Lodge Mountains have characteristics that contribute to a greater likelihood of naturally occurring failures on steep slopes or human-caused failures in association with site disturbances such as highway and road construction or vegetation removal activities. It is important to note that soil displacement in the form of mass movement (also known as slope failures or landslides), has not been observed to occur on the Forest with cross-country motorized use. Mass movement increases as identified in the Region 2 Soil Quality Handbook, Region 2 Water Conservation Practices Handbook, and in Forest Plan standard 1103 are not expected to be an issue since no roads would be designed or constructed as part of this decision. Designation of transportation facilities in the Bear Lodge Mountains under any of the action alternatives is not expected to increase the likelihood of mass movement. The only routes to be designated under any of the action alternatives are located on existing routes that currently have some level of drainage features designed into them. No user-created routes were included as designated open routes within the alternatives for that portion of the Black Hills National Forest. In addition, removal of timber canopy is not a part of the activities or decision to be made for this project. Therefore, mass movement potential is not expected to increase or decrease as part of this project.

When wet, various native surface roads and trails with low strength characteristics\(^{13}\) can be susceptible to rutting. Rutted conditions can result in a desire by users to circumvent the designated transportation facilities and to access areas not designated as open on the motor vehicle use map. Rutted conditions have been observed to contribute to trail widening as vehicles avoid the rutted trail locations, and can result in unacceptable impacts to the transportation surfaces or drainage features and limit their effectiveness (see the transportation report for further information), resulting in concentrating water runoff that can lead to varying levels of gully erosion depending on site characteristics. If rutting of routes occurs, the assumption is that maintenance of designated routes would occur in a timely manner in accordance with protective Forest Service design and trail maintenance standards, and users would be expected to be less inclined to divert off the route where soils would be impacted. Therefore, effects to adjacent soil resources would be expected to be kept at a minimum level.

**Effects Specific to Alternative B**

**Indicators**

- Acres open to unlimited motorized cross-country travel: 0
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping): 179,000 (approximately 15 percent of 1.2 million acres of National Forest System lands from Chapter 1)

Based on the assumptions listed earlier and the indicators above, this alternative can be expected to have some of the same direct and indirect effects as those in the no action alternative but to a much lesser degree. The greatest potential for effects to the soil resource under this alternative

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\(^{13}\) low strength characteristics can be obtained from the NRCS Soils website at [http://soils.usda.gov/technical/manual/contents/chapter6a.html#1](http://soils.usda.gov/technical/manual/contents/chapter6a.html#1)
from motorized recreation is likely to be associated with potential disturbances from areas used for dispersed camping, followed by areas open to game retrieval.

Motorized game retrieval (game retrieval is elk only) can affect soils through disturbance of vegetation. However, under this alternative, very few or no effects to the soil resource would be expected. Only one vehicle is allowed for a retrieval of a harvested animal however, more than one pass by the vehicle is allowed, only as needed, and no resource damage is allowed for the retrieval of an animal (see game retrieval information provided in Actions Common to All Action Alternatives Section in Chapter 2). Based on the size that a mature elk can achieve, it may be possible, depending on the size of the OHV available, that up to four passes may be needed for a smaller, lighter weight vehicle to retrieve an elk (one quarter of the animal per pass), while a larger vehicle (generally, heavier than smaller vehicles) may likely only need one entry to retrieve a harvested animal. While uncertainty exists, it is expected that since the number of passes to retrieve an animal would generally be four entries or less, such a level of use would be expected to have limited potential for causing altered soil conditions to the extent that vegetative productivity of those retrieval sites could not be retained. In addition, game retrieval would generally be limited to less than five months a year (September through January), during a period when soil moisture conditions are generally lower than conditions that generally occur during higher precipitation level months, or frozen soil conditions may be present (climate information for Black Hills can be viewed by following the links provided by the High Plains Regional Climate Center at [http://www.hprcc.unl.edu](http://www.hprcc.unl.edu/)). The hunting period within the Black Hills is also at the end or after the primary growing season period for the general majority of plants in the Black Hills. Based on the soil moisture conditions at this time of the year and the entry limitations to retrieve game, it can be expected that there would be a very limited potential to no likelihood of soils to be compacted to a detrimental level in areas open to that activity. In addition, the entry limitation during the hunting season would generally result in little to no observable reductions of vegetative ground cover, or reduce ground cover to the point below that expected to keep erosion within tolerable limits (approximately 50 to 70 percent of ground cover for soils within the Black Hills).

Recognizing that natural and human restrictive features and conditions prevent access to some of the areas open for motorized cross-country travel, it is likely that fewer acres than the total listed can or will be accessed. For example, in considering slope, an assumption can be made that there may be hunter safety concerns and that there are limitations to the stability of vehicles on certain slopes. Slopes of various portions of the Forest were reviewed through a geographical information system (GIS) query. While it is likely that the general hunting public would probably limit motorized removal of big game to slopes of 15 percent or less, there may be some people that operate their vehicles on steeper slopes; therefore, an even greater conservative query was reviewed. Simply based on eliminating slopes of 30 percent and greater, game retrieval acreage for Alternative B would generally be less than 162,000 acres (approximately 13 percent of the Forest). An assumption is that the total acres that would actually be accessed for game retrieval would be even further limited by site factors that are not as easily mapped or reviewed with a tool such as GIS. These restrictive features can include rock outcrops, soil surface rock fragments or boulders, dense understory shrub conditions, private land fences limiting access to public lands, lakes and other water features, or some other site condition that would limit the desired or safe operability of motorized OHV equipment. Based on the information available and presented, risk of impacts to a detrimental level for soils associated with game retrieval as is specified in Alternative B is considered to be at a low level.
As mentioned above, motorized use off of designated routes can disturb vegetation, which could contribute to some impacts to soils adjacent to specific portions of designated transportation system feature. Motorized dispersed camping is associated with access to and from trails and parking, which can disturb vegetation and in turn can contribute to effects to soils. The total amount of acres actually available for dispersed camping (observations in recent years is that the general majority of camping on the Forest is of a motorized nature), and considered to be more desirable for camping, is significantly less than the total of what is listed for each alternative. Based on site-limiting factors not conducive for locating or setting up campsites, a primary and easily mapped feature is slope, which limits the use of a variety of camping equipment and camper comfort (the assumption is that the majority of motorized or pull type campers or camping equipment would generally access and set up on areas of off-road slopes of 10 percent or less). Recognizing there may be a very limited number of campers that may actually access slopes greater than 5 percent, a query of less than 10 percent slopes was made to estimate the majority of acres where motorized dispersed camping and access would generally be expected to occur. The review of that query indicates that only about 1/3 of the total acres listed as available to motorized use could or would likely be used under Alternative B with dispersed camping use identified (less than 24,000 acres or 2 percent of the Forest). The percentage of the Forest desirable or available for motorized camping would likely be even significantly less based on a number of other site factors, which are generally not as easily reviewed with the tool of GIS as slope, but have been observed. Other factors that limit the desirability or limit the conditions of site suitability for motorized camping can include rock outcrops, soil surface rock fragments or boulders, presence of poison ivy, presence of various noxious weeds (such as Canada thistle), dense understory shrub conditions, high tree stem densities, private land fences, presence of Forest permitted livestock and odor of livestock excrement, road noise, and presence or lack of surface water.

Motorized dispersed camping in Alternative B is included entirely within areas where game retrieval is identified; therefore, total acres of all cross-country travel for Alternative B is 179,000 acres (approximately 15 percent of National Forest System lands). The existing condition (or the no action alternative) currently allows season-long, unlimited motorized cross-country travel activities on 864,000 acres (approximately 72 percent of 1.2 million acres of National Forest System lands). The reduction in the percentage of the Forest open to motorized cross-country travel in Alternative B identifies the level of potential benefits that can likely be realized to various areas of Forest soil resources. In addition, significantly fewer passes by motorized vehicles would be expected to occur on the lands that would continue to remain open to cross-country travel.

Areas designated as part of the permanent transportation facility are no longer managed as a soil resource and therefore were not used as an indicator. If the permanent transportation facility components (considered to be the routes designated, the adjacent parking zones along the routes, and the trailheads) are managed to the transportation facility standards specified in the Implementation section in Chapter 2 and Appendix B and discussed in the hydrology section of this FEIS, any indirect effects associated with the routes to adjacent Forest soil resources are expected to be very limited in spatial extent. This includes the annual inspection of routes and taking actions to mitigating impacts that may be discovered or the removal of routes from the annually issued MVUM if impacts cannot be mitigated. Implementation of Alternative B would have approximately half as many miles used by motorized vehicles as compared to the existing condition (Alternative A, no action).
In summary, full implementation of Alternative B can be expected to have some of the same direct and indirect effects as those in the no action alternative (current conditions) but to a much lesser degree. The acreage where cross-country use is allowed would decrease from the current 864,000 acres to 179,000 acres, a difference of 685,000 acres, or about 55 percent of the total Forest area. Resource conditions on the areas where use would no longer occur would improve at varying rates as existing disturbed or impacted sites associated with motorized cross-country use activity begin to revegetate. It is expected that some sites would require active rehabilitation to restore some level of vegetative or productive condition. While uncertainty exists, on the 179,000 acres that would still be open to limited cross-country use, it is likely that resource conditions would improve to various levels. Depending on individual site characteristics and precipitation cycles experienced in the future, areas where game retrieval only is allowed could have the most potential for improved conditions (with use generally occurring at times of lowest soil moisture contents levels, on potentially frozen soils and with limited number of passes over limited number of months and for elk only). In areas where impacts may currently exist and that would still be available for dispersed camping in Alternative B, conditions may improve but improvement would likely be to a lesser extent or at a slower rate than in the game retrieval areas (due to potential for more passes by vehicles, use occurring during a variety of soil moisture content levels associated with number of months of camping opportunities).

**Effects Specific to Alternative C**

### Indicators

- Acres open to unlimited motorized cross-country travel: 0
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping): 485,500 (approximately 40 percent of the total Chapter 1 identified 1.2 million acres of National Forest System lands)

Based on the assumptions listed earlier and the indicators above, this alternative can be expected to have some of the same direct and indirect effects as those in the no action alternative but to a much lesser degree. The greatest potential for effects to the soil resource under this alternative from motorized recreation is likely to be associated with potential disturbances from areas used for dispersed camping, followed by areas open to game retrieval.

Direct and indirect effects of game retrieval in Alternative C would generally be similar to those identified and discussed under Alternative B, but could be expected to occur over a larger area since more acres would be available and there is greater potential for more game-retrieval-entry opportunities since this alternative allows for deer in addition to the retrieval of elk. The same GIS slope query exercise used in Alternative B was used for Alternative C analysis. The results indicate that less than 337,000 acres (approximately 28 percent of the Forest) would be available for motorized game retrieval. Alternative C differs from B in that it allows game retrieval off of the designated Forest transportation system for both elk and deer (deer have far more tags available than elk); therefore, not only does Alternative C have more acres available for big game retrieval as compared to Alternative B, more cross-country motorized entries can be expected in Alternative C as compared to Alternative B, which has elk-only game retrieval specified (see the Wildlife Section for additional information). Based on the size of the animal, it can generally be assumed that only a single entry would be needed to retrieve a deer. Since elk are larger animals, it may be possible, depending on the size of the OHV available, that up to four passes may be needed for a small vehicle to retrieve an elk (one quarter of the animal per pass), while a larger vehicle (generally heavier than the smaller vehicles) may only need one entry to retrieve a harvested animal. While uncertainty exists, it is expected that since the
number of passes to retrieve an animal would generally be four entries or less, such a level of use would be expected to have limited potential for causing altered soil conditions to the extent that vegetative productivity of those retrieval sites could not be retained. While more opportunities are at a greater potential for risk of effects to the soil resource based on acres and more entries as compared to Alternative B, the other information presented in Alternative B would also indicate that risks of detrimental impacts to the soil resource would be low for Alternative C if game retrieval would be implemented to the standard specified in the alternative.

Direct and indirect effects for dispersed camping in Alternative C would be similar to those identified and discussed in Alternative B but would occur over a slightly larger area since more acres are available for that recreational activity in Alternative C. A similar GIS query was completed for Alternative C as to the query that was completed for Alternative B to indicate the amount of acres that might actually be used for dispersed camping. Similar to Alternative B, the review of that query indicates that only about 1/3 of the total acres listed as available to motorized dispersed camping use would likely be used in Alternative C (less than 58,000 acres or approximately 5 percent of the Forest). As with Alternative B, within even those acres, desirable or available camping would likely be even significantly less based on a number of other site factors listed in the discussion for Alternative B above, which are generally not as easily mapped as slope, but have been observed. Based on that information, less than 5 percent of the Forest for the implementation of Alternative C would likely be used for motorized dispersed camping if Alternative C were implemented. Of the action alternatives, Alternative C would have the greatest number of acres likely to be used for motorized dispersed camping, followed by Alternative B.

As with Alternative B, total acres of motorized cross-country travel for Alternative C cannot be calculated by adding game retrieval and motorized dispersed camping acres together. Unlike Alternative B, motorized dispersed-camping areas are not entirely inclusive in the game retrieval areas of Alternative C; however, there is some overlap resulting in a total area of 485,500 acres (approximately 40 percent of National Forest System lands) available for specific, limited motorized cross-country activities. As compared to the existing condition, the percentage of the Forest open to motorized cross-country travel in Alternative C would be reduced by approximately 30 percent, resulting in potential benefits to various areas of soil resources. In addition, fewer passes by motorized vehicles would be expected to occur on these lands.

Areas designated as part of the permanent transportation facility are no longer managed as a soil resource and therefore were not used as an indicator. If the permanent transportation facility components (considered to be the routes designated, the adjacent parking zones along the routes, and the trailheads, and specific to this Alternative, concentrated cross-county areas less than 5 acres (see Table 7) are managed to the road and trail and other transportation facility standards specified in the Implementation section in Chapter 2 and Appendix B and discussed in the Hydrology section of this FEIS, any indirect effects associated with the routes to adjacent Forest soil resources are expected to be very limited in spatial extent. This includes the annual inspection of routes and taking actions to mitigating impacts or reclaiming issue areas that may be discovered or the removal of routes from the annually issued motor vehicle use map if it is determined that impacts cannot be corrected or mitigated. Similar to Alternative B, implementation of Alternative C would have approximately half as many miles used by motorized vehicles as compared to the existing condition (Alternative A, no action).

In addition, various seasonal closures are identified associated with big game winter range or goshawks (see design criteria in Appendix B and the alternative maps in Appendix I, map
packet). Both seasonal closure periods overlap with all or portions of the climatic season when the greatest precipitation is generally experienced in the Black Hills (High Plains Regional Climate Center information indicates this as the beginning of April until the end of June) and soil moisture is generally at some of the highest levels of the year. While uncertain, there could be additional benefits to the soil resources adjacent to routes with seasonal closures as compared to routes that are designated open year round. Seasonally closed routes may experience some vegetative growth during portions of closure periods, thereby contributing to potentially limiting water runoff velocities, which in turn would generally be expected to contribute to reductions in erosional forces on adjacent soil surfaces located down slope of transportation facilities.

In summary, full implementation of Alternative C could be expected to have some of the same direct and indirect effects as those in the no action alternative but to a much lesser degree. The acreage where cross-country use is allowed would decrease from the current 864,000 acres to 485,500 acres, a difference of 378,500 acres, or about 30 percent of the total Forest area. Resource conditions on the areas where use would no longer occur could generally be expected to improve at varying rates as existing disturbed or impacted sites associated with motorized cross-country use activity begin to revegetate. It is expected that some sites would require active rehabilitation to restore some level of vegetative or productive condition. While uncertainty exists, on the 485,000 acres that would still be open to limited cross-country use, resource conditions would also likely improve to varying levels. Depending on individual site characteristics and precipitation cycles experienced in the future, areas where game retrieval only is allowed could have the most potential for improved conditions (with use generally occurring at times of lowest soil moisture contents levels, on potentially frozen soils and with limited number of passes over limited number of months). While unknown, in areas where impacts may currently exist and that would still be available for dispersed camping in Alternative C, conditions may improve but would be expected to be to a lesser extent or at a slower rate than in the game retrieval areas (due to potential for more passes by vehicles, use occurring during a variety of soil moisture content levels associated with number of months of camping opportunities).

**Effects Specific to Alternative D**

**Indicators**
- Acres open to unlimited motorized cross-country travel: 0
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping): 0

In this alternative, no motorized game retrieval off of motorized routes or dispersed camping would occur; therefore, no impacts to the soil resource associated with these activities would be expected.

Areas designated as part of the permanent transportation facility are no longer managed as a soil resource and therefore were not used as an indicator. If the permanent transportation facility components (considered to be the routes designated, the adjacent parking zones along the routes, and the trailheads) are managed to the road and trail standards specified in the Implementation section in Chapter 2 and Appendix B and discussed in the hydrology section of this FEIS, any indirect effects associated with the routes to adjacent Forest soil resources are expected to be very limited in spatial extent. This includes the annual inspection of routes and taking actions to mitigating or reclaiming impacted areas that may be discovered or the removal of routes from the annually issued motor vehicle use map if impacts cannot be mitigated or corrected.
Implementation of Alternative D would have about 40 percent of motorized use route miles as compared to the existing condition (Alternative A, no action).

In summary, full implementation of Alternative D would be expected to have no direct and indirect effects associated with cross-country motorized use as compared to Alternative A (current conditions). The acreage where cross-country use is allowed would decrease from the current 864,000 acres to 0 acres, a difference of about 70 percent of the total Forest area. Depending on individual site characteristics and precipitation cycles experienced in the future, various exposed areas (where the vegetation component has been lost from the land surface) associated with OHV use could be expected to establish some level of a vegetation component (although not likely what existed at the site prior to the disturbance) and organic litter layers development would begin to result in fewer visual features of active erosion over time. It is expected that some sites would require active rehabilitation to restore some level of vegetative or productive condition.

**Effects Specific to Alternative E**

**Indicators**

- Acres open to unlimited motorized cross-country travel: 0
- Acres open to limited motorized cross-country travel (motorized game retrieval, motorized dispersed camping): 0

In this alternative, no motorized game retrieval off of motorized routes or motorized dispersed camping would occur; therefore, no impacts to the soil resource associated with these activities would be expected.

Areas designated as part of the permanent transportation facility are no longer managed as a soil resource and therefore were not used as an indicator. If the permanent transportation facility components (considered to be the routes designated, the adjacent parking zones along the routes, and the trailheads) are managed to the road and trail standards specified in the Implementation section in Chapter 2 and Appendix B and discussed in the hydrology section of this FEIS, any indirect effects associated with the routes to adjacent Forest soil resources are expected to be very limited in spatial extent. This includes the annual inspection of routes and taking actions to mitigating or reclaiming impacted areas that may be discovered or the removal of routes from the annually issued motor vehicle use map if impacts cannot be mitigated or corrected.

Implementation of Alternative E would have the same number of designated routes of National Forest System lands open for motorized use as the existing condition and no action alternative, but none of the unauthorized routes would be open to motorized use in Alternative E; therefore, Alternative E would have approximately 46 percent of the route miles as compared to the existing condition (Alternative A, no action).

In summary, full implementation of Alternative E would be expected to have no direct and indirect effects associated with cross-country motorized use as compared to Alternative A (current conditions). The acreage where cross-country use is allowed would decrease from the current 864,000 acres to 0 acres, a difference of about 70 percent of the total Forest area. Depending on individual site characteristics and precipitation cycles experienced in the future, various exposed areas (where the vegetation component has been lost from the land surface) associated with OHV use could be expected to establish some level of a vegetation component (not likely what existed at the site prior to the disturbance) and organic litter layers development would begin to result in fewer visual features of active erosion over time. It is expected that
some sites would require active rehabilitation to restore some level of vegetative or productive condition.

**Cumulative Effects**

The geographic scope of the cumulative effects analysis selected is the entire Forest. Some general similarities exist in soils and climates within this area that are within the Black Hills. A larger area would include the surrounding lower elevation plains areas outside of the Black Hills, but these include a different suite of soils and climatic conditions. A temporal scale of 10 years was used and is based on (1) the time over which one can expect to predict reasonably foreseeable actions and (2) the time over which one can expect to predict effects of ongoing and proposed activities.

The cumulative effects analysis for the soils resource generally considers impacts of the alternatives when combined with the following past, present, and foreseeable future actions and events including: (1) designated Forest transportation facility maintenance; (2) closure or rehabilitation efforts on routes not open for public use or not maintained for administrative use; (3) vegetation treatments; (4) urban interface growth and increased Forest use; and (5) future road or trail realignment, reconstruction, or decommissioning. Management actions can contribute to alterations in user concentrations, creation of unauthorized routes, maintenance needs and levels, the effectiveness of closures, and rehabilitation or some level of recovery of closed routes. Cumulatively, these actions can influence vegetative growth and soil erosion.

The designation of a transportation system does not limit the ability of the Forest to use closure orders for areas where unacceptable resource damage is identified. This important management tool can limit the duration and extent of effects if resource damage is beginning to occur. Effects to the soil resource, such as soil erosion features being present, may be reason for the implementation of this tool if corrective maintenance is not successful.

Some erosional or drainage issues have periodically been identified for Forest transportation facilities and may be tied to inadequate design, maintenance, inspections or repairs, or from a climatic event (USDA Forest Service 2007a). Roads that are regularly used, such as those used for timber entries, are generally inspected and maintained according to timber sale contract specifications. Other transportation facilities on the Forest are assigned a maintenance level and follow a Forest maintenance schedule (refer to the Transportation section of this Chapter). Various portions of the Forest experienced high-intensity precipitation events in 2008. The volume of water was to the level that floodplains and components of the Black Hills transportation system (both Forest and other systems) were flooded and impacted and various Black Hills communities closed roads, both for human safety and repair needs. Transportation facility inspections conducted on the Forest noted slope failures, washouts, and other damage associated with the high-intensity precipitation events. The assumption for this analysis is if there are similar future precipitation events, there would likely be similar maintenance and repair implementation, or temporary route closures for Forest motorized trail and trailhead facilities since they would be designated as part of the Forest transportation system.

The Forest-urban interface in the vicinity of Rapid City is one of the most rapidly growing areas in the State of South Dakota. The rapid population growth has likely contributed to the popularity of all-terrain vehicles and the demand for this type of motorized recreation can be expected to continue to increase (see Chapter 1). Therefore, it is likely that demand would concentrate or use levels would increase on open routes within this general area. Areas with concentrated use would wear on drainage structures, which could contribute to increased erosion.
and deposition of material on adjacent soil resources. However, the assumption is that by reducing the number of routes inspections would be timely and maintenance would occur soon after an issue was identified and any impacts to adjacent Forest soil resources would be kept to a minimum.

Following this travel management decision, and potentially concentrating use, there may be a need to reroute or rehabilitate some routes. Rehabilitation and relocation activities typically result in some level of soil disturbance. However, the long-term effects of rehabilitation actions would likely contribute to reducing impacts to soil resources, by reducing the potential for soil erosion of a site. If a rehabilitation project would be determined to consist of something other than routine maintenance of a designated transportation facility, environmental analysis specific to the rehabilitation is expected to occur.

A variety of activities, such as vegetation management activities, recreational activities and other management activities are expected to continue on the Forest. Road construction, reconstruction, and decommissioning as part of managing the Forest designated transportation system are expected to continue to move towards Forest Plan objective 309 (USDA Forest Service 2006a). As identified in previous documents, these activities would likely have various levels of effects to soils identified in the Forest Plan EIS (USDA Forest Service 1996a) and in the Phase II Amendment EIS (USDA Forest Service 2005a).

As indicated in the Direct and Indirect Effects section above, implementation of any of the action alternatives (B, C, D and E) would be expected to significantly reduce the amount of area open to cross-country travel as compared to Alternative A. No rehabilitation of unauthorized routes or other disturbed areas associated with OHV use within areas not to be designated open is included in any of the action alternatives and no roads are to be closed under this decision. Therefore, no immediate beneficial rehabilitation is anticipated to occur off of designated routes and this analysis is not considering effects of rehabilitation activities off designated routes. Over time, various exposed areas (vegetation component has been lost from the land surface) associated with OHV use can be expected to establish some level of a vegetation component (not likely what existed at the site prior to the disturbance) and organic litter layers development would begin to result in fewer visual features of active erosion over time. The progression of vegetation establishment has been observed on the Forest (e.g., closed roads, following fire events) and occurs at various rates based on variability in site characteristics. These include soil moisture conditions and retention capabilities, other continuing site disturbances, precipitation patterns, and seed source availability. In addition, the amount of surface soil components remaining at a disturbed site contribute to the length of time it can take areas to establish vegetation and organic litter. Sites with no remaining surface soil layers, or where OHV tracks are compacted, may no longer have site characteristics to support vegetation establishment and vegetative litter accumulation to a level (generally 50 to 70 percent) that would successfully prevent erosion without implementing active rehabilitation efforts. Rehabilitation efforts at disturbed locations may occur through the implementation of future Forest project planning efforts.

An assumption from Chapter 2 is that the public is generally expected to observe and fully comply with the requirements of the designated transportation system with no unauthorized access following this travel management decision. As with effects to other resources, the extent and degree of effects to the soil resources would be expected to depend to a certain extent on the timeliness and effectiveness of maintenance as well as timeliness and effectiveness of future closures if designated routes or trailheads could not be maintained to standard (see Chapter 2). The assumption is that if transportation facilities are maintained to standard, they would meet
Forest Plan standards and guidelines and Regional Watershed Conservation Practices. Therefore, while the potential for effects associated with motorized dispersed camping and game retrieval are expected to be minimal, the implementation of Alternative D could contribute the greatest benefit to soil resource conditions by having the least area available to cross-country travel (no motorized game retrieval and no dispersed camping) and the least total miles of designated motorized routes.

Hydrology

Introduction

This section describes and analyzes effects to the water resource in relation to motorized travel on the Black Hills National Forest. One of the key issues identified with this proposal is that the number of miles and location of routes proposed for motorized use could affect natural and cultural resources. Specifically, motorized activity could alter aquatic habitat conditions through soil erosion and sedimentation and changed hydrology patterns.

Research has shown and personal knowledge confirms that roads can be a major source of sediment delivered to streams in watersheds. Research has not established consistent numerical criteria for determining when roads are likely to contribute sediment to streams that causes adverse effects. Direct, quantitative, cause-and-effect links between roads and the condition of aquatic habitat and species have been difficult to document (Gucinski et al. 2001).

From the standpoint of aquatics, it is desirable to have as little impact to the water resource as possible. Forest Plan standard 1203 prescribes stream crossings allow for passage of flow and sediment, withstand flood flows, allow free movement of aquatic life, and maintain current stream dimensions. Forest Plan standard 1212 prescribes that sediment not be introduced to the streams from the roads and trails. Executive Order 11988 outlines floodplains and flood flows not be changed or impacted, and Executive Order 11990 outlines wetland and riparian areas not be impacted.

The area of analysis for the water resource includes all of the water resources contained within the Black Hills National Forest.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

Three major laws and regulations apply to the water resource.

Clean Water Act

The Clean Water Act is the primary Federal law in the United States governing water pollution. The principal body of law currently in effect is based on the Federal Water Pollution Control Amendments of 1972, which significantly expanded and strengthened earlier legislation. Major amendments were enacted in the Clean Water Act of 1977 and the Water Quality Act of 1987. Commonly abbreviated as the CWA, the Act established the symbolic goals of eliminating releases of high amounts of toxic substances to water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. The Act regulates discharges of pollutants from point sources through a permitting system. Nonpoint source pollution is controlled through the use of best management practices (BMPs) per State nonpoint source management plans.
Executive Order 11988 – Floodplain Management

Executive Order 11988 requires Federal agencies to avoid to the extent possible long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for the following actions: (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities (FEMA 2008a).

Executive Order 11990 – Protection of Wetlands

The purpose of Executive Order 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". To meet these objectives, the Order requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The Order applies to: (1) acquisition, management, and disposition of Federal lands and facilities construction and improvement projects which are undertaken, financed or assisted by Federal agencies and (2) Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities (FEMA 2008b).

Forest Plan Direction

Presented here are the Forest Plan standards that directly apply to travel management relating to the water resource. Listed below some of the Forest Plan standards are design criteria that are in the Watershed Conservation Practices Handbook (USDA Forest Service 2006c). Some of the Forest Plan standards are Watershed Conservation Practices.

Forest Plan Standard 1203 – Design and construct all stream crossings and other instream structures to provide for passage of flow and sediment, withstand expected flood flows, and allow free movement of resident aquatic life.

a. Install stream crossings to meet Corps of Engineers and State permits, pass normal flows, and be armored to withstand design flows.

b. Size culverts and bridges to pass debris. Engineers work with hydrologists and aquatic biologists on site design.

c. Install stream crossings on straight and resilient stream reaches, as perpendicular to flow as practicable, and to provide passage of fish and other aquatic life.

d. Install stream crossings to sustain bankfull dimensions of width, depth, and slope and keep streambeds and banks resilient. Favor bridges, bottomless arches or buried pipe-arches for those streams with identifiable flood plains and elevated road prisms, instead of pipe culverts. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary, or the ford design maintains the channel pattern, profile and dimension.
Forest Plan Standard 1212 – Apply runoff controls to disconnect new pollutant sources from surface and ground water.

Forest Plan Standard 1301 – In the water influence zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition.

Forest Plan Standard 1302 – Maintain long-term ground cover, soils structure, water budgets, and flow patterns in wetlands to sustain their ecological function, per 404 regulation.

   a. Keep ground vehicles out of wetlands unless protected by at least 1 foot of packed snow or 2 inches of frozen soil. Do not disrupt water supply or drainage patterns into wetlands.

   b. Keep roads and trails out of wetlands unless there is no other practicable alternative. If roads or trails must enter wetlands, use bridges or raised prisms with diffuse drainage to sustain flow patterns. Set crossing bottoms at natural levels of channel beds and wet meadow surfaces. Avoid actions that may dewater or reduce water budgets in wetlands.

   e. Avoid any loss of rare wetlands such as fens and springs.

Forest Plan Standard 1304 – As opportunities arise, and need dictates, relocate or implement mitigation measures for roads, trails, water tanks, ponds, water catchments, and similar facilities currently located in the WIZ.

Methodology

Indicators
The following indicators will be used to measure the effects to the water resource across the range of alternatives:

- the number of road/trail crossings on perennial streams,
- miles of road/trail within 30 feet of a perennial stream (floodplain), and
- miles of road/trail within 119 feet of a perennial stream (WIZ).

Assumptions
The analysis presented here is based on the assumption that design criteria would be implemented and adequate funding would be provided for implementation, monitoring and enforcement.

Design Criteria
Design criteria developed to conserve and protect the hydrologic resource is located in Appendix B.

Field Surveys and Other Analysis Information
The analysis is largely based on three sources of information:

- Attributes contained in GIS concerning the relationships between water resources and roads
• Field surveys containing information of condition of the water resources and roads over the years
• Personal knowledge of the water resources and roads by resource specialists

Affected Environment

The affected environment for the water resource is described in detail in the Forest Plan EIS, which is incorporated by reference for this analysis and will not be repeated here. What will be discussed here are the components that have the potential to be affected by travel management and relate to the major laws and regulations listed above. The agency has provided guidance for NEPA analysis and different components that should be considered in the analysis. The areas that will be discussed are aquatic ecosystems relating to sediment, bed and bank stability, and temperature, wetlands, and floodplains.

Aquatic Ecosystems

Aquatic ecosystems are water dependent and the main areas of concern of streams. Streams are classified perennial, intermittent, or ephemeral and are defined in the Watershed Conservation Practices Handbook (USDA Forest Service 2006c; see text box).

There are almost 3,500 miles of drainages on the Black Hills National Forest. It is not clear how many are intermittent and ephemeral drainages. There is an estimated 950 miles of perennial streams within the boundaries of the National Forest with an estimated 515 miles on National Forest System lands. Sediment, bed and bank stability, and temperature are the physical components of concern.

Sediment

Most sediment delivered to streams comes from a source zone along streams whose width depends on topography, soils, and ground cover. Connected disturbed areas like roads and other disturbed soils near streams can deliver sediment during runoff events. Sediment deposits in streambeds harm insect populations and fish reproduction. Road and stream crossings on the Black Hills National Forest are a concern. There are an estimated 1,778 road/perennial stream crossings on the current road system (including unclassified roads and citizen routes), an estimated 59 miles of road within 30 feet of a perennial stream, and an estimated 285 miles of road within 119 feet of a perennial stream. Most of the sediment is generated when the road is closest to the stream and is best reflected with the miles within 30 feet. No streams in the Black Hills National Forest are listed as impaired on the Clean Water Act 303(d) list, due to pollutants such as sediment derived from roads (SD DENR 2008).
Bed and Bank Stability

Bed and bank stability can be damaged from trampling by animals or humans, vehicle impacts, degraded bank vegetation, or excessive flow augmentations. Streams can be made wider and shallower, pools and overhanging banks can be destroyed, and much sediment can be added to streams. Vehicle impacts are of concern where off-road travel is permitted and streams are crossed by vehicles breaking down the streambanks. There are an estimated 1,000 crossings on user-created routes.

Temperature

Summer water temperature is increased, and winter water temperature is decreased, by removing shade, reducing low flows, or damaging banks so streams are wider and shallower. Dissolved oxygen is usually reduced when summer water temperature is increased. Such impacts impair or destroy the suitability of water bodies for aquatic biota. This is affected by road crossings that remove riparian vegetation, unmitigated low-water crossings, and from off-road vehicles crossing streams. Vehicles crossing streams tend to remove riparian vegetation and widen the streams, increasing water surface area. Removing riparian vegetation and increasing the water surface area increases the solar radiation input in the summer, which increases water temperature. It is unknown how many low-water crossings are on the current transportation system of an estimated 750 crossings and user-created routes of an estimated 1,000 crossings.

There are several streams listed within the Black Hills National Forest as impaired on the Clean Water Act 303(d) list and are not supporting designated beneficial uses due to temperature (SD DENR 2008). They are Battle Creek, Bear Butte Creek, Elk Creek, Grizzly Bear Gulch, North Fork Rapid Creek, Rapid Creek, Spring Creek, and Victoria Creek. All are streams listed as impaired due to natural sources. West Strawberry Creek is also listed as impaired due to temperature, but a cause is not listed. French Creek is listed as impaired due to dissolved oxygen from natural and drought-related sources. Dissolved oxygen and temperature are directly related.

Wetlands

Wetlands control runoff and water quality, recharge ground water and provide special habitats. Actions that may alter their ground cover, soil structure, water budgets, drainage patterns and long-term plant composition can impair these values. The USDI Fish and Wildlife Service completed mapping of wetlands for the National Wetland inventory that includes the Black Hills National Forest. This was completed through aerial photo mapping. It is a starting point for identifying wetlands. No determination can be made as to whether they are jurisdictional wetlands without a site visit to confirm that the three components of a wetland (hydrology, soils and vegetation) are in place. Generally, if any component is missing, it is not a jurisdictional wetland unless the area has been disturbed, and in that case, all three components are not required. Wetlands that are isolated and not connected to the waters of the U.S. are not jurisdictional wetlands.

A large portion of the mapped wetlands is along ephemeral drainages. From personal observations, the hydrology and vegetation are not present to support a jurisdictional wetland along these drainages. The water regime modifier in many cases is seasonally flooded. With this information and looking at the modifiers, a query of the National Wetlands Inventory (NWI) layer was performed using modifiers that suggest more permanent water, such as saturated, semi-permanently flooded, and permanently flooded. A list of possible modifiers can be found in Appendix A to the water resource specialist’s report in the project file. This resulted in 120 miles of linear wetlands and 1,800 acres of polygon wetlands.
Wetlands are broken down into different categories. On the Black Hills National Forest, there are three categories:

- **Lacustrine** - Relating to lakes and a system of inland wetlands and deep-water habitats associated with freshwater lakes and reservoirs, characterized by the absence of trees, shrubs, or emergent vegetation;

- **Palustrine** - Relating to a system of inland, nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface). Palustrine wetlands range from permanently saturated or flooded land (as in marshes, swamps, and lake shores) to land that is wet only seasonally (as in vernal pools); and,

- **Riverine** - Relating to, formed by, or resembling a river and to a system of inland wetlands and deep-water habitats associated with nontidal flowing water, characterized by the absence of trees, shrubs, or emergent vegetation.

The linear wetlands consist of 1 percent palustrine and 99 percent riverine. The polygon wetlands are 91 percent lacustrine, 9 percent palustrine, and less than 1 percent riverine. Ninety-six percent (96 percent) of the lacustrine wetlands are the surface waters of Deerfield Lake, Pactola Reservoir, and Sheridan Lake.

**Floodplains**

Floodplains are natural escape areas for floods that temper flood stages and velocities. Floodplains occur on every stream. Floodplains store water, serve as natural sponges to moderate the release of high waters and act as filters to trap sediment and pollutants (Greater Yellowstone Coalition 2006). They are important because the loss of the function of floodplains can change the timing and peak of floods.

Mapped floodplains for the entire Black Hills National Forest do not exist. FEMA has completed maps of counties that participate in the National Flood Insurance Program. This includes all counties within the Black Hills National Forest within South Dakota. There are 11,000 acres of mapped 100-year floodplain on National Forest in South Dakota. No information or data could be located for Wyoming.

The Forestwide Travel Analysis Process Report (USDA Forest Service 2007a) used a buffer of 30 feet on perennial streams to address the encroachment into floodplains. The number of road crossings and miles of road within 30 feet would be a good indicator of possible impacts to the floodplain.

The current transportation system and user-created routes on the Black Hills National Forest currently have an estimated 750 perennial stream crossings and 59 miles of road within 30 feet of a perennial stream.

**Environmental Effects Analysis**

The effects analysis encompasses the effects resulting from the use, construction, and maintenance of designated motorized road and trial systems.
Effects Common to All Alternatives

Sediment

Ouren et al. (2007) state “Where OHV activity occurs, networks of OHV routes proliferate. Wheel cuts and tracks within these networks may serve as water conduits that channel and direct water flow containing sediments and contaminants into aquatic ecosystems”.

There are several ways routes provide direct paths for accelerated runoff transporting sediments and road-associated contaminants to natural drainage channels. They include “(1) inboard ditches delivering runoff to a stream at a road-stream crossing, (2) inboard ditches delivering water to a cross-drain, (3) where sufficient discharge is available to create a gully or sediment plume that extends to the stream channel, (4) roads sufficiently close to streams so that the fill slope encroaches on the stream and (5) landslide scars on the road fill” (Ouren et al. 2007).

Sediments can be minimized from roads and trails. Research shows that where cross drains were positioned at sufficient distances from streams, the drainage discharge infiltrated the soil and did not contribute to sedimentation in streams (Ouren et al. 2007). The Forestwide Travel Analysis Report states “The major potential effect of roads on streams and lakes is related to sedimentation. Serious sedimentation in some streams would affect some fish and bird populations” (USDA Forest Service 2007a). See Figure 6.

![Figure 6. Example of sediment being added to a stream from a user-created route in a cross-country-use area](image)

Bed and Bank Stability

Bed and bank stability along a stream is affected when crossings are not designated or designed. This is related to traveling cross-country and pioneering new crossings or crossings that are not armored. When a crossing is not armored, it can become impassable and then users move to a new site, disturbing and destabilizing new banks (see Figure 7).
**Temperature**

Temperature of the streams can be affected when crossings are not designated or designed. Crossings not designated are related to traveling cross-country and pioneering new crossings, which tend to widen the streams at the crossings. Crossings not designed are generally low water crossings on roads that have evolved over the years (see Figure 8). Widening of the stream provides more water surface area to be exposed to solar radiation, thus having the potential of increasing water temperature. One widened stream crossing may not be a concern, but several can effectively raise the temperature of a stream. Hydrology and fisheries design criteria in Appendix B identify those low water crossings where stream channel widening is occurring on existing routes and should be remediated. Restoring the natural stream channel width at these low water crossings would eliminate the potential to increase water temperatures at these crossings. Appendix B also identified stream crossings to be monitored. These low water crossings are currently not resulting in stream channel widening to the degree that water temperature is likely to be affected.

**Figure 7. Example of streambank instability from a user-created route in a cross-country-use area**

**Figure 8. Examples of stream widening and potential effect to water temperature from user-created routes when crossings are not armored or properly mitigated**

**Wetlands**

Roads can affect wetlands in several ways. Roads can alter surface water runoff patterns and contribute sediment or other contaminants. Road construction can fragment or remove wetland habitat. Roads can contribute to the spread of invasive species (including noxious weeds) resulting in greater competition with native species for resources. Finally, roads increase access
for people and livestock, which can lead to trampling, cropping, and collecting of riparian plant species. Road systems are more likely to affect wetlands in valley bottom locations where wetland sites and road locations are more likely to coincide, than on drier, upland sites (USDA Forest Service 2007a). Road and trails that are not designed and are impacting wetlands are related to cross-country travel. They can disrupt flow patterns, contribute sediment, and remove vegetation, as well (Figure 9).

Roads and trails can be designed to avoid wetlands and wet areas or minimize the effects to wetlands, which would result in minimal impacts to wetlands. The design criteria related to wetlands (see Appendix B) would help protect and minimize the impacts from designed roads and trails.

**Floodplains**

The travel analysis report (USDA Forest Service 2007a) discusses how floodplains function in the hydrologic environment and how roads can affect them:

“Roads can directly affect physical channel dynamics where they encroach on floodplains or restrict channel migration. Floodplains help dissipate excess energy during high flows and recharge soil moisture and groundwater. The functions of a floodplain are compromised when roads encroach on or isolate floodplains. This can increase discharge velocities during peak flows and result in increased bed and/or bank erosion and overall channel in stability. Roads that reduce the storage capacity of floodplains can also affect flood magnitudes downstream of the affected area. Restricting channel migration can cause channel straightening which increases the stream energy available for channel erosion. This can also result in channel instability. Altering channel pattern affects a stream’s ability to transport materials, including wood and sediment”.

Roads can impact floodplains and affect flood flows in the watershed. Road and stream crossings can impact a floodplain when the floodplain is filled to accommodate the crossing (see Figure 10). This fill can create an effective dike or dam and allow water to pass only through the opening of the bridge.
or culvert. This would usually back up the floodwaters and can raise the flood elevation. This also causes increased velocity at the constriction and can cause scour of the stream channel and possible channel incision. The number of road/stream crossings on perennial streams is a good indicator of the effects on floodplains. Currently there are 1,778 road crossings on perennial streams.

Constructed roads in close proximity to the creek can also affect floodplains. Road fill would occupy floodplains and reduce the area flood are allowed to spread out. With less floodplain area, the elevation of the flood would be raised. Miles of roads and trails within 30 feet of a perennial stream is another good indicator. Currently there are 59 miles of road within 30 feet of a perennial stream.

*Comparison of Effects for all Alternatives*

Table 36 and displays the water resource indicators by alternative and Table 37 displays the number of crossings on impaired streams by alternative. They are presented here to give a display of all alternatives in one central location. Discussion of the effects will take place under each alternative discussion.

**Table 36. Water resource indicators by alternative. These indicators are also applicable to the fisheries resource.**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Number of road/trail crossings on perennial streams Forestwide</td>
<td>1,778</td>
<td>547</td>
<td>536</td>
<td>455</td>
<td>547</td>
</tr>
<tr>
<td>Miles of road/trail within 30 feet of perennial streams Forestwide</td>
<td>59</td>
<td>20</td>
<td>20</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Miles of road/trail within 119 feet of perennial streams Forestwide</td>
<td>285</td>
<td>125</td>
<td>125</td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

**Table 37. Impaired stream crossings by alternative**

<table>
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</thead>
<tbody>
<tr>
<td>Total number of road/trail crossings on impaired streams Forestwide</td>
<td>131</td>
<td>30</td>
<td>32</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>System road crossings on impaired streams</td>
<td>33</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td>Nonsystem road crossings on impaired streams</td>
<td>98</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Alternative A – Direct and Indirect Effects**

*Sediment*

This alternative would have the most impacts to the water resource from sediment because of the sheer number of unmitigated crossings and miles of road in proximity to streams, as illustrated in Table 36. Also, new user-created routes can be added under this alternative, because the Forest would be open to cross-country travel. No other alternative would have this kind of impact with the potential to add sediment to the streams and aquatic ecosystems. Some of the crossings can have effects as illustrated in Figure 6.
**Bed and Bank Stability**

This alternative would have the greatest effects on bed and bank stability because off-road travel and pioneering new trails with stream crossings would continue to occur. None of these new crossings and many of the existing crossings would not be mitigated to armor the crossings, thus contributing to increased bed and bank instability at the crossings. This is illustrated in Figure 7.

**Temperature**

This alternative would have the greatest effects on temperature because of the sheer number of unmitigated stream crossings. Also off-road travel and pioneering new trails with stream crossings would continue to occur, widening the streams. Figure 8 illustrates widening of streams with unmitigated stream crossings. Streams that are impaired due to temperature would have a negative effect with this alternative because all of the 131 stream crossings would remain and new crossings would be created by users due to cross-country travel being allowed. Of the 131 crossings, 33 are on system roads.

**Wetlands**

This alternative has the largest area available to off-road travel and consequently the greatest potential impacts to wetlands. The greatest potential effects to wetlands are from creating new routes by traveling off roads and trails and big game retrieval or dispersed camping. Creating new trails and off-road travel through wet areas can have impacts as illustrated in Figure 9.

**Floodplains**

As indicated by the numbers in Table 36, this alternative would have the most potential impacts related to effects to floodplains just by the sheer number of crossings and miles in proximity to streams. No other alternative would have this kind of impact. All routes would remain and all fills would remain in the floodplains. New user-created trails generally would not introduce fill into the floodplain, and thus would be expected to have little effect.

**Alternative B – Direct and Indirect Effects**

**Sediment**

This alternative would have the second most impact to the aquatic ecosystems from sediment but is very similar to Alternatives C and E. There would be a 69 percent reduction in the number of stream crossing as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent and a 56 percent reduction in miles of road would be achieved within 119 feet of streams. All crossings would have the design criteria applied to them over time, thereby reducing impacts to the aquatic resource from sediment.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource and sediment. Guidelines 9107 and 9108, listed in the design criteria (Appendix B), would prevent or minimize impact to the water resource from sediment.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3 and design criteria ‘e, which directs the Forest to locate new concentrated-use sites outside the water influence zone (minimum 100 feet from water’s edge) if practicable and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to avoid adverse indirect effects to the water resource from sediment.
Sediment being added to the streams under this alternative would be minimized when the design criteria are implemented to armor the crossings, provide drainage for roads and trails, and provide buffers for trailheads. Even with the design criteria in place, sediment would not be completely eliminated under this alternative.

**Bed and Bank Stability**
This alternative would not have an effect on bed and bank stability of the streams. All crossings would be designated and have design criteria applied that would armor all crossings so the bed and banks would be protected and remain stable. No other bank instability should occur.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource and bank and stream stability. Guidelines 9107 and 9108 listed in the design criteria (Appendix B) would prevent or minimize impacts to the water resource and to bed and bank stability.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to bed and bank stability. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the bed and bank of the streams.

**Temperature**
This alternative would have the second most impact to the aquatic ecosystems due to temperature but is very similar to Alternatives C and E. There would be a 69 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent. All crossings would have design criteria applied to them over time to maintain or reduce stream width, thereby reducing the impacts to the aquatic resource from potential temperature increases. Riparian vegetation that provides shade to the streams would always be permanently altered at crossings but maintaining proper stream width would help minimize impacts. Streams that are impaired due to temperature would have a positive benefit with this alternative because of the reduction of the number of stream crossings to 30. Of those 30 crossings, 25 are on system roads.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource and temperature. Guidelines 9107 and 9108, listed in the design criteria section (see Appendix B), would prevent or minimize impact to the water resource from temperature.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to stream temperature. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the temperature of the streams.

**Wetlands**
This alternative has the third largest area available to off-road travel and consequently the third most potential for impacts to wetlands. The potential impact would come from big game retrieval and dispersed camping if off-road travel occurs through wetlands or wet areas.
**Floodplains**

This alternative would have the second most impact to floodplains but is very similar to Alternatives C and E. There would be a 69 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent. The design criteria requiring crossing rehabilitation and reducing fill in floodplains (see Appendix B) would reduce impacts and restore the floodplains when implemented.

**Alternative C – Direct and Indirect Effects**

**Sediment**

This alternative would have the fourth most impact to the aquatic ecosystems from sediment but is very similar to Alternatives B and E. There would be a 70 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent and a 56 percent reduction in miles of road would be achieved within 119 feet of streams. All crossings would have design criteria (see Appendix B) applied to them over time, thereby reducing impacts to the aquatic resource from sediment.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource. Guidelines 9107 and 9108 (see Appendix B), would prevent or minimize impacts to the water resource from sediment.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3 and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone if practicable and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to avoid adverse indirect effects to the water resource from sediment.

Sediment being added to the streams under this alternative would be minimized when the design criteria are implemented to armor the crossings, provide drainage for roads and trails, and provide buffers for trailheads. Even with the design criteria in place, sediment would not be completely eliminated under this alternative.

**Bed and Bank Stability**

This alternative would not have an effect on bed and bank stability of the streams. All crossings would be designated and have design criteria applied that would armor all crossings so the bed and banks would be protected and remain stable. No other bank instability should occur.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource and bank and stream stability. Guidelines 9107 and 9108 listed in the design criteria (Appendix B) would prevent or minimize impacts to the water resource and to bed and bank stability.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to bed and bank stability. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the bed and bank of the streams.
**Temperature**

This alternative would have the fourth most impact to the aquatic ecosystems due to temperature but is very similar to Alternatives B and E. There would be a 70 percent reduction in the number of stream crossing as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent. All crossings would have design criteria applied to them over time to maintain or reduce stream width, thereby reducing the impacts to the aquatic resource from potential temperature increases. Riparian vegetation that provides shade to the streams would always be permanently altered at crossings but maintaining proper stream width would help minimize impacts. Streams that are impaired due to temperature would have a positive benefit with this alternative because of the reduction of the number of stream crossings to 32. Of those 32 crossings, 25 are on system roads.

Game retrieval and dispersed camping under this alternative is not likely to have any adverse effects on the water resource and temperature. Guidelines 9107 and 9108, listed in the design criteria section (see Appendix B), would prevent or minimize impact to the water resource from temperature.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to stream temperature. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the temperature of the streams.

**Wetlands**

This alternative has the second largest area available to off-road travel and consequently the second most potential for impacts to wetlands. The potential impact would come from big game retrieval and dispersed camping if off-road travel occurs through wetlands or wet areas.

**Floodplains**

This alternative would have the fourth most impact to floodplains but is very similar to Alternatives B and E. There would be a 70 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 66 percent. The design criteria requiring crossing rehabilitation and reducing fill in floodplains (see Appendix B) would reduce impacts and restore the floodplains when implemented.

**Alternative D – Direct and Indirect Effects**

**Sediment**

This alternative would have the least impact to the aquatic ecosystems from sediment. There would be a 74 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 73 percent and a 65 percent reduction in miles of road would be achieved within 119 feet of streams. All crossings would have design criteria (see Appendix B) applied to them over time, thereby reducing impacts to the aquatic resource from sediment.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3 and design criteria ‘e, which directs the Forest to
locate new concentrated-use sites outside the water influence zone if practicable and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to avoid adverse indirect effects to the water resource from sediment.

Sediment being added to the streams under this alternative would be minimized when the design criteria are implemented to armor the crossings, provide drainage for roads and trails, and provide buffers for trailheads. Even with the design criteria in place, sediment would not be completely eliminated under this alternative.

**Bed and Bank Stability**

This alternative would not have an effect on bed and bank stability of the streams. All crossings would be designated and have design criteria applied that would armor all crossings so the bed and banks would be protected and remain stable. No other bank instability should occur.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to bed and bank stability. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the bed and bank of the streams.

**Temperature**

This alternative would have the least impact to the aquatic ecosystems due to temperature. There would be a 74 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 73 percent. All crossings would have design criteria applied to them over time to maintain or reduce stream width, thereby reducing the impacts to the aquatic resource from potential temperature increases. Riparian vegetation that provides shade to the streams would always be permanently altered at crossings but maintaining proper stream width would help minimize impacts. Streams that are impaired due to temperature would have a positive benefit with this alternative because of the reduction of the number of stream crossings to 28. Of those 28 crossings, 25 are on system roads.

The designation of new trailheads in this alternative is not likely to have any adverse effects on the water resource related to stream temperature. All new trailheads meet standard 1301, Region 2 Water Conservation Practices Handbook Management Measure 3, and design criteria ‘e’, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable) and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to protect the temperature of the streams.

**Wetlands**

This alternative, along with Alternative E, would have the least impact to wetlands. No off-road travel would be allowed with this alternative, which would result in no impacts to wetlands. Trail systems would generally avoid wetlands and wet areas.

**Floodplains**

This alternative would have the least impact to the floodplains. There would be a 74 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 73 percent. The design criteria requiring crossing rehabilitation and reducing fill in floodplains (see Appendix B) would reduce impacts and restore the floodplains when implemented.
Alternative E - Direct/Indirect Effects

Sediment
This alternative would have the third most impact to the aquatic ecosystems from sediment but is very similar to Alternatives B and C. There would be a 69 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 71 percent and a 61 percent reduction in miles of road would be achieved within 119 feet of streams. All crossings would have design criteria (see Appendix B) applied to them over time, thereby reducing impacts to the aquatic resource from sediment.

Sediment being added to the streams under this alternative would be minimized when the design criteria are implemented to armor the crossings, provide drainage for roads and trails, and provide buffers for trailheads. Even with the design criteria in place, sediment would not be completely eliminated under this alternative.

Bed and Bank Stability
This alternative would not have an effect on bed and bank stability of the streams. All crossings would be designated and have design criteria applied that would armor all crossings so the bed and banks would be protected and remain stable. No other bank instability should occur.

Temperature
This alternative would have the third most impact to the aquatic ecosystems due to temperature but is very similar to Alternatives B and C. There would be a 69 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 71 percent. All crossings would have design criteria applied to them over time to maintain or reduce stream width, thereby reducing the impacts to the aquatic resource from potential temperature increases. Riparian vegetation that provides shade to the streams would always be permanently altered at crossings but maintaining proper stream width would help minimize impacts. Streams that are impaired due to temperature would have a positive benefit with this alternative because of the reduction of the number of stream crossings to 28. All 28 crossings are on system roads.

Wetlands
This alternative, along with Alternative D, would have the least impact to wetlands. No off-road travel would be allowed with this alternative, which would result in no impacts to wetlands. Trail systems would generally avoid wetlands and wet areas.

Floodplains
This alternative would have the third most impact to the floodplains but is very similar to Alternatives B and C. There would be a 69 percent reduction in the number of stream crossings as indicated in Table 36. Miles of road within 30 feet of streams would be reduced by 71 percent. The design criteria requiring crossing rehabilitation and reducing fill in floodplains (see Appendix B) would reduce impacts and restore the floodplains when implemented.

Cumulative Effects
The cumulative effects area is bounded in space as the Forest boundary and in time as the next 5 to 15 years. Activities considered in this cumulative effects analysis include road and trail use and management, mining, recreation, timber harvest, grazing, and reservoir use and management. Foreseeable actions include 9 miles of new trails on Bearlodge Ranger District, 10
miles of new trails on the Northern Hills Ranger District, and 6 miles of new trails and two new trailheads on the Hell Canyon Ranger District.

**Sediment**

Impacts to streams from sediment can come from roads, trails, mining, recreation, timber harvest, and grazing that occur near streams. Roads and trails can add sediment at crossings if not properly designed and mitigated. Mining can contribute point-source impacts adding sediment at specific locations. Mining areas are generally historic sites and any new mining activities would have BMPs implemented to minimize or eliminate sediment added to streams. Recreation impacts tend to be minimal, but some are associated with fishing as trails are developed along streams. Timber harvest can add sediment if equipment crosses streams to get to units or if skidding occurs along or across streams. This is generally avoided or minimized with the implementation of BMPs. Grazing impacts can add sediment along streams when cattle trample the banks as they access water.

There would be a positive cumulative impact from travel management with any of the action alternatives. This is because the number of stream crossings would be reduced by at least 69 percent or more and those crossings that remain would be mitigated with design criteria to reduce sediment. There would be cumulative impacts from the no action alternative, Alternative A, with the continued proliferation of trails with stream crossings and continued use of unmitigated stream crossings adding sediment to the streams.

**Bed and Bank Stability**

Impacts to bed and bank stability can come from roads, trails, mining, recreation, timber harvest, and grazing that occur near streams. Roads and trails can have impacts at a crossing if it is not properly mitigated. When not properly mitigated, crossings can become impassable and new crossings may be developed, impacting more bank areas and causing wave action to erode unprotected banks. Mining will generally not impact banks unless it occurs in the stream itself. Recreation impacts tend to be associated with fishing as trails are developed along streams. Timber operations will generally avoid streambanks except at designated crossings that can impact bank stability at the crossing. This is generally avoided or minimized with the implementation of BMPs. Grazing impacts can impact bed and bank stability along streams when cattle trample the banks as they access water.

There would be a positive cumulative impact from travel management to bed and bank stability with any of the action alternatives. This is because the number of stream crossings would be reduced by at least 69 percent or more and those crossings that remain would be mitigated with design criteria to reduce impacts from users finding new passable crossings. There would be cumulative impacts from the no action alternative, Alternative A, with the continued proliferation of trails with stream crossings and continued use of unmitigated stream crossings that may cause users to find a new crossing that they can navigate, thus affecting bed and bank stability.

**Temperature**

Impacts to streams from increased water temperature can come from roads, trails, mining, recreation, timber harvest, grazing, and reservoirs that occur on or near streams. Roads and trails can have impacts at a crossing if it not properly mitigated. When not properly mitigated, crossings can become very wide. More stream surface area allows for solar radiation absorption, and with enough crossings on a stream, stream temperature can increase. Mining would generally not impact temperature unless the mining occurs close enough to the stream and
removes streamside vegetation. Recreation can impact the water temperature of a stream when activities are heavy enough along streams to remove or reduce the streamside vegetation. Timber operations, with the implementation of BMPs, would avoid streams and generally not affect the vegetation shading along the stream. Grazing impacts occur along streams and could impact temperature through bank trampling and stream widening when cattle access the water and reduce the vegetation that shades the streams. Reservoirs on the stream provide more water surface area that absorbs solar radiation. The absorption of solar radiation can increase surface water temperature of the reservoir and water that flows off the top of the reservoir would increase temperature downstream.

There would be a positive cumulative impact from travel management from temperature with any of the action alternatives. This is because the number of stream crossings would be reduced by at least 69 percent or more and those crossings that remain would be mitigated with design criteria to reduce the width of the crossing to match the stream width. This reduction of the water surface area of the stream would have a positive benefit on stream temperature. There would be cumulative impacts from the no action alternative, Alternative A, with the continued proliferation of trails with stream crossings increasing stream width and continued use of unmitigated stream crossings that usually continually get wider, thus impacting stream temperature.

Wetlands
Impacts to wetlands can come from roads, trails, mining, recreation, timber harvest, and grazing. Roads, trails and mining would contribute point source impacts affecting wetlands at specific locations and would be permanent. Recreation would impact wetlands along streams primarily where trails are developed. Timber can affect wetlands if equipment tracks through them to get to units, but they are generally prohibited from doing so. Grazing impacts can occur across the entire area because of the mobility of stock animals and if they are allowed to be in the area too long, impacts can occur from trampling and browsing of the vegetation.

There would be no cumulative impacts from travel management to wetlands with any of the action alternatives. This is because all of the trails generally already exist on the landscape, and any new trails would avoid wetlands. Any trails that are impacting wetlands would be mitigated or moved. There would be cumulative impacts from the no action alternative, Alternative A, with the continued proliferation of trails and direct impact to wetlands if the new trails go through wetlands.

Floodplains
Roads have the biggest potential impacts to floodplains. Other impacts can come from mining and private land development. All activities can fill and encroach on floodplains. All of these activities can have an effect and if enough impacts occur in a watershed, they would potentially change the character of floods downstream.

There would be no cumulative impacts from travel management to floodplains with any of the action alternatives. This is because all crossings of floodplains already existing on the landscape would be mitigated with design criteria to reduce or minimize the fill across floodplains. In addition, the number of floodplain crossings would be reduced and eliminated. The no action alternative, Alternative A, would not have a cumulative effect on floodplains even with the continued proliferation of trails because these new trails generally do not fill in the floodplain and will not restrict flood flows.
**Monitoring and Recommendations**

A stream-crossing inventory protocol needs to be completed for the transportation system that is adopted. The purpose is to find crossings not meeting current standards so a fix can be prescribed and implemented to reduce the impacts of the all crossings. It is recommended that this be completed by stream, starting with the streams that are listed as impaired due to temperature, and continuing on to the streams with the most crossings. It should be completed for the entire stream, catching crossings that were abandoned and are no longer used. A list of the streams in recommended order for completion of the protocol can be found in Appendix B to the water resource specialist’s report in the project file.

**Permits**

A storm water permit may be required for activities resulting from this EIS. These activities are not covered under the Silvicultural exemption that the Forest Service normally uses. Ground disturbance of an acre or more is the trigger for this permit. Linear features such as trails would provide for some challenges since the disturbed area is not concentrated. For a trail 65 inches wide, it would take approximately 8,000 feet or 1.5 miles of trail to trigger the permit.

**Conclusion**

Implementing any alternative other than Alternative A would have benefits on the water resource. The number of road and trail stream crossing would be drastically cut and new ones would not be pioneered in the future. Roads and trails in proximity to a stream would be reduced and new ones would not be pioneered. There would be an overall reduction of sediment introduced into streams, and low-water crossings would be improved and controlled to reduce the impacts due to bed and bank stability and water temperature.

The requirements of the Clean Water Act would be met. Applicable permits (i.e., stormwater, 404, etc.) would be obtained. Sediment would be controlled by implementing the prescribed design criteria that includes watershed conservation practices and best management practices. Monitoring and completing the stream-crossing protocol would identify abandoned crossings that need rehabilitation and existing crossings that need to have the design criteria applied to the stream crossings on the road and trail system. Applying improved design measures to crossings would minimize and prevent sedimentation of the streams. It would narrowing existing crossings and prevents new crossings from widening the stream. This would meet the requirements of the Clean Water Act by keeping sedimentation and stream temperature in check at the crossings. Streams that are listed as impaired should be completed first.

The Executive Order for Floodplains would be complied with when the design criteria, to minimize fill in floodplains to facilitate crossings to allow flood flows to pass with minimal interruption, is implemented for new roads and trails and when old road and trails are obliterated and fill in the floodplains is removed.

The Executive Order for Wetlands would be complied with when the design criteria are implemented. They include (1) areas not connected to streams that are wet and have riparian and wetland vegetation would be avoided and runoff from the roads and trail would not be drained into these areas, and (2) avoid creating elevated roads and trails through wetlands which disrupt the flow of water through the wetland.

Forest Plan compliance would be achieved by meeting the requirements of the above laws and regulations and implementing the design criteria referenced here and outlined in Appendix B.
Fisheries

Introduction

This section describes and analyzes effects to the fisheries resource in relation to designation of a motorized road and trail system on the Black Hills National Forest. Additional information on watershed, riparian and aquatic resources can be found in the Wildlife, Plants and Botanical Resources, or Hydrology sections of this document and in the project record.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

The Region 2 Watershed Conservation Practices Handbook (Forest Service Handbook 2509.25) contains proven watershed conservation practices to protect soil, aquatic, and riparian systems. If used properly, the watershed conservation practices will meet applicable Federal and State laws and regulations, including State Best Management Practices (BMPs).

Executive Order 12962 – Recreational Fisheries, dated June 7, 1995, directs Federal agencies to manage for increased recreational fishing opportunities by providing access for public participation and enjoyment of recreational fishery resources.

Executive Order 13474 – Amendments to Executive Order 12962, dated September 26, 2008, directs Federal agencies to ensure that recreational fishing is managed as a sustainable activity.

Forest Plan direction specific to fisheries is identified below. Additional direction that indirectly benefits fisheries through aquatic and riparian habitat protection is identified in the Hydrology section of this document.

Goal 2. Provide for a variety of life through management of biologically diverse ecosystems.

- **Objective 217.** Maintain habitat for game and fish populations at the state objectives in effect in 1996.
- **Objective 219.** Maintain or improve instream fisheries habitat. Cooperate with state agencies in aquatic ecosystem improvements to meet mutually agreed-upon objectives.
- **Objective 221.** Conserve or enhance habitat for Region 2 sensitive species and species of local concern (SOLC). Monitoring will be conducted at a Forestwide level, not at the project level, and will be done for habitats or populations.
- **Objective 238d.** Maintain or enhance habitat quality and connectivity for mountain suckers, as outlined in specific direction pertaining to aquatic resources (e.g. objectives 103, 104, 219, standards 1201, 1203, 1205, guideline 1115).

Goal 4. Provide for scenic quality, a range of recreational opportunities and protection of cultural resources in response to the needs of the Black Hills National Forest visitors and local communities.

The following Forest Plan standards and guidelines are pertinent to the fisheries resource. Some redundancy with the Region 2 Watershed Conservation Practices Handbook (Forest Service Handbook 2509.25) is noted.

- **Standard 1105.** Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate (Regional WCP Handbook Management Measure 9).
Design Criteria h. Designate, construct, and maintain recreational travelways for proper drainage and armor their stream crossings as needed to control sediment.

- **Standard 1201.** Conduct actions so that stream pattern, geometry, and habitats are maintained or improved toward robust stream health (Regional WCP Handbook Management Measure 5).

- **Standard 1203.** Design and construct all stream crossings and other instream structures to provide for passage of flow and sediment, withstand expected flood flows, and allow free movement of resident aquatic life (Regional WCP Handbook Management Measure 4).
  
  - **Design criteria a.** Install stream crossings to meet Corps of Engineers and State permits, pass normal flows, and be armored to withstand design flows.
  
  - **Design criteria c.** Install stream crossings on straight and resilient stream reaches, as perpendicular to flow as practicable, and to provide passage of fish and other aquatic life.
  
  - **Design criteria d.** Install stream crossings to sustain bankfull dimensions of width, depth, and slope and keep streambeds and banks resilient. Favor bridges, bottomless arches or buried pipe-arches for those streams with identifiable flood plains and elevated road prisms, instead of pipe culverts. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary, or the ford design maintains the channel pattern, profile and dimension.

- **Guideline 1205.** When projects are implemented that can affect large, woody debris, retain natural and beneficial volumes of large, woody debris for fish habitat, stream energy dissipation, and sources of organic matter for the stream ecosystem.

- **Standard 1301.** In the water influence zone next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition (WCP Handbook Management Measure 3).
  
  - **Design criteria c.** Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 2 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods.

- **Guideline 3212.** Manage for high quality riparian communities; (a) Provide stable stream banks; (b) Retain woody vegetation along streams and lakes to provide shading for aquatic life and habitat for terrestrial species; (c) Provide large woody material for aquatic life.

- **Guideline 9107.** Prohibit land vehicles from entering perennial streams where resource damage would occur except to cross at specified points.

- **Guideline 9108.** Vehicular traffic, except for snowmobiles, will be restricted to roads and trails in riparian areas.

- **Guideline 9109.** Walk-in fisheries are closed to motorized travel.

There is no additional management area direction specific to fisheries resources.

**Methodology**

The area of analysis includes perennial waterbodies (streams and lakes) that provide suitable fish habitat on the Forest. The following indicators were used to evaluate the effects on natural and cultural resources (Issue 1).
Indicators
The following indicators will be used to measure the effects to the fisheries resource:

- Number of motorized road and trail crossings on perennial streams. This indicator evaluates the relative risk that road and trail-stream crossings create in regard to stream fragmentation (barriers to fish passage) and habitat degradation (sediment input, loss of riparian vegetation, bank instability and increased stream channel width at crossings).

- Miles of motorized road and trail within 30 feet and 119 feet of perennial streams or lakes. Miles of road within 30 feet of a stream is a good initial indicator of where the road system might be affecting physical channel dynamics (USDA Forest Service 2007a). A buffer width of 119 feet was used as a long term, worst-case buffer width for capturing 97 percent of the sediment from a road in an area of highly erosive soils (USDA Forest Service 2007a).

Assumptions
This analysis assumes that all road and trail crossings of perennial streams have the same impact on stream connectivity and aquatic habitat quality. This assumption is justified due to the lack of a Forestwide inventory of stream crossings. Sediment input from road and trail dust is dependent on a variety of factors, such as vehicle numbers and speed, roadbed condition and type, wind direction, and road and trail distance from water. Due to the uncertainty of predicting these variables on a site-specific basis, it was assumed that the impacts of road and trail dust are considered within the context of the number of stream crossings and route proximity to streams. It is also assumed that new stream crossings affect 10 feet of streambank.

Design Criteria
Design criteria developed to protect and conserve the fisheries resource can be found in Appendix B.

Field Surveys and Other Analysis Information
Site-specific field surveys were done on June 22, 2008, August 13, 25, 27 and 29, 2008 and September 18 and 19, 2008 to evaluate 121 perennial stream crossings identified as new nonsystem routes considered for designation on the motor vehicle use map. A random sample of closed roads that are proposed to be opened was also sampled on some of the above dates.

Perennial stream crossings were identified through a geographic information system (GIS) exercise that intersected the Forest stream layer with the travel management routes layer. Similarly, a GIS exercise was done to buffer the perennial streams layer and intersect this buffer with routes to determine the miles of routes in close proximity to water.

Affected Environment
The Forest Plan Phase II Amendment (USDA Forest Service 2006a) provides background information on fisheries. This information is incorporated by reference and summarized below. Additional information on watershed, riparian and aquatic resources can be found in the Wildlife, Plants and Botanical Resources or Hydrology sections of this document.

Historically, the diversity of fish species was limited in the Black Hills. Native species include suckers, chubs and dace. The finescale dace (*Phoxinus neogaeus*), lake chub (*Couesius plumbeous*) and mountain sucker (*Catostomus platyrhynchus*) are Region 2 sensitive fish.
species. These species are analyzed in detail in the biological evaluation (BE) for this project. The mountain sucker is also designated as a management indicator species (MIS). Of these three species, the mountain sucker is the most widely distributed on the Forest. There are no federally listed threatened or endangered fish species on the Forest.

Today, the majority of fish species on the Forest are non-native species introduced primarily to provide for recreational fishing opportunities. The primary game species include brook, brown, and rainbow trout. Other game species, such as bass, perch, pike and bullheads, are also present. Some species have been introduced illegally. Limited administrative access is currently needed to manage fisheries. The vast majority of waterbodies that are stocked, surveyed, or fished are motor vehicle accessible because other developed recreational facilities exist for camping, swimming, picnicking, or boating or access to the more heavily used recreational fishing streams occurs along paved or well-maintained roads.

Seven walk-in fisheries were designated in Travel Management Order 11, dated November 29, 1989 (USDA Forest Service 1989). Some walk-in fisheries are closed to motorized vehicle travel off Forest system roads, while in others the possession or use of any motor vehicle is prohibited year long. Guideline 9109 closes walk-in fisheries to motorized travel.

Several aquatic nuisance species occur on the Forest (USDA Forest Service 2009e). The diatom (single-celled algae) *Didymosphenia geminata* (Didymo) was first documented in Rapid Creek downstream of Pactola Dam in 2002. This species forms dense mats of vegetation on the streambed. These mats affect habitat conditions and food production for fish. Didymo is able to survive and remain viable in cool, damp, dark conditions for at least 40 days (Spaulding and Elwell 2007).

Fish habitat on the Forest falls within two general categories: streams and creeks (flowing water or lotic habitat) and reservoirs, lakes, and ponds (standing water or lentic habitat). Approximately 950 miles of perennial streams exist within the Forest boundary. Slightly more than half of these miles flow through National Forest System lands; the remainder flows primarily through private lands. Aquatic habitat conditions are influenced by precipitation, geology, and other watershed characteristics. Stream connectivity is influenced by these natural conditions as well as other manmade structures (dams) or barriers at road-stream crossings, such as impassable culverts.

No natural lakes occur in the Black Hills (Stewart and Thilenius 1964) but a number of manmade impoundments provide fish habitat. These waterbodies range in size from 852 acres (Pactola Reservoir) to less than an acre (Strawberry Pond). Not all of these waterbodies are under the jurisdiction of the Forest Service. Many of these sites have additional recreational facilities for boating, camping, picnicking, or swimming and are accessible by motorized vehicles.

**Environmental Effects Analysis**

**Alternative A - Direct and Indirect Effects**

Direct effects (mortality or injury) to fish would only occur where motor vehicles drive through perennial streams or where in-water construction activities occur to install new structures (culverts, bridges, etc.) or to rehabilitate existing stream crossings. This impact relates primarily to fish eggs and fry that are immobile and more vulnerable to injury and more so to trout, which deposit their eggs in the stream substrate in concentrated areas (redds). Juvenile and adult fish are likely to swim away to avoid injury.
The magnitude of this impact is likely negligible. Habitat conditions at road and trail stream crossings are usually degraded. Therefore, these sites are less suitable for trout spawning, egg incubation, hatching, or the rearing of fry, so these life stages are less likely to be abundant at these sites. These crossing locations also make up a very small percentage of the available spawning habitat Forestwide. Direct effects to the most vulnerable life stages and fish species are further avoided and minimized through conservation measures for instream activities. These measures include Forest Plan guideline 9107, which prohibits land vehicles from entering perennial streams where resource damage may occur except to cross at specified points. Also, the Regional Watershed Conservation Practices Handbook provides direction to keep heavy equipment out of streams, swales, and lakes (except to cross at designated points, build crossings, or do restoration work), and to keep heavy equipment out of streams during fish spawning, incubation, and emergence periods. More specific seasonal in-water timing restrictions to protect fall-spawning brook and brown trout will also be implemented to further avoid adverse effects consistent with Clean Water Act Section 404 regional permit conditions and best management practices.

Potential indirect effects to fisheries include a reduction in stream connectivity, the loss or modification of riparian and aquatic habitat, and the degradation of water quality due primarily to sediment input. Additional discussion of these effects to the physical and chemical aspects of water resources can be found in the Hydrology section.

Gucinski et al. (2001) provide a synthesis of scientific information on the effects of Forest roads. Roads may result in aquatic and riparian habitat loss due to floodplain encroachment or stream channel realignment. Unpaved road surfaces are a long-term source of sediment input. Roads may divert and concentrate surface flows, altering the normal runoff pattern transporting more sediment into streams, lakes, or wetlands. Poorly designed, installed, or maintained culverts may create barriers to fish passage, fragment aquatic habitat, and contribute sediment during their placement or removal or if fill material is washed-out due to debris blockage or overtopping of culverts during high-flow events.

Structures, particularly culverts, at road-stream crossings can block the movement of fish and fragment the stream network. Generally, this blockage is on upstream migration and is due to a change in water surface levels (a waterfall) at the culvert outlet, increased water velocities and/or inadequate water depth in the culvert. Fish passage needs are species-specific. For example, trout are generally stronger swimmers and better jumpers than suckers or minnows. A habitat condition often observed at perched culvert outfalls is the creation of a plunge pool. These pools provide fish habitat, especially in the fall and winter months when stream flows are at their lowest level, and likely improve the overwintering survival of fish.

The number of existing perennial stream crossings, and therefore the potential for adverse effects to stream connectivity and fish passage, are greatest under Alternative A. Additional stream crossings associated with the proliferation of user-created routes under this alternative typically do not impede fish passage because no instream barriers are constructed. On Forest system routes, new barriers to fish passage are avoided through the implementation of standard 1203, which requires that all stream crossings and instream structures be designed and constructed to allow free movement of aquatic organisms.

In aquatic ecosystems, adverse effects from roads often result from increased sediment input, streambank degradation, and riparian habitat loss. Increased amounts of sediment may reduce food availability, degrade high-quality fish spawning habitat or decrease the volume of pool habitats (Isaak et al. 2003). This may lead to reduced fish reproduction and survival. Alternative
A has the greatest number of existing perennial stream crossings and the most miles of routes in close proximity to perennial streams and therefore the greatest potential for adverse effects to fish habitat. This alternative also has the greatest potential for adverse effects to fish habitat given the acres of motorized cross-country travel allowed and the potential proliferation of additional user-created routes and stream crossings; guidelines 9107 and 9108 attempt to reduce these adverse impacts. Guideline 9107 prohibits land vehicles from entering perennial streams where resource damage would occur except to cross at specified points. Guideline 9108 restricts vehicular traffic to roads and trails in riparian areas.

Alternative A has the greatest potential of all the alternatives to affect fisheries from motorized big game retrieval and motorized dispersed camping based on the acres where this activity is currently allowed. However, motorized big game retrieval in Alternative A is likely having a negligible effect on fisheries because this activity only occurs for a few months out of the year. The majority of motorized dispersed camping sites have already been established from historic use at the most favorable locations, so limited new adverse impacts to fisheries are anticipated. Alternative A should have negligible indirect effects to fisheries with the implementation of guidelines 5301, 9107 and 9108. Guideline 5301 discourages dispersed camping within 100 feet of lakes and streams unless exceptions are justified by terrain.

Motor vehicle access to recreational fishing sites would be maintained under this alternative consistent with Executive Orders 12962 and 13474. Administrative access to conduct fisheries management activities on roads not open to the public is allowed per guideline 9104.

Motor vehicle use has the potential to spread aquatic nuisance species through the direct transfer from one waterbody to another or by providing easier and quicker access than nonmotorized methods. The greatest threat of aquatic nuisance species introduction or spread likely occurs from people using developed recreation sites, such as Pactola or Sheridan reservoirs or at Spearfish, Castle, and Rapid Creeks, where there is more boat or vehicle traffic entering the water and this traffic arrives from the largest geographic area. Currently, off-highway vehicle use is likely having a negligible effect related to the incidental transfer of aquatic nuisance species from one waterbody to another.

Alternative A maintains species viability for the three sensitive fish species (finescale dace, lake chub, and mountain sucker) that occur on the Forest. Due to the direct and indirect effects described above, the determination for Alternative A for these three species is “may adversely impact individuals, but not likely to result in a loss of viability in the planning area, or cause a trend toward federal listing”.

The Forestwide population and habitat trend for the mountain sucker was assessed given its status as a management indicator species. The Forestwide population trend for mountain sucker is one of decline when comparing past to present occurrence (USDA Forest Service 2009g). Alternative A would maintain stream connectivity because no additional instream structures are proposed that would impede mountain sucker passage, consistent with standard 1203. Implementation of Forest Plan standards and guidelines and Regional Watershed Conservation Practices are intended to maintain habitat quality through riparian and aquatic conservation. Subsequently, Alternative A meets the intent of objective 238d to maintain or enhance mountain sucker habitat quality and connectivity.
Direct and Indirect Effects Common to all Action Alternatives

The action alternatives share the same direct and indirect effects that result from stream crossings and roads and trails that are in close proximity to waterbodies as described for Alternative A. These similarities are represented by the same indicators summarized in Table 36 of the Hydrology section (page 146); in general, the larger the number, the greater the potential for adverse effects to fisheries.

New barriers to fish passage are avoided under all action alternatives through the implementation of standard 1203, which requires that all stream crossings and instream structures be designed and constructed to allow free movement of aquatic organisms. All of the nonsystem routes that are proposed to be designated on the motor vehicle use map have low-water crossings (fords) that are not barriers to fish passage. Existing stream crossings on routes that would not get designated on the motor vehicle use map may continue to fragment stream habitat if an instream structure, such as a perched culvert outfall, occurs at these crossings and blocks the passage of fish.

The potential effects on fisheries management and recreational fishing opportunities were evaluated. Access to developed recreational sites and more heavily used recreational stream fisheries would continue to be open to motorized vehicle use under Alternatives B, C, D, or E. Subsequently, all of the action alternatives provide recreational fishing access similar to Alternative A and are consistent with Executive Orders 12962 and 13474.

The potential introduction or spread of aquatic nuisance species or other undesirable aquatic species was evaluated. Off-highway vehicle use is likely to have minimal adverse effects related to the incidental transfer of aquatic nuisance species from one waterbody to another. As previously stated, all Alternatives maintain the same level of motorized vehicle access to the primary recreational fishing sites on the Forest. Therefore, the risk of aquatic nuisance species introduction or spread is similar to Alternative A.

All action alternatives maintain the same level of motorized vehicle access to streams and lakes for fisheries management activities because administrative access (guideline 9104) would continue to be provided on routes not open to the public. All action alternatives maintain the same level of access for recreational fishing opportunities consistent with Executive Orders 12692 and 13474 because the primary recreational fisheries are located in association with developed recreation sites, such as campgrounds or boat ramps, or they are accessed by roads that are proposed to remain open.

The designation of new trailheads in Alternatives B, C and D is not likely to have any adverse effects on fisheries. All new trailheads would be consistent with standard 1301 and Region 2 Watershed Conservation Practices Handbook Management Measure 3, design criteria “e”, which directs the Forest to locate new concentrated-use sites outside the water influence zone (if practicable), and outside riparian areas and wetlands. Compliance with this direction would provide an adequate vegetative buffer to avoid adverse indirect effects to fish habitat.

The site-specific effects to the finescale dace, lake chub and mountain sucker are disclosed in the biological evaluation and summarized here. The effects determination for these three sensitive fish species for all action alternatives is “may adversely impact individuals, but not likely to result in a loss of viability in the planning area, or cause a trend toward federal listing”. Impacts to individuals are primarily associated with indirect effects resulting from potential stream fragmentation due to instream barriers at motorized road or trail crossings on perennial
streams and/or aquatic and riparian habitat loss or degradation. Additional stream fragmentation is avoided given the lack of new instream structures, such as culverts, that may be barriers to fish passage. All the action alternatives provide less risk to these three sensitive fish species than Alternative A; therefore, species viability would continue to be maintained.

All action alternatives would have a positive effect on the Forestwide mountain sucker population and/or habitat trend by maintaining or improving stream quality and connectivity. No additional instream structures are proposed that would impede mountain sucker passage, consistent with standard 1203. Implementation of Forest Plan standards and guidelines and Regional Watershed Conservation Practices are intended to maintain habitat quality through riparian and aquatic conservation. Therefore, all action alternatives meet the intent of objective 238d to maintain or enhance mountain sucker habitat quality and connectivity.

**Alternative B – Direct and Indirect Effects**

Compared to the existing condition, this alternative would reduce the number of stream crossings by 69 percent and the miles of routes within 30 feet and 119 feet of perennial streams by 66 percent and 56 percent, respectively. Six new perennial stream crossings are proposed. A total of about 60 feet of stream channel would likely be modified at these crossings. Water quality standards would be maintained and seasonal in-water work restrictions would be employed during the construction of these new crossings to avoid adverse effects to fish.

Motorized big game retrieval in Alternative B would likely have a negligible effect on fisheries for the same reasons mentioned for Alternative A. The potential for effects to fisheries is further reduced because it is allowed on the least area Forestwide and is only for the retrieval of elk.

Alternative B would reduce the potential for adverse effects to fisheries from motorized dispersed camping when compared to the current condition because the distance (100 feet) from routes and the area available for this activity would be greatly reduced. In principle, Alternative B should have negligible effects with the implementation of guideline 5301. This guideline discourages dispersed camping within 100 feet of lakes and streams unless exceptions are justified by terrain.

**Alternative C – Direct and Indirect Effects**

This alternative has effects very similar to Alternative B. It would reduce the number of stream crossings by 70 percent and the miles of routes within 30 feet and 119 feet of perennial streams by 66 percent and 56 percent, respectively. Five new perennial stream crossings are proposed. A total of about 50 feet of stream channel is likely to be modified at these crossings. Water quality standards would be maintained and seasonal in-water work restrictions would be employed during the construction of these new crossings to avoid adverse effects to fish.

Overall, motorized big game retrieval in Alternative C would likely have a negligible effect on fisheries for the same reasons mentioned for Alternative A. Motorized big game retrieval in Alternative C would have more potential to affect fisheries than Alternative B because it includes motorized retrieval of both deer and elk and it includes more area open to motorized retrieval.

Alternative C would reduce the potential for adverse effects to fisheries from motorized dispersed camping when compared to the current condition because the distance (300 feet) from routes and the area available for this activity is reduced. In principle, Alternative C should have negligible effects with the implementation of guideline 5301. This guideline discourages dispersed camping within 100 feet of lakes and streams unless exceptions are justified by terrain.
Alternative C is not consistent with guideline 9109 in relation to walk-in fisheries and motorized use. This alternative proposes designating a single-track trail (route CZ-4895) that crosses Rapid Creek below Pactola Dam within the Rapid Creek walk-in fishery. Designation of this route would result in some loss of the “walk-in” fishing experience due to the motorized vehicle noise that would occur. The magnitude of this impact is difficult to predict, but would depend on the level of use and the overlap in time between anglers and motorized recreationists.

This same route (CZ-4895) crosses Rapid Creek where Didymo, an aquatic nuisance species, is present. If dirt bikes cross Rapid Creek, there is the potential to pick up and transfer Didymo to another waterbody, though this risk is low. Installation of a bridge on the abandoned railroad grade prior to this route segment being designated on the motor vehicle use map would eliminate the potential risk of Didymo transfer and would also reduce negative impacts to water quality and riparian vegetation.

**Alternative D – Direct and Indirect Effects**

Compared to the existing condition, this alternative would reduce the number of stream crossings by 74 percent and the miles of routes within 30 feet and 119 feet of perennial streams by 73 percent and 65 percent, respectively. This alternative would have the greatest positive benefit to fisheries based on the indicators. Two new perennial stream crossings are proposed. A total of about 20 feet of stream channel would likely be modified at these crossings. Water quality standards would be maintained and seasonal in-water work restrictions would be employed during the construction of these new crossings to avoid adverse effects to fish.

Both the motorized retrieval of big game and motorized dispersed camping are prohibited in this alternative. Therefore, no direct or indirect effects to fisheries are anticipated from those activities.

**Alternative E – Direct and Indirect Effects**

Compared to the existing condition, this alternative would reduce the number of stream crossings by 69 percent and the miles of routes within 30 feet and 119 feet of perennial streams by 71 percent and 61 percent, respectively. Similar to Alternative D, both the motorized retrieval of big game and motorized dispersed camping are prohibited in this alternative. Therefore, no direct or indirect effects to fisheries are anticipated from those activities. No new stream crossings are proposed.

**Cumulative Effects**

**Past, Present, and Reasonably Foreseeable Actions**

Stream connectivity is affected by a number of factors. Both large and small dams occur Forestwide that fragment the stream system both on National Forest System lands and other land ownerships. These dams are likely to persist because they serve one or more purposes related to flood control, recreation, or water supply. Roads to private lands and other roads outside National Forest have impassable fish barriers at road-stream crossings that are likely to persist. The likelihood of additional instream barriers exists as development of private inholdings continues and additional motor vehicle access is needed.

Historic and ongoing mining, grazing, logging, water storage and diversion, and recreational and road-related activities have modified stream habitat conditions. Efforts to improve stream crossings and aquatic habitat conditions will continue through focused program efforts, such as the Wildlife, Fish, and Rare Plants Program, through timber sale area improvement activities and
through special emphasis programs, such as the Legacy Roads and Trails Program. These activities are likely to continue at levels similar to the current condition. Administrative access on routes not designated on the motor vehicle use map may continue. This will result in the continued use of some stream crossings and routes in close proximity to streams that are otherwise closed to the public. This ongoing use may slow or impede the natural recovery of these sites dependant on the level of motorized traffic. Very little administrative access is currently needed or predicted to be needed to conduct fishery management activities.

The introduction and spread of aquatic nuisance species can have dramatic negative effects on aquatic ecosystems (Strayer 2010b). Activities, such as nonmotorized trail use, boating, fishing, water quality monitoring, fisheries surveys, or aquatic habitat restoration have the potential to introduce or spread aquatic nuisance species. Given the ever-expanding global spread of aquatic nuisance species, it is likely a matter of time before additional aquatic nuisance species occur on the Forest.

**Cumulative Effects Analysis**

The cumulative effects area for fisheries is bounded in space as the Forest boundary and in time as the next 5 to 15 years. This temporal scale is based on: (1) the time over which one can expect to predict reasonably foreseeable actions and (2) roughly the time until the next Forest Plan Revision. The Forest boundary was chosen because it encompasses similar ecosystem components and species that occur on the Forest. A larger area would include the surrounding plains, which includes a vastly different suite of species and ecosystem components.

All action alternatives would have a positive incremental impact on stream connectivity and aquatic habitat quality because they would reduce the number of stream crossings and the miles of routes within 30 and 119 feet of perennial streams. The number of perennial stream crossings, and therefore the potential for adverse effects, are greatest under Alternative A. Alternative D has the fewest crossings. Alternatives B, C and E have about the same number of crossings. Alternatives B, C and D would have 6, 5 and 2 new stream crossings, respectively, but stream connectivity and habitat quality would not be reduced with the implementation of standards and guidelines and regional watershed conservation practices. All other stream crossings already exist on system or nonsystem roads and trails in Alternatives B, C and D. There would be no new stream crossings in Alternative E.

The designation of existing user-created routes on the motor vehicle use map is not likely to have an additive incremental impact on stream connectivity because these routes are all low-water crossings that lack instream structures (culverts), thereby avoiding barriers to fish movement. Opening a closed road to motor vehicle use, changing the use from a road to a trail or closing a road is not likely to have an additive incremental impact on stream connectivity because these routes were engineered when they were constructed and the structures or improvements are in place at stream crossings.

Alternative D would have the greatest positive incremental impact on habitat quality because it results in the lowest number of stream crossings and lowest mileage of motorized roads and trails in close proximity to streams. Alternatives B, C and E are fairly similar in their number of streams crossings and route mileage in close proximity to perennial streams. Alternative A would have the largest adverse affect based on the indicators. All action alternatives have the positive incremental impact that no additional user-created or unclassified routes would be created, though additional new routes may be added in the future. Those routes not designated on the
motor vehicle use map would rehabilitate naturally over time (except where administrative access may continue to occur) or quicker if site-specific remedial action is taken sooner.

Routes with new perennial stream crossings would result in the additive incremental impact of 60, 50, and 20 feet of stream channel modification in Alternatives B, C, and D, respectively. This impact is minor in a Forestwide context, but could be reduced slightly if two new route segments/crossings (CZ-0631 and MY3) are not designated on the motor vehicle use map. These routes are redundant with other existing routes in the immediate vicinity. Non-designation of these two routes/crossings would reduce the incremental impact to 40 feet in Alternative B and 40 and 10 feet, respectively, in Alternatives C and D.

The designation of nonsystem roads and trails on the motor vehicle use map may result in additional use on these routes in the future. This would likely have a negative additive incremental impact resulting in additional stream channel widening, decreased bank stability, loss of riparian vegetation, and increased sediment input at low-water stream crossings due to the more frequent and higher volume of use. This would likely be most apparent on some single-track (dirt bike) routes that are currently hard to detect on the ground due to the limited use now. A design criterion to monitor and remediate these crossings has been identified to lessen this impact.

None of the action alternatives have an additive incremental impact on fisheries management activities requiring motor vehicle access because heavily used recreational fishing sites would still be accessible via motor vehicles and limited administrative access would be provided (Travel Management Rule §212.51 and guideline 9104) when needed to access routes not open to the public. Subsequently, no cumulative effects would occur.

None of the action alternatives have an additive incremental impact on access to recreational fishing opportunities because the primary fisheries occur at developed recreation sites or along the larger perennial streams adjacent to level 3, 4, or 5 roads that remain open to public motor vehicle use. Alternative C is likely to have a negative cumulative effect on the Rapid Creek walk-in fishery experience because it proposes a new motorized route in this stream reach that would likely reduce the quality of the fishing experience for which this area was originally designated.

Generally, Alternatives B, D, and E are likely to have a similar or a slightly reduced level of additive incremental impact compared to Alternative A in regards to the potential introduction or spread of aquatic nuisance species. Alternative C with its one new proposed stream crossing in Rapid Creek within the current distribution of Didymo is not likely to have a detectable incremental impact because it affects a very small percentage of Rapid Creek that is currently infested with Didymo. All alternatives maintain the same level of motor vehicle access to streams and lakes that have developed recreation sites. These sites are likely to get the highest recreational visitor use from the broadest geographic area and therefore have the highest risk of aquatic nuisance species introduction.
Wildlife

Introduction
This section discusses the analysis of effects of the proposed action and alternatives on management indicator species (MIS), threatened and endangered species, sensitive species, species of local concern (SOLC), demand species, and migratory birds. Each of these categories of species is defined in their respective sections.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

Endangered Species Act (ESA). This document analyzes and determines the likely effects of the alternatives on federally listed threatened and endangered species. Section 7(a) (1) of the ESA requires Federal agencies to use their authorities to further the conservation of listed species. Section 7(a) (2) requires that Federal agencies ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of federally listed species, or destroy or adversely modify designated critical habitat.

National Forest Management Act (NFMA). Provide for a diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple use objectives of a land management plan.

FSM 2620.44 (4). Evaluate the cumulative effects of proposed management on habitat capability for wildlife, including endangered, threatened, and sensitive animal species.

FSM 2620.01 (Black Hills Supplement). Provides direction to consider species of local concern during project design and evaluate the effects to the species from alternatives considered through the NEPA process.

FSM 2670. Provides direction to evaluate the effects on threatened, endangered, and sensitive species as part of the biological evaluation and NEPA process.

Forest Plan Objectives, Standards, and Guidelines. The following Forest Plan objectives, standards, and guidelines provide direction for management of wildlife species and their habitat on the Black Hills National Forest. Due to the extensive number of objectives, standards, and guidelines that are applicable to wildlife management, the details of each are not provided here. Please refer to the Wildlife specialist report or the Forest Plan for more information.

Objectives: 105, 110, 112, 113; 201, 202, 205, 239-LVD, 211, 213, 217, 218, 220, 221, 230, 231, 237, 238 (a-d); 309; 5.4-207, and 5.43-205.

Standards: 1113, 1301, 1302, 1401 (a, b), 2301 (a, b), 2305, 3101 (a-d), 3102, 3103 (a-e), 3108 (a, b), 3111, 3116, 3123, 3204, 3207, and 3215

Guidelines: 3202, 9107, and 9108

Methodology
A pre-field review was conducted of available information to assemble occurrence records and describe habitat needs and ecological requirements for each species. Sources of information included Forest Service records and files, NRIS FAUNA database, South Dakota Game, Fish, and Parks (SDGFP), Wyoming Game and Fish Department, and published research (citations). This information served as the basis for determining the effects of the alternatives on wildlife
species. In addition, publications based on field work conducted by other parties in the Black Hills and elsewhere were also used as appropriate.

The analysis of effects on wildlife species was conducted using existing data and the habitat requirements for each species. The habitat requirements for each species were used to determine the effect of the alternatives on each wildlife species. The habitat impacts and risks to species on the Forest were estimated based on the best available science and data. The overall conclusions were derived from anticipated trends, probable risks, and degree of uncertainty under each alternative.

Determinations for each threatened, endangered, and sensitive species are made as a result of the existing information gathered during the pre-field review and evaluated in the effects analysis. The basis for each determination is potential habitat, expected occurrence, distribution, effects from proposed activities, and proposed design features used to alleviate the potential effects resulting from management activities.

The analysis of effects for wildlife is based primarily on the direct impacts on wildlife (collisions, etc.) and the indirect impacts of habitat alteration and disturbance to wildlife. The effects of habitat alteration and disturbance to wildlife are based on the miles of motorized routes in a species habitat and the acres of habitat open to motorized cross-country travel. The loss of habitat to road or trail construction is unknown, but is often estimated at 5 acres per linear mile (Rowland at al. 2004). Geographic information systems data were used to query the miles of motorized routes and acres open to motorized cross-country travel in different habitat types used by each species.

The effects of disturbance to wildlife are based on the miles of motorized routes in a species habitat and the acres of habitat open to motorized cross-country travel. Geographic information systems data were used to query the miles of motorized routes and acres open to motorized cross-country travel in different habitat types used by each species.

The indirect and cumulative effects analysis is bounded in time as the next 5 to 15 years. This temporal scale is based on: (1) the time over which one can expect to predict reasonably foreseeable actions and (2) roughly the time until the next Forest Plan Revision.

For wildlife species, the spatial scale for cumulative effects analysis generally encompasses the area within the Forest boundary. This area was chosen because it encompasses similar ecosystem components and species that occur on the Forest. A larger area would include the surrounding plains, which includes a vastly different suite of species and ecosystem components.

**Indicators**

The wildlife effects analysis uses the following as indicators of effects for each alternative.

- Miles of motorized routes Forestwide
- Acres open to motorized cross-country use
- Acres open to motorized game retrieval
- Acres open to motorized dispersed camping
- Miles of routes in general wildlife habitat components
  - Miles of motorized routes in ponderosa pine habitat
  - Miles of motorized routes in spruce habitat
Miles of motorized routes in hardwood habitat
Miles of routes within 400 feet of riparian areas
Miles of motorized routes in grass cover-types
Miles of routes in mountain mahogany (shrubland) habitat
- Miles of routes in species-specific habitat or use areas.
- Routes identified with a relative risk to dippers in the Forestwide Travel Analysis Report (USDA Forest Service 2007a).
- Winter open route density in Management Areas 5.4 and 5.43.

Assumptions
- The amount of direct wildlife mortality as a result of vehicle collisions is correlated with the miles of motorized routes in wildlife habitat and the acres of habitat open to motorized cross-country travel. This makes sense generally at the Forest scale. Different types of roads likely pose different levels of risk, but most of the roads being considered in the alternatives for closure or addition to the system are of similar maintenance level (lower maintenance level, with slower speeds).
- Disturbance impacts to a species from motorized users are correlated with the miles of road within the species’ habitat and the acres of habitat open to motorized cross-country travel.
- All motorized routes are equally disturbing to wildlife or a specific species. In reality, all routes are probably not equally disturbing. However, the different types of routes and the difference in effects from those routes can’t be teased out at the Forestwide scale. Since one is unable to determine where and when these different disturbances would occur and whether an animal would be nearby, it is assumed for analysis purposes that all motorized routes are about equal relative to wildlife disturbance.

Design Criteria
Design criteria developed to protect and conserve wildlife species and their habitats can be found in Appendix B.

Field Surveys
No wildlife surveys were done specifically for this project. Field reconnaissance has continued to be gathered during work on other projects and Forestwide monitoring efforts. The information gathered from these surveys and stored in the NRIS FAUNA database provided information on distribution and habitat associations for species and helped to determine effects of the alternatives.

Routes and trailheads were visited if the pre-field review showed a potential conflict with Forest Plan standards. In most cases, the routes or trailheads were consistent with Forest Plan standards. Routes and trailheads with field verified conflicts with Forest Plan standards were modified according to design criteria to be consistent with Forest Plan standards.

Affected Environment

General Wildlife and Habitat Components
Roads affect wildlife species through direct mortality, modification of behavior, habitat alteration, spread of exotics, disturbance through increased human use (Trombulak and Frissell 2000), and pollution (Noss 1995). Ortega and Capen (2002) found that some forest birds had
lower densities near unpaved roads. Direct mortality can occur from vehicle collisions or by being run over by vehicles (Trombulak and Frissell 2000). Collisions are less likely to occur on primitive roads and trails where traffic is slower than on more well-developed roads and highways (Oxley et al. 1973). Some collisions likely occur on all route types, but there no data available documenting the current number of collisions on the Forest. In general, the more motorized routes and motorized use in wildlife habitat, the more potential there is for wildlife and vehicle collisions. Cross-country travel (off roads and trails) can also cause direct mortality. The loss of habitat to road or trail construction is unknown, but is often estimated at 5 acres per linear mile (Rowland at al. 2004). Different types of roads and trails result in different levels of habitat loss. A single-track route that winds among the trees obviously results in less habitat loss than a Forest road. Cross-country motorized travel can also reduce habitat through repeated use by killing the vegetation.

Rocks can also promote habitat fragmentation for some species. Roads can fragment habitat into smaller patches and increase the ratio of edge to forest interior areas. More road miles mean a reduction in the amount of available interior habitat for requisite interior species, such as marten and brown creepers (Reed et al. 1996).

Disturbance from motorized recreation may cause animals to abandon favored habitat or expend more energy. Noise might affect predator avoidance, food intake, social interactions, reproductive activities, or parenting (Bowles 1995). Animals can habituate to noise, but the process is slow (Bowles 1995). Animals are more likely to habituate to noises that occur on a regular basis; for example, constant traffic on a well-used road. If animals respond as soon as they hear a noise, vehicles would affect them at greater ranges than humans. However, if the animals are habituated to vehicle noise, humans laughing and yelling can cause responses at greater ranges (Bowles 1995). Off-highway vehicles may represent a combination of irregular traffic patterns that prevent habituation and more frequent stops with resulting human activities (laughing and talking).

Non-native invasive plants can adversely affect native plant communities by aggressively competing for nutrients, water, and sunlight. As a result, wildlife forage quantity and quality can be affected.

**Ponderosa Pine Habitat**

Ponderosa pine is the dominant tree species on the Forest and occurs from low to high elevations on all soil types and aspects (USDA Forest Service 2005a). As a result, ponderosa pine serves as a habitat component for most wildlife species on the Forest. The ponderosa pine cover type is broken into nine structural stages based on tree size and canopy closure because some species use certain structural features on ponderosa pine. There are about 1,037,000 acres of ponderosa pine on the Forest (USDA Forest Service 2007b). Much of the ponderosa pine habitat is currently open to motorized cross-country travel. Existing motorized route information in ponderosa pine habitat is shown in Table 38.
Table 38. Existing motorized recreation information for ponderosa pine habitat

<table>
<thead>
<tr>
<th>Structural stage</th>
<th>Miles of motorized routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>333</td>
</tr>
<tr>
<td>2</td>
<td>104</td>
</tr>
<tr>
<td>3A</td>
<td>125</td>
</tr>
<tr>
<td>3B</td>
<td>145</td>
</tr>
<tr>
<td>3C</td>
<td>55</td>
</tr>
<tr>
<td>4A</td>
<td>969</td>
</tr>
<tr>
<td>4B</td>
<td>698</td>
</tr>
<tr>
<td>4C</td>
<td>226</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>2,661</td>
</tr>
</tbody>
</table>

White Spruce Habitat

The Black Hills has one of the southern-most populations of white spruce in the United States. White spruce is the most shade tolerant of the Black Hills tree species, enabling regeneration and growth under closed canopy conditions. The cool, moist environments of white spruce stands provide habitat diversity in a ponderosa pine-dominated landscape. Spruce provides habitat for many species including golden-crowned kinglets (MIS), brown creepers (MIS), northern flying squirrels, and land snails. Spruce habitat currently occupies about 25,700 acres on the Forest (USDA Forest Service 2009g). Much of the spruce habitat is currently open to cross-country travel and approximately 100 miles of motorized routes are in spruce habitat.

Hardwood Habitat

Quaking aspen and bur oak are the principle upland hardwoods (i.e., broad-leaved deciduous trees) on the Forest (USDA Forest Service 2005a). Other hardwood trees in the Black Hills include narrowleaf cottonwood, plains cottonwood, paper birch, American elm, green ash, and boxelder. Hardwood forests, with their associated understory shrub components are an important source of forage for all browsing ungulates, especially white-tailed deer. Hardwoods provide habitat for many wildlife species including elk, beaver, ruffed grouse, black-and-white warblers, butterflies, and snails. The current condition for hardwoods and associated motorized recreation is shown in Table 39.

Table 39. Miles of motorized routes in hardwood habitat on the Forest

<table>
<thead>
<tr>
<th>Hardwood cover type</th>
<th>Current acres on the Forest (USDA Forest Service 2007b, 2009g)</th>
<th>Miles of currently open-motorized routes within habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen</td>
<td>45,111</td>
<td>150</td>
</tr>
<tr>
<td>Bur oak</td>
<td>13,132</td>
<td>22</td>
</tr>
<tr>
<td>Paper birch</td>
<td>3,423</td>
<td>6</td>
</tr>
<tr>
<td>Other hardwoods</td>
<td>970</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>62,636</td>
<td>179</td>
</tr>
</tbody>
</table>
Snag Habitat
Snags are an important habitat component for cavity nesting birds and mammals. The majority of snags on the Forest are ponderosa pine. The Forest currently exceeds the Forest Plan objective of three snags per acre (USDA Forest Service 2009g).

Riparian Habitat
Riparian habitat is located along the edges of streams. It is the transition zone between the aquatic habitat and the upland terrestrial habitat. Riparian habitat is important to most terrestrial and aquatic species because of its association with water. There are about 76,900 acres of riparian habitat on the Forest (USDA Forest Service 2005a). Effects to riparian habitat and the species that use it are based on acres of habitat open to cross-country travel and miles of motorized routes within 400 feet of riparian areas. The 400-foot distance was based on Forest Plan guideline 9204 that states, if topography allows, roads should not be constructed with 400 feet of a meadow. Riparian areas include meadows although not all riparian areas are classified as meadows. Much of the riparian habitat on the Forest is open to cross-country travel and approximately 2,050 miles of motorized routes are within 400 feet of riparian areas.

Grassland Habitat
Grasslands on the Black Hills provide habitat for many wildlife species including, deer, elk, northern harrier, ferruginous hawk, and grasshopper sparrow. The most recent estimate of grassland habitat on the Forest is approximately 104,000 acres (USDA Forest Service 2009g). Much of the grassland habitat on the Forest is open to cross-country travel and approximately 650 miles of motorized routes are within grassland habitat.

Shrubland Habitat
Mountain mahogany shrublands are the most extensive shrubland type on the Black Hills and are most common in the west-central portion (east of Newcastle, Wyoming) of the Black Hills on low-elevation limestone. These shrublands are patchy and have a relatively sparse herbaceous understory dominated by side-oats grama. Three-leaved sumac is usually present in mountain mahogany shrublands and Rocky Mountain juniper and ponderosa pine occur as scattered individuals (USDA Forest Service 2005a). Mountain mahogany is a habitat component for mule deer, some open-country raptors, and other migratory birds.

Table 40. Miles of motorized routes in mountain mahogany habitat

<table>
<thead>
<tr>
<th></th>
<th>Current acres on the Forest (USDA Forest Service 2009g)</th>
<th>Miles of currently open-motorized routes within habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain mahogany</td>
<td>4,597</td>
<td>5</td>
</tr>
</tbody>
</table>

Management Indicator Species
The Forest Service Manual defines management indicator species as “…plant and animal species, … selected for emphasis in planning, and which are monitored during Forest Plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent” (FSM2620.5). Forestwide wildlife MIS are:
All Forest MIS are discussed in this document because this project covers the entire Forest. All Forest MIS occur and have habitat within the project area.

**Black-Backed Woodpecker**

The black-backed woodpecker was selected as a Forest MIS to address Forest condition and habitat diversity, specifically the occurrence and distribution of mature and late-successional forest, burned forest, insects, and snags on the landscape. The black-backed woodpecker is also a Region 2 sensitive species. The effects to this species are evaluated under the Sensitive Wildlife Species section and in the biological evaluation.

**Brown Creeper**

The brown creeper is selected as a Forestwide MIS to address forest condition and habitat diversity, particularly availability of spruce and late-successional and dense mature pine stands. The brown creeper occurs in low abundance in coniferous forest in the Black Hills and is largely tied to late-successional pine and white-spruce habitats (Panjabi 2003, 2004, Giroir et al. 2007) but also occurs in other ponderosa pine successional stages (Giroir et al. 2007). A small, well-camouflaged tree climber, the brown creeper is often observed scaling the bark of trees gleaning spiders, beetles, moths, and other insects from crevices and behind pieces of loose bark (Wiggins 2005).

The brown creeper is found most abundantly in mature, old-growth-coniferous and mixed-coniferous-deciduous forests. The preferred nesting habitat for this species is mature, old growth forest that is undisturbed and contains a closed canopy (Wiggins 2005). Brown creepers tend to prefer dense, late-successional coniferous, deciduous, or mixed habitats (Wiggins 2005). Panjabi (2001, 2003, 2004, 2005) found that brown creepers are closely associated with dense mature and late-successional ponderosa pine stands (structural stages 4C and 5) and white spruce in the Black Hills. They are also found in lower densities in other structural stages of ponderosa pine (Panjabi 2001, 2003, 2004, 2005, Giroir 2007). Evidence also suggests that this species is sensitive to the effects of forest fragmentation (Wiggins 2005).

Other important habitat requirements for the brown creeper are areas of large trees (greater than 10 inches in diameter); loose bark, areas infested with bark beetles, and snags (Wiggins 2005). Dead or decaying trees and snags provide substrate for nests and foraging. Habitat trend appears to be stable on the Black Hills. Acres of white spruce and ponderosa pine structural stages 4C and 5 are stable, acres of ponderosa with a tree size of very large are stable, and snag density is above the Forest Plan objective (USDA Forest Service 2009g).

Brown creeper populations appear stable on the Forest. Brown creepers have been monitored on the Black Hills since 2001 in cooperation with the Rocky Mountain Bird Observatory (Panjabi...
Black Hills National Forest Travel Management Plan

2001, 2003, 2004, 2005, Beason et al. 2006, Hutton et al. 2007, Giroir et al. 2007). Brown creepers are well distributed in low abundance throughout the Black Hills. The Migratory Bird Breeding Habitat (MBBH) program was designed to statistically detect population trends over a longer time period than the seven years that it has been implemented. Natural variability in the data and other factors preclude a short-term, meaningful analysis. However, a less rigorous analysis of the data reveals varying densities across the years, with no obvious upward or downward Forestwide population trend (USDA Forest Service 2009g). Relative densities showed a significant drop in 2007 (Blakesley et al. 2008) but it is unclear if this is annual fluctuation or the beginning of a downward trend.

Golden-crowned Kinglet
Golden-crowned kinglets were selected as Forestwide MIS to address forest condition and habitat diversity, specifically abundance, distribution, and condition of spruce habitat. Golden-crowned kinglets that breed in the Black Hills are disjunct from their main breeding range across the boreal forests of Canada and in the Western United States. The golden-crowned kinglet is an uncommon permanent resident at higher elevations in the Black Hills, where they are found primarily in white-spruce forests (South Dakota Ornithologist’s Union 1991; Panjabi 2003, Giroir et al. 2007). Golden-crowned kinglets are uncommon in winter in the Black Hills, but are common spring and fall migrants (South Dakota Ornithologist’s Union 1991).

Golden-crowned kinglets are found primarily in white-spruce forests (South Dakota Ornithologist’s Union 1991; Panjabi 2003, Giroir et al. 2007). Panjabi (2003) also found them in small numbers in mature ponderosa pine, aspen, and wet meadows, although these areas likely had a spruce component. Golden-crowned kinglets on the Black Hills are likely limited by the abundance, distribution, and condition of spruce habitat. Golden-crowned kinglet habitat (white spruce) appears relatively stable or slowly increasing on the Forest (USDA Forest Service 2009g). Spruce habitat is naturally patchy and of low abundance on the Black Hills. White spruce occurs at high elevations on north aspects and in cool canyon bottoms of the Forest. MBBH data suggests the golden-crowned kinglet is distributed primarily in the northern half of the Black Hills, although it is also found in more localized areas of the central Hills and Bear Lodge Mountains as well (USDA Forest Service 2007b).

Golden-crowned kinglets have been monitored on the Black Hills National Forest since 2001 in cooperation with the Rocky Mountain Bird Observatory (Panjabi 2001, 2003, 2004, 2005, Beason et al. 2006, Hutton et al. 2007, Giroir et al. 2007). The MBBH program was designed to statistically detect population trends over a longer time period than the seven years that it has been implemented. However, a less rigorous population trend analysis suggests an increase through 2006 (USDA Forest Service 2007b). The relative density in 2008 was the lowest since monitoring began in 2001 (USDA Forest Service 2009g). Habitat trend for the golden-crowned kinglet has increased over the long term (USDA Forest Service 2009g).

Grasshopper Sparrow
Because of its association with intermediate and taller vegetation, the grasshopper sparrow habitat and/or population trends are likely a good indicator of prairie grassland habitat condition. The grasshopper sparrow was selected as an MIS on the Forest to address abundance, distribution, and condition of grassland habitat. The grasshopper sparrow is also a Region 2 sensitive species. The effects to this species are evaluated under the Sensitive Wildlife Species section and in the biological evaluation.
**Ruffed Grouse**

The ruffed grouse was selected as an indicator of aspen quantity and vigor in pure and mixed stands. Ruffed grouse was selected as an MIS for the Forest to address forest condition and habitat diversity, specifically aspen distribution and condition. Ruffed grouse is a year-round resident in the Black Hills and occurs widely but in low abundance (Panjabi 2003). Ruffed grouse is classified by state wildlife agencies (South Dakota and Wyoming) as an upland game bird. There is an annual fall hunting season for these birds. Distribution on the Black Hills roughly correlates to the distribution of Aspen. Aspen is more abundant in the northern and central Black Hills and Bear Lodge Mountains. Aspen becomes sparse in the southern Black Hills.

Ruffed grouse are strongly associated with aspen throughout much of their range (Wiggins 2006). Ruffed grouse use a variety of aspen age classes for foraging, nesting, brood rearing and predator avoidance (ibid.). Ruffed grouse nest in forests or woodlands with some deciduous trees and is closely associated with hardwoods, particularly aspen (ibid.). On the Forest, this species is associated with aspen in a variety of structural stages. The species feeds on aspen buds and catkins in the winter and spring, respectively (ibid.). In South Dakota, ruffed grouse is typically found in young to medium-age aspen stands, other hardwood stands, and open pine forests (South Dakota Ornithologist’s Union 1991). The Forestwide habitat trend of aspen over the past 11 years is slightly downward (USDA Forest Service 2009g). Aspen stands have been replaced by pine and spruce in many areas of the Forest, and may have declined since pre-settlement times (Parrish et al. 1996), resulting in a net loss of ruffed grouse habitat.

Although quantitative data are lacking, grouse appear to be less common in the Black Hills than they were historically (Wiggins 2006). The Forest is currently working with the South Dakota Game, Fish, and Parks and the Forest Service’s Rocky Mountain Research Station to develop a new monitoring protocol for ruffed grouse. Data was collected for the first time in 2007. Preliminary data from 2007 show a probability of occupancy of 0.133 (Hansen et al. 2008). This data would serve as baseline data for future trend assessments.

**Song Sparrow**

The song sparrow was selected as an MIS for the Forest to address riparian condition. This species is expected to be a good supplemental indicator of riparian habitat condition in addition to Beaver. Song sparrows are found throughout much of the Black Hills, but are more common in the north part. Song sparrows occur mainly in streamside thickets, especially willows, and are dependent upon these habitats (Panjabi 2001). Panjabi (2001, 2003) found them in the highest density in riparian habitat. Song sparrows were also found in white spruce adjacent to riparian stringers.

The song sparrow breeds in a wide range of forest, shrub and riparian habitats, but in dry areas is normally limited to those close to fresh water (Arcese et al. 2002). Year-round residents are often found near breeding areas during winter (Arcese et al. 2002). The highest densities have been found in riparian habitat (Panjabi 2001, 2003; Hutton et al. 2007; Giroir et al. 2007). Riparian areas account for approximately 1 percent of public and private land in the Black Hills and are typically located adjacent to streams and around natural springs, seeps, fens, and reservoirs. Due to the presence of water, these areas frequently receive a disproportionate amount of use from wildlife, livestock, and humans.
Riparian habitats have decreased in quality since the pre-European settlement era, indicating a long-term declining habitat trend. More recent, shorter-term riparian trends are unclear. Small riparian protection projects have improved riparian conditions in some areas.

Song sparrows have been monitored on the Black Hills since 2001 in cooperation with the Rocky Mountain Bird Observatory (RMBO; Panjabi 2001, 2003, 2004, 2005, Beason et al. 2006, Hutton et al. 2007, Giroir et al. 2007). The MBBH program was designed to statistically detect population trends over a longer time period than it has been implemented. However, a less rigorous analysis of the data suggests a stable Forestwide population trend since 2001 (USDA Forest Service 2009g).

**Beaver**

Beaver was selected as an MIS for the Forest to address hardwood and riparian/aquatic habitat condition. This species was selected due to its relationship to riparian/aquatic habitat condition, status as a keystone species, available monitoring protocols, and dependence on riparian forest and shrub habitat. Beavers are found in suitable habitat throughout much of North America, ranging as far south as northern Mexico; they are widely distributed throughout South Dakota. The beaver is North America’s largest rodent, with adults weighing 30 to 60 pounds (Higgins et al. 2000). Beavers are semi-aquatic and widely distributed in large rivers and lakes with constant water levels, marshes, small lakes, and streams with weak flows adequate for damming (ibid.).

Beavers are adversely affected by predation, loss of food base due to wildfire or habitat overuse, and drought. Direct impacts to beavers by humans typically are caused by trapping and hunting. Indirect impacts to beavers are any impacts that affect their specific habitat requirements for perennial water and deciduous riparian woody vegetation.

General habitat requirements of beavers include suitable riparian habitat dominated by stands of willow, aspen, or cottonwood (Olson and Hubert 1994). Beavers are not found in areas without permanent water and suitable woody vegetation; they build dams by cutting down trees and shrubs and packing mud between the branches. They also build lodges with feeding and sleeping chambers that are accessed through underwater entrances. The beaver is nocturnal and active year-round. It is vegetarian, preferring aspen, willow, cottonwood, and alder (Higgins et al. 2000).

At one time, beavers were likely the most important biological influence on riparian systems of the Forest. Through dam construction, they can enhance and maintain aquatic and riparian communities by elevating water tables; reducing stream velocity and subsequent sedimentation and bank erosion; improving water quality; improving stream flow stability; and enhancing fish and wildlife habitat (Olson and Hubert 1994).

Riparian habitats have decreased in quality since European settlement, and the total amount of aspen has decreased over at least the past 30 years. Both of these indicate a long-term declining habitat trend for beaver. More recent, shorter-term riparian trends are unclear. Small riparian protection projects on the Forest have improved riparian conditions in some areas (USDA Forest Service 2007b).

Historically, beaver were heavily trapped in the Black Hills. By the late 1880s, populations were low and restricted to remote areas (Parrish et al. 1996). Beaver have increased since then and are now widely distributed in both South Dakota and Wyoming. Beaver can be legally harvested in both states, but hunting regulations moderate the effect on populations. Limits to persistence include degradation and/or loss of riparian shrubs and forests due to historical management.
activities, as well as the loss of hardwood components on adjacent uplands. Baseline beaver surveys were conducted on the Forest during September 2004 (USDA Forest Service 2009g). Beaver and their habitats were most common in the Bear Lodge Mountains and in the central Black Hills, although they were present in other areas as well. A total of 74 active and 5 inactive beaver colonies were observed on National Forest System lands during aerial and ground-based surveys.

**White-tailed Deer**

White-tailed deer were selected as an MIS for the Forest to address forest condition and habitat diversity, including the occurrence of understory shrubs. White-tailed deer occur throughout most of the United States and southern Canada and occupy a wide range of habitats. In the Black Hills, they are associated with forested habitat (conifer and hardwood) in close proximity to water (SAIC 2003). White-tailed deer are mostly migratory in the Black Hills, using lower elevations in winter (Stefanich 1995). White-tailed deer move to low-elevation winter range from October to January, the timing of which depends on snow and forage conditions (Stefanich 1995; Griffin et al. 1999). Wooded draws and pine stands with closed canopies provide thermal cover while agricultural areas and recently logged and open stands with abundant shrubs are important for forage. Bearberry juniper and snowberry provide important winter browse (DePerno et al. 2002).

White-tailed deer in the Black Hills require a diversity of habitat types. Juxtaposition between cover and forage for the white-tailed deer is crucial year-round. Hardwood stands, which provide abundant forage combined with screening cover, were best predictors of white-tailed deer diurnal, summer use (Stefanich 1995). Peak use of dense aspen habitats with dense, tall shrub cover indicated importance as fawning habitat in the northern and central Black Hills (DePerno et al. 2002). Summer nocturnal habitat use is significantly different with use of open habitat types of meadows, riparian areas, and/or open pine relative to proximity of dense cover (Stefanich 1995). Wet meadows, riparian areas, and open stands of ponderosa pine also provide quality forage and water.

In winter, white-tailed deer in the central Black Hills selected forested habitat with shrubs 1.5 to 4.7 times more frequently than shrub habitats occurred on the Forest (DePerno et al. 2002). Uresk and Severson (1998) found that open-canopy conditions are necessary to get to understory shrubs. Closed-canopy stands with minimal understory vegetation represent cover.

Another factor that can affect deer habitat is road construction and road density. High road densities (miles of road/square mile area) alter both human and animal behavior, which contribute to animal displacement and stress (SAIC 2003). Roads may cause a direct loss in habitat and increased vehicular volume may indirectly degrade habitat quality. In the 1990s, up to 1,400 deer per year were killed in vehicle collisions in the Black Hills (Parrish et al. 1996).

The Arc Habitat Suitability Index (ArcHSI) model was used to provide an index to Forestwide deer habitat conditions in 2005. The Forestwide summer habitat trend is increasing, and winter habitat trend is stable to slightly decreasing (USDA Forest Service 2006b). The South Dakota white-tailed deer population has increased since 2000. In 2005, there were an estimated 50,000 white-tailed deer (USDA Forest Service 2009g). The Wyoming Game and Fish (WGF) Department models estimate that there are about 40,000 white-tailed deer in the Black Hills herd unit that includes both private and Forest lands (Sandrin 2007a). The population may be beginning to grow based on field personnel observations (Sandrin 2007a).
In 2008 in South Dakota, there were 4,444 white-tailed deer harvested in the Black Hills area (Huxoll 2009). In 2008 in Wyoming, 3,790 white-tailed deer were taken in Hunt Areas 2 and 4 (Wyoming Game and Fish Department 2009). In both states, these hunting areas have significant amounts of private land so harvest levels on the Forest were likely less than these numbers.

Threatened and Endangered Species
The purpose of this section is to analyze and determine effects of the alternatives on species listed as endangered, threatened, or proposed under the Endangered Species Act. The black-footed ferret is the only threatened, endangered, or proposed species located on the Forest, or located adjacent to project area that could potentially be affected. The species was identified through informal consultation with the South Dakota and Wyoming field offices of the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service 2007a, 2007b). No designated critical habitat for the black-footed ferret is presently located on lands administered by the Forest.

*Black-footed Ferret*

Black-footed ferrets (*Mustela nigripes*) are federally endangered throughout their former range. In Wyoming, there are historic records of ferrets in the Black Hills area (Luce et al. 1999). Ferrets have recently been released in Wind Cave National Park in the southern Black Hills. The black-footed ferret is a nocturnal, solitary carnivore with the narrowest range of ecological tolerance of any North American predatory mammal (USDA Forest Service 1996a Appendix H). In the Black Hills, as elsewhere, the key habitat component for black-footed ferrets is the distribution and abundance of prairie dogs (Forrest et al. 1985), its primary food source (see discussion for Black-tailed prairie dog on p. 192). Vacated prairie dog burrows also provide shelter.

One prairie dog town is located near Wind Cave National Park. It is located in the small section of Norbeck Wildlife Preserve (Section 2) near the boundary between Wind Cave National Park and Custer State Park and is about 13 acres in size. Ferrets could move out of Wind Cave National Park and into this prairie dog town. Norbeck Wildlife Preserve is currently not open to public motorized travel.

*Region 2 Sensitive Species*

Region 2 sensitive species are those plant and animal species identified by the Regional Forester for which population viability is of concern, as evidenced by significant current or predicted downward trends in population numbers or density, or in habitat capability that would reduce a species’ existing distribution (USDA Forest Service 2007c). Table 41 lists wildlife and fish species designated as sensitive species Region 2 of the United States Forest Service (USDA Forest Service 2007c) known or likely to occur on the Forest.

*Cooper’s Rocky Mountain Snail*

Anderson (2004) lists Cooper’s Rocky Mountain snail (*Oreohelix cooperi*) as the only *Oreohelix* in the Black Hills. Anderson (2004) also notes the taxonomy of this species is confusing with the species often classified as *Oreohelix strigosa cooperi*. Anderson et al. (2006) and Weaver et al. (2006) found only one species in the Black Hills, and referred it as *O. cooperi*. For the purposes of this analysis, we consider the two species to be one and the same as suggested by Anderson et al (2006), but refer to it here as *O. strigosa cooperi* since that is the label used on Region 2 sensitive species list. Anderson et al. (2006) consider this snail to be widely distributed in the Black Hills. Cooper’s snail also occurs in the Judith Mountains in Montana and in the Bighorn Mountains in Wyoming (Anderson et al. 2006, Weaver et al. 2006).
In 2002, the Forest received the final report for a contract to inventory and/or monitor 357 sites for land snails (Frest and Johannes 2002). Many of the sites had been surveyed in the early to mid-1990s, and some were revisited in 1999 to help assess population changes. More than 100 new sites were inventoried for the first time. A total of 38 species were identified, including 12 not documented previously in South Dakota. The surveys also provided information on Cooper’s mountain snail. Cooper’s snail was found at 109 sites. Locations are concentrated in the northern, central and western Black Hills (Anderson 2004, 2005).

The following discussion is based on information from the Black Hills (Frest and Johannes 2002). Cooper’s snail was found on calcareous soils; most localities were lowland wooded areas and talus slopes, generally but not always with northern or eastern exposures. Many of the colonies, including most of the largest, are found in ponderosa pine with a partially closed canopy, a secondary deciduous tree component, and diverse understories. At some sites, white spruce was common. Riparian woodland communities, often in areas with adjacent steep rocky slope bases, were also found to contain some substantial colonies. This species generally

### Table 41. Forest Service Region 2 sensitive species analyzed

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Invertebrates</strong></td>
<td></td>
</tr>
<tr>
<td>Oreohelix strigosa cooperi</td>
<td>Cooper’s mountain snail</td>
</tr>
<tr>
<td>Speyeria idalia</td>
<td>regal fritillary</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
</tr>
<tr>
<td>Storeria occipitomaculata pahasadap</td>
<td>Black Hills redbelly snake</td>
</tr>
<tr>
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<td>Ovis canadensis</td>
<td>Rocky Mountain bighorn sheep</td>
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<td>Cynomys ludovicianus</td>
<td>black-tailed prairie dog</td>
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dominates the mollusk fauna in the area of occurrence, but it has been found to occur with two other species of land snail: the callused vertigo and striate disc.

Litter is an important component for snails as food and cover. In general, snails prefer a well-developed litter layer, but not thick or matted (Anderson 2005). In contrast to other land snails, Cooper’s snail can thrive with little cover and thin litter (ibid.). Oreohelix have been observed in a variety of litter types in the Black Hills, including coniferous needles litter, deciduous litter, and areas of thin litter (ibid.).

Road construction and maintenance can affect snails by eliminating habitat or killing snails. Roadside brushing or weed spraying can also damage snails and/or their habitat (ibid.). Several known locations of Cooper’s snail are near roads.

Regal Fritillary Butterfly

The Black Hills are at the western margin of the regal fritillary’s range, possibly due to increased aridity further west (USDA Forest Service 2000b). The regal fritillary requires open prairies (Royer and Marrone 1992). In South Dakota, the fritillary is most likely to be found in native tall-grass prairies composed of big bluestem (Andropogon gerardii), western wheatgrass (Pascopyrum smithii), and green needlegrass (Stipa viridula) (ibid.). Continuous prairie greater than 1,000 acres may be required for stable populations (ibid.). In smaller habitat patches, individuals would move in and out depending on habitat condition and size (Royer and Marrone 1992, USDA Forest Service 2000b). The Black Hills is primarily forested, and as such, contains only relatively small patches. The best habitats within the Black Hills occur in lower elevation prairies along the outer Forest boundary and in interior prairies, although tall-grass species are not predominant in the interior prairies.

Adult female regal fritillaries lay eggs near violets. During the following spring, the larvae feed exclusively on violet leaves. By late June or early July, juveniles transform to adults (Royer and Marrone 1992). Adults require a continuous source of nectar-producing flowers such as coneflowers, fleabanes, and thistles (ibid.).

The primary factor affecting long-term populations is thought to be conversion of native tall-grass prairie habitats to cropland and pasture, which primarily occurs on private lands. It is estimated that one-half to two-thirds of the regal fritillary’s original range has been converted to cultivated cropland, making it a species that is considered rare rangewide (USDA Forest Service 2000b). Another risk to this butterfly is exotic weed invasion into prairie habitat (Royer and Marrone 1992).

Northern Leopard Frog

Northern leopard frogs are considered common in suitable habitat in the Black Hills and are found at all elevations, though systematic surveys have not been done in the Black Hills to verify this (Smith 2003). The northern leopard frog appears to be more common in the northern Black Hills. In the Black Hills, it is believed this species has been reduced from its historical abundance due to the loss of wetlands, though population trend and size are speculative due to lack of information (ibid.).

The northern leopard frog occurs in a wide variety of habitats including creeks, lakes, ephemeral wetlands, and ponds. Emergent vegetation is important in providing protective cover in ponds and lakes that contain predatory fish. After maturing, sub-adult frogs migrate to suitable feeding sites that are usually adjacent uplands. These dispersal movements may be along riparian
corridors or upslope areas. After breeding, adult frogs can be found feeding in upland habitats of grasslands, meadows, and pastures adjacent to breeding areas. Adult frogs are highly mobile. They have been found up to two miles from water (Smith 2003).

Risk factors identified by Smith (2003) include inadequate regulatory protection of smaller (less than 12 acres) seasonal and semi-permanent ponds, introduced predatory fish, lack of protection at overwintering sites, water quality degradation due to chemicals, loss of migratory pathways, introduced diseases, and road-related mortality.

Roads can cause substantial direct mortality from road-kill events (Smith 2003, Smith and Keinath 2007). Roadways can also fragment habitat and alter frog dispersal patterns. Road construction also causes siltation, which can smother eggs. Runoff from roads can carry oil and other automotive pollutants into waterways, adversely affecting frog populations (Smith and Keinath 2007).

**Black Hills Redbelly Snake**

The redbelly snake is a nocturnal and secretive snake found in moist sites from the western foothills, the limestone plateau, and the central core of the Black Hills (Smith and Stephens 2003). Sites where the snake has been observed range in elevation from 4,700 to 6,400 feet (Peterson 1974). The Black Hills subspecies of the redbelly snake is an isolated population with the nearest population of redbelly snakes about 300 miles east near Aberdeen, South Dakota (USDA Forest Service 2000b). Biological expert interviews (USDA Forest Service 2000b) suggest that the redbelly snake is reasonably common in the Black Hills.

Although the redbelly snake does not appear to be in danger of extirpation, the population in the Black Hills is an isolated subspecies and endemic to the Black Hills (USDA Forest Service 2000b). Little demographic and population trend data are available specific to the Black Hills population (Smith and Stephens 2003). This subspecies is considered one of the most poorly understood snakes of North America (Bartlett and Tennant 2000).

Several den sites have been found in the Black Hills with hibernacula located within rock fissures (USDA Forest Service 2000b). Observations are concentrated in the central and northern portions of the Black Hills. The southern portion of the Black Hills is drier, which may affect distribution.

Black Hills redbelly snakes are associated with mesic sites such as wetlands, riparian areas, and wet meadows (USDA Forest Service 2000b). The most serious risk to redbelly snakes populations may be the loss of mesic habitats (Smith and Stephens 2003). Suitable environments for redbelly snakes are thought to be abundant and broadly distributed across the Black Hills (USDA Forest Service 2000b). The northern Black Hills, being generally moister and more fire-resistant than the rest of the Forest, likely provides more habitat than other districts of the Forest (USDA Forest Service 2000b). Stumps and down woody material are important in maintaining moist conditions; as roots of stumps decay, they provide cover (USDA Forest Service 2000b, Smith and Stephens 2003).

Road construction and off-highway vehicles can impact redbelly snakes. These activities involve the displacement and/or compaction of large amounts of soil, removal of ground litter and other debris, and potentially loss of mesic habitat (Smith and Stephens 2003). Direct mortality has been observed on existing roads and motorized routes.
**American Three-Toed Woodpecker**

The main range of the three-toed woodpecker extends through the Rocky Mountains and laterally across Canada to northern New England (Leonard 2001). The Black Hills population is isolated from the main range by nearly 200 miles. In South Dakota, this woodpecker is considered a rare yearlong resident limited to the higher elevations of the Black Hills (South Dakota Ornithologist’s Union 1991). The three-toed woodpecker may also be found at lower elevations, especially in winter (ibid.). The three-toed woodpecker population trend has been relatively stable in both the northern Rocky Mountains and Badlands/Prairies physiographic regions. However, Breeding Bird Survey data suggests there may be isolated local declines (Sauer et al. 2001).

In a baseline study of three-toed woodpecker populations in the Black Hills, Mohren (2002) estimated that approximately 320 to 440 birds occurred here in 2000-2001, with an average Forestwide density of 1 bird per 3,088 acres (0.08 birds/km$^2$). The estimate applies across all habitat types on the Forest, including forest types that the species does not typically inhabit (e.g., pure ponderosa pine). According to Mohren (2002), the Forestwide density estimate was similar to what has been recorded in other unburned habitats across the species range.

Late successional spruce-fir forest represents the core breeding and feeding habitat for the species (Wiggins 2004). To date, monitoring results show areas in or adjacent to mature white spruce stands harbor the highest three-toed woodpecker densities in the Black Hills. Relative densities in spruce habitats range from 1 bird per square kilometer to 5.5 birds per square kilometer (USDA Forest Service 2009g). These figures are 23 to 45 times higher than Mohren’s (2002) Forestwide average. Birds were also found in late-successional pine habitats and riparian habitats but in much lower densities than in white spruce. Also, spruce trees were usually present in those other habitat types where the woodpeckers occurred.

Spruce habitat is naturally patchy and of low abundance on the Black Hills. White spruce occurs at high elevations, on north aspects, and in cool canyon bottoms of the Forest. Fire suppression during the last century has allowed spruce to increase in abundance and density in the Black Hills, generally at the expense of quaking aspen (Parrish et al. 1996). The white-spruce cover type now occurs on 25,000 acres of the Forest. Approximately 90 percent of the spruce on the Forest is in mature or late-successional condition (structural stages 4 and 5) and likely provides high-quality habitat for three-toed woodpeckers. Three-toed woodpeckers nest mainly in snags but would use live trees, especially those with heart rot. Species of nest trees vary and include hardwoods as well as conifers. Optimal habitat includes areas with 42 to 52 snags per 100 acres, occurring in clumps (Nicholoff 2003). The most important snags are 12 to 16 inches dbh, 20 to 40 feet tall, and have bark still present (Nicholoff 2003).

**Bald Eagle**

Bald eagles are present in the Black Hills during winter, usually arriving in early November (USDA Forest Service 1996a, Appendix H) and leaving by March or April. The bald eagle was formerly a rare breeder in the southeastern portion of South Dakota (South Dakota Ornithologist’s Union 1991). An unsuccessful nesting attempt was reported adjacent to the Forest in the Southern Hills in spring 2004. In 2007, an unsuccessful nest attempt occurred at Deerfield Lake on the Forest. This was the first nest attempt on the Forest in recent times. The bald eagle nest is again active in April 2008. Most suitable nesting habitat occurs around the major reservoirs or along major creeks in the Black Hills.
Prior to 2006, there were no known traditional (repeated use) or communal roost sites in the Black Hills. In 2006, a night roosting area was discovered at Pactola Reservoir. Approximately 18 to 22 eagles were observed at the roost on four separate occasions between late December 2005 and late January 2006. The roost covers at least 100 acres of mature to late-successional ponderosa pine forest on very steep slopes. Large trees and snags are abundant. The site is adjacent to Pactola Reservoir, parts of which were not frozen during the time of the discovery. Further monitoring of this roost is needed to clarify the full extent of the roost and its importance to bald eagles (USDA Forest Service 2007b).

Key winter habitat components for the bald eagle on the Forest include perch sites, roost sites away from human disturbance, and an adequate food supply. The ponderosa pine landscape provides suitable roosting habitat. A small population of eagles does winter on the Black Hills. This small population appears to rely mainly on a dependable supply of carrion, especially deer and small mammals killed by vehicle traffic. Bald eagles are frequently observed feeding on carcasses along roads.

**Black-Backed Woodpecker**

The main range of the black-backed woodpecker is in the northern Rocky Mountains and across Canada (Dixon and Saab 2000). In South Dakota, this woodpecker is known only in the Black Hills, where it is considered an uncommon yearlong resident (South Dakota Ornithologist’s Union 1991). In Wyoming, the species occurs in the northeastern portion of the state as well as in the Black Hills and Bear Lodge Mountains. In the Black Hills, black-backed woodpecker distribution and abundance is closely associated with recent stand-replacing fires (Panjabi 2001, 2003, 2004, 2005, Giroir et al. 2007) and insect outbreaks (Bonnot 2004, Rumble 2002). They also occur at much lower densities throughout the remainder of the Forest (Mohren 2002; Panjabi 2001, 2003, 2004, 2005, Giroir et al. 2007).

In the Black Hills, black-backed woodpeckers are associated with ponderosa pine habitats that have high populations of their main prey: the larvae of wood-boring beetles, engraver beetles, and bark beetles (Anderson 2003). Recently burned pine forests and areas infested with mountain pine beetles are most preferred by black-backs. The species can also be found in forests that are relatively unaffected by beetles, but it is relatively rare in such places.

Unburned pine stands infested with mountain pine beetles (bark beetles) are also important to black-backed woodpeckers. Rumble (2002) found that the density of black-backed woodpeckers in the heavily infested Beaver Park area was approximately seven times greater than what Mohren (2002) found across all habitats in the Black Hills. The core of the infestation had densities that were 32 times higher than the Forestwide average; this is the highest density recorded on the Forest although it occurred over a fairly small localized area.

In unburned, uninfested pine habitat of the Black Hills, black-backed woodpeckers select mature or late-successional pine stands with high canopy cover, high tree densities, and high snag densities (Mohren 2002; Panjabi 2001; Panjabi 2003; and USDA Forest Service 2000b). These conditions are found primarily in structural stages 4C and 5. Black-backs also use sapling-pole stands with any amount of canopy cover (i.e., structural stages 3A, 3B, and 3C), but to a lesser degree than any of the other habitat structures mentioned thus far (Mohren 2002, USDA Forest Service 2000b). Mohren (2002) reported that black-backed woodpeckers avoid mature pine stands that do not have high canopy cover (i.e., structural stages 4A and 4B). Black-backed woodpeckers nest in hard snags or live trees with diameters of 9 to 18 inches (Anderson 2003).
Ponderosa pine appears to be the most important nest tree in the Black Hills, as all recent studies report nests in only that species (Vierling 2004; Mohren 2002; Rumble 2002).

Burned habitat has declined because large fires that burned prior to 2002 have aged and become less valuable as black-backed habitat. Still, because of other fires since 2002, there is a relatively high amount of potential habitat available on the Forest. Habitat provided from mountain pine beetle is abundant when compared to 10 years ago and appears to be increasing.

Forestwide habitat conditions have been favorable for the black-backed woodpecker over the past few years due to numerous large fires and beetle outbreaks. Habitat is relatively abundant when compared to 10 to 25 years ago. In the past few years, the habitat trend appears to be stable as recently burned areas have declined (aged) and insect caused tree mortality continues to increase. The addition of recent wildfires and insect tree mortality results in above 3 snags per acre (Forest Plan objective 211) well dispersed across the Forest (USDA Forest Service 2009g).

In his baseline population study, Mohren (2002) estimated that approximately 1,200 black-backed woodpeckers occurred in the Black Hills during 2000, with an average Forestwide density of one bird per 883 acres (0.28 birds/km²). The estimate applied across all habitat types on the Forest, excluding large recent burns, which did not exist at the time. According to Mohren (2002), the Forestwide density estimate was similar to what has been recorded in other unburned habitats across the species range. Since Mohren’s first estimate was derived, several large fires occurred in the Black Hills, which has undoubtedly increased the black-backed woodpecker population. Black-backed woodpeckers have been monitored on the Black Hills since 2001 in cooperation with the Rocky Mountain Bird Observatory (Panjabi 2001, 2003, 2004; Beason et al. 2006, Hutton et al. 2007, Giroir et al. 2007). Monitoring was focused on burned habitat in the Jasper Fire, which burned in 2000.

It appears that black-backed woodpecker densities peaked in the 2000 Jasper Burn during the second post-fire year when one bird per 36 acres (or 6.9 birds/km²) were observed (Panjabi 2003). This is nearly 25 times higher than what Mohren (2002) found as a Forestwide average. One year later, densities in the Jasper Burn had declined by nearly half (Panjabi 2004), but they were still much higher than what has been found in other habitats. Relative densities in burned habitat have continued to decline in the Jasper Burn as expected following a fire (USDA Forest Service 2009g).

Burrowing Owl

The western burrowing owl is a grassland specialist distributed throughout western North America, primarily in open areas with short vegetation and bare ground (Klute et al. 2003). The northern populations of owls are migratory and may winter in the southwestern U.S. and Mexico (Johnson and Anderson 2002). Numerous authors have identified elimination of burrowing rodents through control programs as the primary factor in the recent and historical decline of burrowing owl populations (Klute et al. 2003).

Burrowing owl nesting habitat typically consists of level, open landscapes with sparse grassland vegetation that either has low structure or is heavily grazed (Johnsgard 1988), either by cattle or prairie dogs (Klute et al. 2003). They are dependent on burrowing mammals whose vacant burrows are used for nesting and roosting; the burrows of prairie dogs, particularly black-tailed prairie dogs, are of central importance (Johnson and Anderson 2002, Klute et al. 2003).

While burrowing owls nest and roost in shortgrass habitats, they forage over a variety of habitats including tall grass, cropland, and fallow fields (Klute et al. 2003). A mosaic of grassland
habitat diversity. Habitat for burrowing owls on the Forest is limited; the availability of black-tailed prairie dog colonies may be the greatest limiting factor (Johnson and Anderson 2002; see p. 192 for discussion on prairie dog colonies).

A burrowing owl was observed in 2002 (Panjabi 2003), and another observation occurred on the Forest in June 2004 by the Rocky Mountain Bird Observatory during ongoing breeding bird monitoring. The 2004 observation was associated with a prairie dog town on the Hell Canyon Ranger District. Seven burrowing owls were observed on the Forest in 2006. Two adults and three chicks were observed at two nests. These are the first nesting burrowing owls documented on the Forest for quite some time (USDA Forest Service 2007b).

**Ferruginous Hawk**

The ferruginous hawk ranges through most of the western United States. Its breeding range extends from northern Arizona, New Mexico, and Texas north to southern Canada (Collins and Reynolds 2005). The bird winters primarily from the southwestern and south central United States south to central Mexico (Collins and Reynolds 2005). In South Dakota, it is considered an uncommon to fairly common summer resident in prairies, chiefly in the western but also northeastern part of the state (South Dakota Ornithologist’s Union 1991). In Wyoming, ferruginous hawks are a common resident, with breeding records across most of the state, but there is a noticeable drop in numbers in the winter (Luce et al. 1999).

Rangewide, ferruginous hawks occupy a variety of habitat types including open grasslands, shrub-steppe, croplands and desert (Collins and Reynolds 2005). Ferruginous hawks prefer open rolling or rugged terrain and avoid high elevations, forest interiors, narrow canyons, and cliffs (Collins and Reynolds 2005), which may account for their rarity in the Black Hills. The most recent estimate of grass cover-types on the Black Hills is approximately 104,000 acres (USDA Forest Service 2009g). Prairie grasslands refer to those grasslands that generally occur on the outer perimeter of the Black Hills as a transition between the true prairie ecosystems and the forested ecosystems of the foothills and mountains. Interior grasslands occur within the forested perimeter of the Black Hills and can include large areas dominated by plant species typically associated with prairie systems (e.g., Reynolds and Gillette Prairies).

Disturbance during the nesting period has been identified as a risk to the species. The increased use of recreational vehicles, such as all-terrain vehicles is a source of human disturbance that can have negative consequences for ferruginous hawks. Recreational vehicles can cause habitat alteration through the destruction or degradation of vegetation structure. Noise and other disturbances associated with motorized recreation can have equally important effects on individual ferruginous hawks physiologically, and may reduce productivity at nest sites (Collins and Reynolds 2005).

**Flammulated Owl**

The flammulated owl breeds in mountain ranges from Central America north through the western U.S. to southern British Columbia; it winters from Mexico into Central America (Johnsgard 1988; Sibley 2000). In the United States and Canada, it lives in montane forest habitats dominated by yellow pines (i.e., ponderosa and Jeffrey). Distribution of the owl is scattered as a consequence of habitat distribution and the bird’s less-than-full occupation of yellow pine habitats (Hayward and Verner 1994). The species is conspicuously absent from various yellow pine forests in the western United States, including ponderosa-pine forests in Wyoming (e.g., Bighorn Mountains) and eastern Montana.
In their rangewide assessment of the owl, Hayward and Verner (1994) specifically noted that the species was not present in the Black Hills despite the availability of seemingly suitable ponderosa pine habitat. Other accounts support the absence by failing to mention species presence (e.g., South Dakota Ornithologist’s Union 1991; Peterson 1995; Luce et al. 1999). However, there have been two reports of flammulated owls in the past 10 years that could be valid sightings. These reports could represent periodic use by transient individuals, or the beginning of a range expansion. Establishment of flammulated owls in newly occupied habitat could take many years, because the species has a low reproductive potential (Hayward and Verner 1994). A concerted effort was made to verify flammulated owls, at the two recent observation areas and other seemingly suitable sites during 2003 but the species were not detected (Fauna West Wildlife Consultants 2003).

Flammulated owls are associated primarily with ponderosa pine and Jeffrey pine habitats. In the Black Hills, only ponderosa pine is present. Flammulated owls select older seral stages for breeding and nesting (Hayward and Verner 1994). They are often associated with old-growth forests. Interior and exterior forest edge seems to be a desirable if not necessary component of flammulated owl habitat (ibid.). Clumped tree distributions, multi-layered canopy, and a well-developed shrub component contribute to internal forest edge. Low-to-moderate canopy closure prevails in most sites used by the owl (ibid.). The ponderosa pine structural stages corresponding most closely to potential flammulated owl nesting and foraging habitat on the Forest are 4A, 4B, and 5.

Flammulated owls appear to prefer denser vegetation for roosting (Hayward and Verner 1994). Across the species range, they have been found roosting in mixed-conifer stands, thickets, and other conditions with high foliage density or multi-layered canopy that were in close proximity to nest sites (e.g., greater than 300 feet). In Oregon and Colorado, the species did not select pure stands of ponderosa pine for roosting but instead used mixed-conifer stands where pine was a component (Hayward and Verner 1994). Roosting habits are unknown in the Black Hills, but if rangewide patterns hold true here, the species may roost in spruce or in stands where pine and spruce both occur. In their summary of nest site characteristics across three studies in New Mexico and Oregon, Hayward and Verner (1994) found that the owls occurred in snags that averaged between 19 and 28 inches dbh.

**Grasshopper Sparrow**

In Wyoming, the grasshopper sparrow breeds mainly in the eastern portion of the state, and occurs almost statewide except in the south central portion (Luce et al. 1999). In South Dakota, there are breeding records throughout the state, including the Black Hills (Peterson 1995). It is considered an uncommon to common summer resident (South Dakota Ornithologist’s Union 1991). It occurs widely in native mixed-grass prairies in the southern Black Hills, and locally further north in the central Black Hills (Panjabi 2005). Panjabi (2005) found them in the highest density in mixed-grass prairie habitat. They may also occur in other types of grasslands (Panjabi 2003).

According to Slater (2004), the grasshopper sparrow is found in a variety of open grassland types, but appears to be area sensitive, preferring grasslands greater than 20 acres in size. They may select larger patches to avoid predation associated with edge habitats. In South Dakota, they are primarily found in mixed-grass prairies. Within these grassland patches, they prefer grasslands of intermediate height and avoid habitats where vegetation is less than 4 inches. They require some areas of bare ground for foraging and some taller vegetation (tall grasses, forbs, or scattered shrubs) for singing perches (Slater 2004).
Panjabi (2005) found that in the Black Hills, grasshopper sparrows can be locally abundant in some prairies, especially where there is a greater proportion of tall grass. They occur widely in native mixed-grass prairies in the southern Black Hills, and locally further north in the central Black Hills. Panjabi (ibid.) found them in the highest density in mixed-grass prairie habitat.

The Forest’s vegetation database shows increased acres of Black Hills grassland cover-types since 1995. Projects across the Forest have been emphasizing meadow and grassland restoration through removal of pine encroachment. Some of this, particularly pine removal on the periphery of prairies, is likely contributing to an increased habitat trend for the grasshopper sparrow. However, changes in mapping and reporting methods might contribute to at least some of the difference (USDA Forest Service 2007b).

Grasshopper sparrows have been monitored on the Black Hills since 2002 in cooperation with the RMBO (Panjabi 2003, 2005). The monitoring program was designed to statistically detect population trends over a longer time period than it has been implemented. However, a less rigorous analysis of the data suggests an upward Forestwide population trend between 2002 and 2008 (USDA Forest Service 2009g). However, this may not be a trend, but instead a short-term phenomenon. According to Panjabi (2003), it is possible that numbers would decrease in future years as habitat becomes more suitable again on the Great Plains (USDA Forest Service 2007b).

Lewis’s Woodpecker
The Black Hills is at the eastern edge of the Lewis’s woodpecker’s range (Sibley 2000). In South Dakota, Lewis’s woodpecker is considered a locally uncommon summer resident in the Black Hills and a locally rare yearlong resident of adjacent stream bottoms (South Dakota Ornithologist’s Union 1991). Breeding has been documented in the Black Hills by Peterson (1995) and Vierling (2004). It is an uncommon summer resident in Wyoming, with breeding records in the east, north, and western portion of the state (Luce et al. 1999).

The Lewis’s woodpecker is an edge specialist that prefers open mature pine forests, mature cottonwood forests, and areas with large burned trees (Tobalske 1997). Burned stands are used most often after they have aged several years (Tobalske 1997). A well-developed shrub layer is usually present (Anderson 2003). In the Black Hills, this woodpecker is most often observed in burned pine forests, but it could also be found in mature to late-successional ponderosa-pine stands that have an open canopy (structural stages 4A and some 5). Lewis’s woodpeckers typically excavate nest cavities in soft ponderosa pine or cottonwood snags, although they would also re-use cavities made by other woodpecker species. Soft snags are dead trees in advanced stages of decay, and they have typically been dead longer than hard snags. Hard snags usually become soft snags given enough time.

Recent bird monitoring on the Black Hills has detected an average of 6 birds each year since 2001 (Giroir et al. 2007). Breeding Bird Survey data suggests that many populations of Lewis’s woodpeckers may have declined since the 1960s (Sauer et al. 2001; Tobalske 1997). However, due to the sporadic distribution and cyclical abundance of this species, Breeding Bird Survey data may not adequately sample populations. Furthermore, many estimates lack statistical significance (Sauer et al. 2001).

Risks to Lewis’s woodpeckers include activities that reduce open or old-growth ponderosa-pine forests and snags (e.g., fire suppression and clearcutting; Anderson 2003). Loss of cottonwood riparian habitat and human encroachment on breeding and wintering habitat are also negative factors (Tobalske 1997), although little cottonwood habitat exists on the Forest.
Loggerhead Shrike

The loggerhead shrike is a fairly common summer resident in Wyoming and South Dakota, with breeding records occurring over most of both states (Luce et al. 1999, Tallman et al. 2002, Peterson 1995). The bird is rare or casual (out of normal range) in the Black Hills (Tallman et al. 2002, South Dakota Ornithologist’s Union 1991). Breeding records occur near the periphery of the Black Hills but not in the interior or at higher elevations (Peterson 1995). Breeding Bird Survey data between 1966 and 2000 indicate significant declines in loggerhead shrikes nearly rangewide (Sauer et al. 2001). In South Dakota, a nonstatistically significant decline has been shown (Sauer et al. 2001). In Wyoming, populations appear to have increased 3.7 percent per year between 1980 and 2000 (Sauer et al. 2001). Regional population declines have been linked to shrub conversion for increased livestock forage, wildfires in arid shrublands, insect (particularly grasshopper) control programs, and grazing pressure that concentrates in arid shrub communities (Beidleman 2000). Wiggins (2005a) lists agricultural conversion, degradation or loss of nesting trees and shrubs, and over-grazing as potential threats to the species.

The loggerhead shrike is associated with open habitats that include scattered or clustered shrubs or trees. This includes some types of grasslands, shrublands, and savannas. Wiggins (2005a) describes nesting habitat as having trees, shrubs or low bushes and elevated perches for hunting and courtship activities. Foraging habitat includes areas of open, short vegetation with some bare areas and thorny trees or barbed-wire fence for impaling prey (Wiggins 2005a). These habitats are limited in the Black Hills but are provided mainly by mixed-grass prairies, mountain mahogany shrublands, and grassy or brushy areas with scattered juniper or ponderosa pine. The combination of habitat features described above is distributed primarily along the southern flank of the Black Hills, especially in the southwestern portion. Most of the interior Black Hills do not provide suitable habitat because tree density is too high.

Long Billed Curlew

Long-billed curlews are native prairie specialists, nesting primarily in shortgrass or mixed-grass prairie habitat with flat to rolling topography (Sedgwick 2006). They prefer short vegetation and generally avoid habitats with trees, abundant shrubs, and tall, dense grass (Sedgwick 2006). Curlews may use taller, denser grass during brood rearing when shade and camouflage from predators are presumably more important for chicks (Sedgwick 2006). Long-billed curlews have been observed nesting in suitable habitat on the Black Hills, mostly the southern Black Hills, during annual bird monitoring efforts. A marginally significant decline has been observed in South Dakota (Sedgwick 2006).

Mountain Plover

Mountain plovers have specific breeding habitat requirements, preferring flat, open areas with very shortgrass and scattered cactus (Graul 1975). Vegetation on shortgrass prairie sites is less than 4 inches tall, and nest sites in the shrub-steppe are usually on active prairie dog towns. Throughout their range, mountain plovers selectively nest on active prairie dog colonies, especially those of the black-tailed prairie dog (Dinsmore 2003).

Mountain plovers have been observed in the general vicinity of the Wyoming Black Hills, with nesting documented in the southern half and north central portion of Wyoming (Luce et al. 1999). Mountain plovers were formerly rare breeders in southwestern South Dakota, and they are currently classified as accidental in South Dakota (Tallman et al. 2002). There is one modern (1977) record of a mountain plover in Bennett County South Dakota (the south central portion of the state), and a few relatively recent, unconfirmed reports of the species (Tallman et al. 2002).
The current breeding distribution of mountain plovers does not include the Black Hills region (Dinsmore 2003). Disturbed and low-growing prairie grassland habitats suitable for mountain plover are currently rare within the Forest. There are only 10 prairie dog colonies on 386 acres across the Black Hills National Forest (see p. 178), which limits their availability of nesting habitat.

**Northern Goshawk**

The northern goshawk is considered a common resident of coniferous forests in Wyoming (Luce et al. 1999). In South Dakota, this forest raptor is a rare to uncommon permanent resident, especially in the higher elevations of the Black Hills (South Dakota Ornithologist’s Union 1991). Known nest densities are generally higher in the northern and central hills. Goshawks are difficult to monitor because of their secretive nature and use of alternate nests. Goshawk monitoring on the Forest consists of monitoring known nests for nesting activity. Goshawk nest activity has ranged from 20 to 40 percent of monitored nests being active in a given year (USDA Forest Service 2009g). Some territories monitored may have been active but were not confirmed, because goshawks are secretive and difficult to detect and often use alternate nests. Additional pairs likely occur on the Forest but have not been detected for the same reason. There is insufficient information to determine population trends in Region 2 or North America (Kennedy 2003).

Goshawks typically nest in relatively dense (dependent on forest type) forest areas and use a mosaic of structural stages for foraging within their home range (Kennedy 2003). Typical nest areas for goshawks in the northern Rocky Mountains are single storied, mature or late-successional coniferous forest, with high canopy closure, clear forest floors, on north-facing moderate slopes (Hayward and Escano 1989; Squires and Ruggiero 1996). Goshawks tend to select stands that have relatively large trees and relatively high canopy closure (Kennedy 2003). In the Black Hills, the goshawk nests in mature, dense, or moderately dense stands of large-diameter pine. Reynolds et al. (1992) characterized the nest area as mature and old stands with canopy closure greater than 50 percent. Ponderosa pine structural stages 4C and 5 (dense mature forest and late-successional) at least 30 acres in size likely best meet these conditions in the Black Hills. Structural stage 4B (mature forest with 40 to 70 percent canopy closure) may also provide some additional nesting habitat.

According to Reynolds et al. (1992), the post-fledging family area (approximately 420 acres) and the foraging area (approximately 5,400 acres) typically include a diversity of forest types and conditions including stands of young, mid-aged, mature, and late-successional trees. At least 40 percent of the home range is recommended to be comprised of mature or late-successional stands with greater than 40-to-50 percent canopy closure, which roughly equates to structural stages 4B, 4C, and 5 on the Black Hills. Snags, down logs, and woody debris are an important component of the post-fledging family and foraging habitat. Downed logs and woody debris are also an important component of goshawk habitat.

**Northern Harrier**

The northern harrier is an uncommon migrant and summer resident in South Dakota (Tallman et al. 2002). Harriers are relatively absent from the Black Hills (Slater and Rock 2005), but the species is occasionally observed here.

Harriers are open-country hawks that are commonly found in prairies, wetlands, marshes, meadows, croplands, and shrublands (Slater and Rock 2005). Associated topography is generally
flat. Most nest sites are in undisturbed wetlands or grasslands dominated by thick vegetation (Slater and Rock 2005).

Large open areas are limited on the Forest, which probably constitute the most limiting factor for harriers on the Forest. Currently, there are approximately 104,000 acres of grasslands on the Forest (USDA Forest Service 2009g), but much of this occurs in linear meadows or isolated patches that are likely too small to support birds for a full season or more. The most extensive grasslands occur in the southern Black Hills.

Harriers have not yet been documented in shrublands of the Black Hills, but presumably, they could use at least some of this cover type. Shrublands occur on over 5,300 acres of the Forest (USDA Forest Service 2007b), mostly along the Wyoming-South Dakota boundary east of Newcastle.

**Peregrine Falcon**

The peregrine falcon has a worldwide distribution, and breeds on every continent but Antarctica (Terres 1991). In the United States, it occurs over much of the West and the eastern seaboard. However, because peregrines have very large territories, population densities are low throughout its range (Johnsgard 1990).

The peregrine falcon inhabits a wide variety of open habitats if cliffs are present (Terres 1991). Optimal cliffs are generally at least 200 to 300 feet high and dominate the surrounding landscape (Sharps and O’Brien 1985). Nest sites are typically on open ledges or shelves that are protected by cliff overhangs and tend to be on higher cliffs (Johnsgard 1990). Nest sites are generally considered the most limiting factor for the species and have a large influence on where the species occurs. Peregrines prefer to hunt in relatively open areas where they can maneuver to capture small and medium-sized birds (Terres 1991).

In the Black Hills, the peregrine falcon is an uncommon spring and rare fall migrant and a rare winter visitor (Tallman et al. 2002). Potential nest sites may occur in deep rocky canyons or other places with tall vertical cliffs (USDI Fish and Wildlife Service 1984). Historical records indicate nesting occurred in the Black Hills in the 1960s (ibid.). The peregrine has not been documented breeding in the Black Hills since that time despite efforts to reestablish it through cross-fostering and hacking during the late 1970s and late 1990s (USDA Forest Service 1979a, Sharps and O’Brien 1985, Tallman et al. 2002). Evaluation of potential peregrine habitat by the Peregrine Fund concluded that most of the Black Hills does not provide adequate nesting sites. The Monitoring Birds of the Black Hills program has not detected peregrines anywhere in the Black Hills since it began in 2001 (Giroir et al. 2007).

Open areas that could provide foraging habitat in the Black Hills include grasslands, shrublands, and structural stages with open canopies (1, 2, 3A, 4A). Currently, there are nearly 600,000 acres that meet these criteria on the Forest. The main factors that may limit occupation of the Black Hills by peregrines are the lack of tall, unbroken cliffs and isolation from established breeding populations.

**Yellow-Billed Cuckoo**

Yellow-billed cuckoos occur in riparian and other deciduous woodlands throughout the United States, except in the Northwest and northern Rocky Mountains (Wiggins 2005b). Although they are found throughout most of the West, cuckoos are not common there. In western South Dakota and eastern Wyoming, the species is a rare to uncommon breeder (ibid.). The yellow-billed
The American marten is distributed over much of the western United States where it occurs in moist boreal forests (Buskirk 2002). The South Dakota Game, Fish, and Parks reintroduced a total of 125 individuals into the Black Hills during the 1980s and 1990s (Buskirk 2002). Fecske et al. (2003) recently estimated that 124 resident martens occur in high-quality habitat, with additional animals occurring at lower density within lower quality habitat. Although considerable mortality and reproduction have likely occurred here since reestablishment began, it appears the marten population trend is relatively stable in the Black Hills (USDA Forest Service 2004a).

According to a recent marten study (Fecske et al. 2003), the greatest marten concentrations appear to be in the northern part of the Forest southwest of Deadwood (northern subpopulation) and in and around the Norbeck Wildlife Preserve (Norbeck subpopulation) (Fecske et al. 2003). These two dominant subpopulations are likely very important in maintaining species persistence in the Black Hills. The Black Hills supports an isolated population, with the nearest neighboring population in the Bighorn Mountains of Wyoming (Buskirk 2002).

Martens are primarily associated with mature white spruce in the Black Hills. Key habitat elements are relatively dense forests with complex physical structure near the ground, abundant coarse woody debris, and lengthy fire-return intervals (Buskirk 2002). Martens prefer moist coniferous forest types with tree species that have branches on their lower boles. White spruce is the tree species on the Forest that provides this condition. Approximately 25,000 acres of white-spruce stands currently occur on the Forest, mostly at high elevations, on north aspects, and in cool canyon bottoms. Fire suppression during the last century has allowed spruce to increase in abundance, density, and maturity in the Black Hills, usually at the expense of quaking aspen (Parrish et al. 1996).

American marten typically avoid dry ponderosa pine sites; however, due to the limited distribution of spruce in the Black Hills, most marten territories undoubtedly contain some portion of pine (Buskirk 2002). Mature and late-successional pine stands also help maintain connectivity between spruce stands. Martens are sensitive to habitat fragmentation and would not move through large, nonforested areas. Fecske et al. (2003) quantified high-quality marten habitat on the Forest based on a habitat relation model (Fecske et al. 2002). They estimated approximately 131,600 acres of high-quality marten habitat exist on the Forest. About 11 percent of this is in the spruce cover type. Approximately 91,000 acres of the high-quality marten habitat supports the two main subpopulation centers, of which about 14 percent is in spruce. Spruce
makes up only about two percent of the forested acres Forestwide. This supports the literature that marten appear to use spruce disproportionately to its availability in the Black Hills.

Coarse woody debris is an important component of marten habitat. Large logs and other structures provide protection from predators, access to the subnivean (i.e., beneath the snow) space where most winter prey are captured, and protective thermal conditions, especially during winter (Buskirk and Powell 1994). A variety of structures is used for dens, with trees, snags, logs, and rocks accounting for 70 percent of reported den structures (Buskirk and Ruggiero 1994).

Motorized recreation can cause increased deaths through vehicle collisions (Buskirk 2002). Increased numbers of forest users associated with dispersed recreational use could cause a wide range of negative effects on martens, including shooting, killing by dogs accompanying recreationists, or providing access to toxins (Buskirk 2002). Off-road vehicles are potentially important as they facilitate dispersed recreation, impeded vegetative recovery on abandoned roads, and compact snow, facilitating movements by competitors of martens (Buskirk 2002). Road-related mortality has been observed along highways and at least one mortality was observed along a primitive road.

**Black-Tailed Prairie Dog**

Historically, black-tailed prairie dogs were one of the most conspicuous and characteristic residents of the shortgrass and mixed-grass prairies of the United States (USDI Fish and Wildlife Service 2000). At present, the black-tailed prairie dog is found in remnant populations throughout much of its former range, and significant range contractions have occurred in the eastern portion of the species range, including South Dakota (ibid.).

Black-tailed prairie dogs are associated with shortgrass and mixed-grass prairies but require sites with soils conducive to burrowing. Suitable prairie dog habitat on the Black Hills National Forest is limited to nonrocky grassland soils on the Hell Canyon Ranger District. The Forest manages for 200 to 300 acres of prairie dog towns in at least three separate towns (Forest Plan objective 237). There are currently 10 known prairie dog colonies on the Forest, covering approximately 386 acres of National Forest System land (USDA Forest Service 2006b). All the towns are in South Dakota. There are no prairie dog towns on the Wyoming portion of the Forest. The three largest towns are about 170, 110 and 40 acres in size. All other towns are less than 20 acres. Additional acres occur on adjacent private land. The potential for prairie dog expansion on the Forest is limited because prairie dog towns on the Forest quickly reach private land or encounter rocky soils that make burrowing difficult. Large areas (greater than 1,000 acres) of potentially suitable prairie dog habitat are not present on the Forest. The colonies are comparatively small and disjunct from adjacent known colonies. Prairie dog towns have remained stable or increased in size on the Forest regardless of recreational shooting and disease (USDA Forest Service 2006b).

**Fringed Myotis**

The Black Hills population of the fringed myotis is a disjunct population and recognized as belonging to a distinct subspecies, *Myotis thysanodes pahasapensis*. The South Dakota Natural Heritage Program gives the fringed myotis a state ranking of imperiled (S2) and the Wyoming Game and Fish Department considers it a species of special concern (Schmidt 2003a). In the Black Hills, this species is known in Custer, Fall River, Lawrence, and Pennington counties of South Dakota, and Crook and Weston Counties in Wyoming at an elevation between 3,800 and
6,200 feet (ibid.). The fringed myotis is a year-round resident of the Black Hills. It can be found during the summer but is very difficult to locate during the winter (USDA Forest Service 2000b).

The fringed myotis occupies a variety of habitats including mid-elevation desert, grass, and woodland habitats and is found at higher elevations in spruce-fir and in mixed timber (Schmidt 2003a). In the Black Hills of South Dakota, it is one of the more commonly captured bats during summer mist-netting studies and tends to occur along ecotones between ponderosa pine and oak/juniper forests (Schmidt 2003a). Little is known about hibernacula requirements for this species. The fringed myotis is known to hibernate in the “Heavenly Room” of Jewel Cave. It tends to hibernate in small groups in the head-up position and to isolate itself from other species. Snags, caves, mines, and buildings may be used as roosts (Schmidt 2003a). In the Black Hills, maternity roosts recorded for this species include rock crevices and ponderosa-pine snags (Cryan et al. 2001).

Riparian areas and water sources are important features of habitat. Open water is important because bats obtain water while flying. Riparian habitats are important for insect production and provide foraging opportunities (USDA Forest Service 2000b).

The fringed myotis is more closely associated with the forested environment than other bat species and may be fairly sensitive to forest management, particularly the availability of snags as roost sites (USDA Forest Service 2000b). The fringed myotis has been documented using ponderosa pine snags for roosts in the Black Hills (Cryan et al. 2001) and in other regions (Rabe et al. 1998).

Human disturbance in or near bat roost sites and hibernacula may cause site abandonment and local population losses. Off-highway vehicles that create substantial noise may disturb reproductive females during the critical pre-parturition period (Schmidt 2003a). Motorized routes may provide access to caves and rock climbing areas, which could lead to disturbance as well. Activities that reduce the availability of suitable roost snags can negatively impact these bats. Activities in riparian zones that reduces available surface water or reduces mesic vegetation may impact site suitability and prey distribution or abundance for bats.

**Townsend’s Big-Eared Bat**

Townsend’s big-eared bat is considered a species of concern through much of its range in the western United States. This species is a year-round resident in all South Dakota Black Hills counties and reported to be the most numerous bat species in Crook County, Wyoming (Schmidt 2003b). In 1992, it was reported that there were 1,200 Townsend’s big-eared bats hibernating in Jewel Cave, making it the largest known hibernating colony of this species in the western United States (Schmidt 2003b). There are four known maternity roosts of these bats in the Black Hills, two of which are on the Forest (USDA Forest Service 2000a).

Townsend’s big-eared bats occupy a variety of habitats but are closely associated with caves and mines (Schmidt 2003b). They also use riparian areas for foraging, including wetlands and meadows (Pierson et al. 1999). Riparian areas account for approximately one percent of public and private land in the Black Hills and are typically located adjacent to streams and around natural springs, seeps, fens, and reservoirs. Townsend’s big-eared bats feed primarily on moths, whose life cycles are dependent upon native forest plants (Schmidt 2003b).

Key habitat components include suitable maternity roost sites and hibernacula. These bats utilize both caves and mines for hibernacula (Schmidt 2003b). In the Black Hills, maternity roost sites
are often in steep drainages with nearly vertical walls. These bats also utilize caves with relatively warm domes or large flat ceilings (Schmidt 2003b).

This species is very sensitive to activities such as recreational caving and mine closings, especially at hibernacula and maternity roosts (Schmidt 2003b). Townsend’s big-eared bats are especially susceptible to human disturbance during the active time of year (summer), more so than other bat species (USDA Forest Service 2000b). These bats are extremely sensitive to disturbances in the vicinity of their roosts, including loud noises such as those produced by motorized off-road vehicles, discharging of firearms, and other such activities (Schmidt 2003b).

**Rocky Mountain Bighorn Sheep**

The range of Rocky Mountain bighorn sheep includes southern British Columbia and southwest Alberta south to southeast California, Arizona, and New Mexico (Whitaker 1980). Current estimate of the population in the Black Hills is approximately 350 sheep (Huxoll 2007).

There are two main populations of bighorn sheep in the Black Hills. The Custer State Park herd is located in Custer State Park and consists of three subherds. The Custer State Park herd experienced a recent die-off from disease. The Rapid City herd is located primarily on National Forest System land and consists of three subherds: the Sheridan Lake, Dark Canyon, and Spring Creek subherds. The Rapid City herd is located between Hill City, Pactola Reservoir, and Rapid City (Merwin 2000). There is also a herd in Elk Mountain area in the southern Black Hills.

Rocky Mountain bighorn sheep typically inhabit alpine meadows, foothills, cliffs, and rock outcrops (Luce et al. 1999; Clark and Stromberg 1987). Alpine habitat is absent in the Black Hills. Merwin (2000) noted that bighorn sheep often selected areas with good visibility (less than 40 percent canopy closure) within suitable distance of water and escape terrain. Limits to persistence include limited availability of habitat on the Forest, vulnerability of habitat to residential development on adjacent private lands, and disturbance from recreation (Benzon and Halseth 1999). Disease is a major concern as diseases transferred from domestic sheep can cause major herd reductions.

**Species of Local Concern**

Species of local concern are plant, fish and wildlife species (including subspecies or varieties) that do not meet the criteria for sensitive status. These could include species with declining trends in only a portion of Region 2, or those that are important components of diversity in a local area. The local area is defined as National Forest System lands within the Forest (FSM 2620.5 Black Hills Supplement 2600-2005-1). All species of local concern on the Forest are addressed in this section except bighorn sheep (Table 42). Bighorn sheep have been recently added to the Region 2 sensitive species list and are addressed under Sensitive Species and in the biological evaluation.

**Demand Species**

Species that are important local game animals but are not MIS, species of local concern or sensitive species are demand species. These species are of particular interest to the public because they are hunted. This analysis includes three demand species: elk, mule deer, and turkey.
Table 42. Black Hills species of local concern

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>American dipper (Cinclus mexicanus)</strong></td>
<td>Clear, fast-flowing streams. In the Black Hills, occurs in Spearfish Creek and several tributaries. Also has been found at Rapid Creek and some of the streams between Rapid Creek and Spearfish Creek. Spearfish Creek is considered to be the only creek left in the Black Hills capable of supporting a self-sustaining population of dippers.</td>
</tr>
<tr>
<td><strong>Black-and-white warbler (Mniotilta varia)</strong></td>
<td>Found in mature and second-growth deciduous and mixed-deciduous-coniferous forests. They are found mostly in bur oak woodlands and associated edges.</td>
</tr>
<tr>
<td><strong>Broad-winged hawk (Buteo platypterus)</strong></td>
<td>Forage in mature to old-growth forests, along forest streams, roads, and openings. In the Black Hills, nests primarily in ponderosa pine in mixed pine-and-deciduous habitats, occasionally with a white-spruce component.</td>
</tr>
<tr>
<td><strong>Cooper’s hawk (Accipiter cooperi)</strong></td>
<td>Considered a habitat generalist. Known to nest in riparian, ponderosa pine, and hardwood forests.</td>
</tr>
<tr>
<td><strong>Northern saw-whet owl (Aegolius acadicus)</strong></td>
<td>Highest densities tend to be found in coniferous forests. Nests in snags in cavities excavated by flickers and other large woodpeckers.</td>
</tr>
<tr>
<td><strong>Pygmy nuthatch (Sitta pygmaea)</strong></td>
<td>A primary cavity nester that also uses secondary cavities. Prefer old or mature undisturbed forests, but are also known to use open, park-like stands of ponderosa pine. Likely needs heterogeneous forests with a mixture of well spaced old trees and trees of intermediate age.</td>
</tr>
<tr>
<td><strong>Sharp-shinned hawk (Accipiter striatus)</strong></td>
<td>Nest almost exclusively in conifers. Vegetation at nest sites is usually in the early successional stages and extremely dense. White spruce could serve as important nesting habitat.</td>
</tr>
<tr>
<td><strong>Bats (Myotis evotis, Myotis volans, Myotis septentrionalis, Myotis ciliolabrum)</strong></td>
<td>Found in the wooded riparian zone in badlands and prairies to higher elevation coniferous and deciduous woodlands. Hibernacula include caves and mines. Day roosts have been reported in buildings; under shingles; behind shutters of buildings; underneath exfoliating tree bark; inside cavities or crevices of trees; and in caves, mines, and quarries. Uses ponderosa pine snags as summer/maternity roosts.</td>
</tr>
<tr>
<td><strong>Meadow jumping mouse (Zapus hudsonius campestris)</strong></td>
<td>Strongly associated with riparian habitats along small streams in meadows and habitats beneath forests with an understory of deciduous shrubs, grasses, forbs, and fallen logs and is presumed to disperse primarily along stream corridors.</td>
</tr>
<tr>
<td><strong>Mountain goat (Oreamnos americanus)</strong></td>
<td>Inhabits rugged terrain including cliffs, rock faces, ledges, and talus slopes. Primary range and habitat of the mountain goat in the Black Hills is centered around Harney Peak and The Needles. The mountain goat population occurs largely within the Black Elk Wilderness and the Norbeck Wildlife Preserve.</td>
</tr>
<tr>
<td><strong>Northern flying squirrel (Glaucomys sabrinus)</strong></td>
<td>Habitat typically dominated by conifers or mixed coniferous/deciduous forests. Found in white-spruce forests in moist canyons of the northern Black Hills. Ponderosa pine is important foraging habitat in the Black Hills especially areas with larger trees and more canopy cover.</td>
</tr>
<tr>
<td><strong>Butterflies</strong></td>
<td>Atlantis fritillary found in wet meadows and moist canyons. Tawny crescent is found in open meadows, stream bottoms, roads, trails, and riparian woodlands.</td>
</tr>
<tr>
<td><strong>Snails (Vertigo arthuri, Catinella gelida, Vertigo paradoxa, Discus shimekii)</strong></td>
<td>Use a variety of habitats: white spruce, hardwoods, mountain mahogany, and ponderosa pine.</td>
</tr>
</tbody>
</table>


Rocky Mountain Elk

The elk population of the Black Hills is difficult to estimate in part because of interstate movements of the species. However, recent estimates placed the population level at 3,800 elk in the South Dakota Black Hills (Huxoll 2007). No population estimates are available for the Wyoming portion of the Black Hills (Sandrini 2007b). The elk herd in Wyoming appears to be growing, but at a slower rate than in the past (Sandrini 2007b). The Forest has committed (through objective 217) to managing habitat for 4,350 elk, which was the combined population objective establish by the two state game agencies in 1996.

About 900 elk were harvested (archery and rifle combined) in the South Dakota portion of the Black Hills in 2008 (Huxoll 2009). Harvest over the past ten years has ranged from about 600 to 1,400 elk (Ibid.). About 200 elk were harvested in Wyoming Hunt Areas 1 and 116 in 2008 (Wyoming Game and Fish Department 2009). Some of these elk in both States were likely harvested on private or other lands outside the National Forest System. In both States, there are significant amounts of private land within the harvest reporting areas. In Wyoming, Units 1 and 116 covers the majority, but not all of the Bearlodge Ranger District. As a result, these numbers should not be viewed as the harvest on National Forest System lands, but do provide a picture of the harvest in and adjacent to the Forest.

Elk use a wide variety of vegetation types on the Forest but show a preference for forested riparian areas, forested stringers in meadows, and deciduous stands of birch or aspen (SAIC 2003). Elk find cover (thermal or hiding or both) on the Forest in the denser stands of conifers (summer and winter) and hardwoods (summer only). For forage, however, they rely on more open stands and meadows and prairies, all of which may provide an abundance of grasses, forbs, and/or shrubs (SAIC 2003).

Roads have been known to negatively affect elk in various ways (Lyon 1979, Lyon 1983). The loss of habitat to road construction is unknown, but is often estimated at 5 acres per linear mile (Rowland et al. 2004). Roads may affect habitat by reducing the amount of patches of forest cover large enough to function effectively as elk habitat (Rowland et al. 2004). Roads may also affect elk habitat by facilitating the spread of invasive, exotic vegetation (Rowland et al. 2004). Roads and motorized trails can also affect the animals directly. In addition to mortality from collisions with vehicles, elk avoid areas near open roads, are more vulnerable to hunter harvest, and exhibit higher stress levels in areas or higher road density (Rowland et al. 2004). Several studies in the Black Hills have shown elk are adversely effected by roads (Millspaugh et al. 2000, Millspaugh et al. 1995, Rumble et al. 2005). Rumble et al. (2005) found that elk movements increased with increased human activity during the hunting season. They suggested this response to hunters may reflect a pattern of elk responses to human disturbance during other times of the year.

An important management consideration for elk include the establishment of no more than one mile of open road per square mile of area and the promoting or maintaining of dense coniferous stands located more than 0.5 miles from open roads (SAIC 2003).

Mule Deer

Mule deer tend to inhabit more open, rugged habitat and are more abundant in the southern Black Hills of South Dakota and Wyoming, where open, rocky habitat is more prevalent (Seig and Severson 1996). Meadows and other grass cover types provide forage. Mountain mahogany habitat in the southern Black Hills may play an important role in providing mule deer habitat.
In 2008 in South Dakota, about 194 mule deer were harvested in the Black Hills Area (Huxoll 2009). Over the past ten years, harvest in the South Dakota portion of the Black Hills has ranged from about 194 in 2008 to 889 in 2006 (Ibid.). In 2008 in Wyoming, 967 mule deer were harvested in Units 2 and 4 (Wyoming Game and Fish Department 2009). There are significant amounts of private land in the hunting units in both States so harvest on National Forest System lands is likely less than these numbers.

The working population estimate for the South Dakota portion of the Black Hills is approximately 10,000 animals (Huxoll 2009). The Wyoming estimate for Herd Unit 751 is approximately 32,000 animals and the population has increased since 2001 (Sandrini 2007c).

Motorized use on roads and trails may affect mule deer by direct mortality (collisions), though this is less likely on primitive roads and trails. Motorized use on roads and trails may also impact habitat effectiveness through disturbance and by facilitating the spread of invasive, exotic vegetation (Rowland et al. 2004).

**Wild Turkey**

Turkeys occur in a wide variety of vegetation types, including foothill and montane riparian associations, pine-juniper shrubland, mixed-grass prairie, and ponderosa pine, white spruce, and aspen forest stands (Panjabi 2003). Open areas are important for foraging during the summer, though meadows are seldom selected for (Rumble and Anderson 1996). Dense mature ponderosa pine serves as winter cover and a source of mast (Rumble and Anderson 1996). During the winter, turkeys also prefer south-facing slopes where the sun melts the snow (Rumble and Anderson 1996).

**Migratory Birds**

Many species of migratory birds are of international concern due to naturally small ranges, loss of habitat, observed population declines, and other factors. The Forest recognizes the ecological and economic importance of birds and approaches bird conservation at several levels by implementing Forest Plan objectives, standards, and guidelines; a Forestwide bird-monitoring program; and site-specific mitigation and effects analyses for identified species of concern.

Forest Plan objectives describe desired resource conditions. The most relevant objectives for bird conservation are those relating to vegetation diversity, landscape structural diversity, snags and down woody material, riparian condition, habitat improvements, and disturbance processes.

Standards and guidelines are designed to help achieve those objectives and are implemented at the project level. The most relevant standards and guidelines for migratory birds that occur on the Forest are presented in discussions of individual birds in the Species of Local Concern and Management Indicator Species sections of this document and the Threatened and Endangered Species and Region 2 Sensitive Species sections of the biological assessment and biological evaluation.

Bird monitoring is conducted at the Forest level to determine species distribution, abundance, and trends (Panjabi 2001, 2003, 2004, 2005, Beason et al. 2006, Hutton et al. 2007, Giroir et al. 2007). The RMBO designs and conducts the monitoring to provide statistically rigorous population trend data for at least 61 species that breed in the Black Hills. Trend data would assist the Forest in determining whether additional conservation measures are necessary. Species of concern applicable to project-level conservation are identified by many sources including the Endangered Species Act; the Region 2 sensitive species list; the Forest MIS list; the U.S. Fish and Wildlife Service’s Birds of Conservation Concern (BCC) publication (USDI Fish and
Wildlife Service 2002); and the Wyoming Partners in Flight (PIF) Plan (Nicholoff 2003). All of these sources and their respective species of concern except the BCC and Wyoming PIF have been examined elsewhere in this document. The BCC 2002 publication partitions North America into 37 bird conservation regions (BCRs). The Black Hills is included in BCR 17 – Badlands and Prairies. The Wyoming PIF plan identifies three levels of priority birds, with the top level (Level 1) representing species that need conservation action. Table 43 shows the disposition of migratory birds from the U.S. Fish and Wildlife Service BCR-17 list of Birds of Conservation Concern and the Level 1 species list of the Wyoming PIF Plan.

**Environmental Effects Analysis**

**Direct Effects and Indirect Effects**

**General Effects to Wildlife and Habitat Components**

Direct mortality from wildlife/vehicle collisions could occur in all alternatives. In all alternatives, direct mortality is expected to affect individuals and is not expected to put populations at risk because collisions are less likely to occur on primitive roads and trails such as those designated in this project (Oxley et al. 1973). In general, the more motorized routes and motorized use in wildlife habitat, the more potential there is for wildlife/vehicle collisions.

The most effects on wildlife from motorized recreation are likely to come in the form of disturbance as a result of route or area use. Habitat is also lost to road or trail surface. The miles of motorized routes and the amount of area open to motorized cross-country travel is used to evaluate the level of effects to wildlife and their habitat in general.

**Alternative A**

Alternative A is expected to have the most risk of direct mortality because it has the most area open to motorized cross-country travel. Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect habitat through trampling and dust creation. Disturbance would continue to accrue in areas where motorized cross-country travel is allowed (about 865,000 acres of the Forest).

Under Alternative A, disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and would incrementally impact wildlife and wildlife habitat in general. Also, under Alternative A, new unintended roads and trails would continue the spread of invasive weeds and potentially increase it, neither of which moves us closer to the goals and objectives of the Forest Plan. Alternative A allows game retrieval on the most acreage. Alternative A also allows for motorized retrieval of all game, which could result in impacts from more hunters. Alternative A has the most acreage open to motorized dispersed camping which would provide additional impacts to wildlife.
Table 43. Species of conservation concern and Wyoming PIF priority 1 species

<table>
<thead>
<tr>
<th>Species</th>
<th>List</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>American bittern</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>Trumpeter swan</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>Bald eagle</td>
<td>WY PIF</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Golden eagle</td>
<td>BCR 17</td>
<td>Foraging habitat present. Evaluated below.</td>
</tr>
<tr>
<td>Northern goshawk</td>
<td>WY PIF</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Swainson's hawk</td>
<td>WY PIF</td>
<td>Occasional on Forest, evaluated below</td>
</tr>
<tr>
<td>Ferruginous hawk</td>
<td>BCR 17, WY PIF</td>
<td>Region 2 sensitive species, - Addressed in BE (shrub-steppe/prairie)</td>
</tr>
<tr>
<td>Prairie falcon</td>
<td>BCR 17</td>
<td>Nesting habitat present. Evaluated below.</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td>BCR 17, WY PIF</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Greater sage grouse</td>
<td>WY PIF</td>
<td>No occurrence on Forest, minimal sage brush (40 acres) on Forest in small patches.</td>
</tr>
<tr>
<td>Columbian sharp-tailed grouse</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>American Golden-plover</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairie)</td>
</tr>
<tr>
<td>Mountain plover</td>
<td>BCR 17, WY PIF</td>
<td>Region 2 sensitive species – Addressed in BE (shortgrass prairie)</td>
</tr>
<tr>
<td>Upland sandpiper</td>
<td>BCR 17, WY PIF</td>
<td>Occurs on and adjacent to the Forest (grassland). Evaluated below.</td>
</tr>
<tr>
<td>Long-billed curlew</td>
<td>BCR 17, WY PIF</td>
<td>Known occurrences. Discussed in BE.</td>
</tr>
<tr>
<td>Marbled godwit</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairies and prairie wetlands)</td>
</tr>
<tr>
<td>Sanderling</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairie wetlands)</td>
</tr>
<tr>
<td>Wilson's phalarope</td>
<td>BCR 17, WY PIF</td>
<td>No habitat on Forest (prairie wetlands)</td>
</tr>
<tr>
<td>Black-billed cuckoo</td>
<td>BCR 17</td>
<td>Species present on Forest (riparian hardwood habitat). Evaluated below.</td>
</tr>
<tr>
<td>Burrowing owl</td>
<td>BCR 17, WY PIF</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Short-eared owl</td>
<td>BCR 17, WY PIF</td>
<td>No habitat on Forest (shortgrass prairie)</td>
</tr>
<tr>
<td>Red-naped sapsucker</td>
<td>BCR 17</td>
<td>Nesting habitat present. Evaluated below.</td>
</tr>
<tr>
<td>Lewis' woodpecker</td>
<td>BCR 17</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Franklin's gull</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>Forster's tern</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>Black tern</td>
<td>WY PIF</td>
<td>No habitat on Forest</td>
</tr>
<tr>
<td>Dickcissel</td>
<td>BCR 17</td>
<td>Species present on Forest (prairie habitat). Evaluated below.</td>
</tr>
<tr>
<td>Grasshopper sparrow</td>
<td>BCR 17</td>
<td>Region 2 sensitive species – Addressed in BE</td>
</tr>
<tr>
<td>Sage sparrow</td>
<td>WY PIF</td>
<td>No Habitat on Forest</td>
</tr>
<tr>
<td>Sprague's pipit</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairie)</td>
</tr>
<tr>
<td>Brewer's sparrow</td>
<td>BCR 17, WY PIF</td>
<td>No habitat on Forest (shrub-steppe)</td>
</tr>
<tr>
<td>Baird's sparrow</td>
<td>BCR 17, WY PIF</td>
<td>No habitat on Forest (shortgrass prairie)</td>
</tr>
<tr>
<td>Le Conte's sparrow</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairie wetlands)</td>
</tr>
<tr>
<td>McCown's longspur</td>
<td>BCR 17, WY PIF</td>
<td>No habitat on Forest (shortgrass prairie)</td>
</tr>
<tr>
<td>Chestnut-collared longspur</td>
<td>BCR 17</td>
<td>No habitat on Forest (prairie)</td>
</tr>
</tbody>
</table>
Effects Common to All Action Alternatives

All the action alternatives are expected to have less chance of direct mortality than Alternative A because they have less area open to cross-country travel. Of the action alternatives, Alternative C is expected to have the most effects from direct mortality followed by Alternatives B, E and D, respectively, based on the miles of routes open to motorized travel.

Effects on habitat quantity are expected to be reduced in all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Habitat fragmentation is expected to be reduced for the same reasons. There would be a beneficial effect of reducing invasive weed spread and disturbance that creates seedbeds for invasive species.

Alternative C would have the most miles of motorized routes that could disturb wildlife, followed by Alternatives B, A, E, and D, respectively (Figure 11). The increase in routes in Alternatives B and C would likely offset some of the benefits of closing areas to motorized cross-country travel. Effects in areas with higher route densities (such as the loop trail areas) are expected to be higher than areas with lower route density. Still, the net result would be a benefit due to the amount of area closed to cross-country travel. The miles of routes in Alternative E would remain at the existing level. The lack of cross-country travel in Alternative E is expected to result in a net reduction in disturbance. Alternative D would have the least disturbance to wildlife in general because it has the least miles of motorized routes and the least area open to cross-country travel.

Road and trail use also causes dust, which can affect wildlife. Effects from dust are expected to be correlated with the miles of routes as discussed above.

Motorized game retrieval can affect wildlife through disturbance. About 900 elk were harvested (archery and rifle combined) in the South Dakota portion of the Black Hills in 2008 (Huxoll 2009). Harvest over the past 10 years has ranged from about 600 to 1,400 elk (Ibid.). About 200 elk were harvested in Wyoming Hunt Areas 1 and 116 in 2008 (Wyoming Game and Fish Department 2009). In 2008 in South Dakota 4,638 deer were harvested (Huxoll 2009). In South Dakota, total deer harvest in the Black Hills units range from 3,369 in 2002 to 5,405 in 2006 (Ibid.). In 2008 in Wyoming 4,757 total deer were harvested in Hunt Units 2 and 4 (Wyoming Game and Fish Department 2009). Actual numbers of elk and deer retrieved on National Forest System lands with motorized vehicles would be less because some of these animals in both States were likely harvested on private land or other ownerships and many hunters use nonmotorized retrieval methods.

Motorized game retrieval is expected to have little effect on wildlife because of the limited number of animals retrieved and the dispersed nature of the activity. Habitat effects are expected
to be minimal because rarely would more than one animal be shot in the same location, making repeated use of the same track unlikely. Motorized game retrieval involves big game, which occurs in the fall outside the bird breeding season. Most big game animals are already being disturbed by hunters in the woods. Still, there could be some impacts to less mobile species.

Of the action alternatives, Alternative C would allow motorized game retrieval on the most acres followed by Alternatives B, D, and E respectively (Figure 12). Alternative B would reduce impacts from existing conditions because it only allows game retrieval for elk, which has far fewer hunters that would need to retrieve game, and in a reduced area. Alternative C would reduce impacts from existing conditions because it has less acreage open to motorized game retrieval, but may have more impacts than Alternative B in the retrieval area because it allows retrieval of elk and deer. Alternatives D and E would have the least impacts from game retrieval because motorized game retrieval is not allowed.

Motorized dispersed camping can also disturb some wildlife. The effects of motorized dispersed camping are estimated using the acreage open to motorized-dispersed camping (Figure 13). Of the action alternatives, Alternative C has the most acreage open to motorized dispersed camping, followed by Alternatives B, D, and E, respectively.

Overall, the action alternatives would have a net benefit to wildlife due to the closing of areas to motorized cross-country travel. Alternative D would have the most benefit because it has the fewest motorized routes and the least area open to motorized cross-country travel, followed by Alternative E, B, and C, respectively.

**Ponderosa Pine Habitat**

**Alternative A**

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect understory vegetation and habitat loss. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels...
increase. User-created routes would continue to be created and impact wildlife that use ponderosa pine habitat.

**Effects Common to All Action Alternatives**

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced.

The effects of disturbance to wildlife that use ponderosa pine is based on the miles of motorized routes in ponderosa pine and the acres of ponderosa pine open to motorized cross-country travel (Figure 14). None of the action alternatives would allow unrestricted motorized cross-country travel. This would have a reduced effect on wildlife using ponderosa pine habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in ponderosa pine habitat, followed by Alternatives B, A, E and D, respectively. Still, the action alternatives would have a reduced net effect on wildlife using ponderosa pine habitat due to the amount of habitat closed to motorized cross-country travel.

The effects of motorized game retrieval and dispersed camping in ponderosa pine habitat are expected to be similar to those discussed above for the Forest in general.

**White Spruce Habitat**

**Alternative A**

Unrestricted motorized cross-country travel would continue in this alternative in much of the spruce habitat. This could lead to more user-created routes that could further reduce understory vegetation. The effects of disturbance to wildlife that use spruce habitat is based on the miles of motorized routes in spruce and the acres of spruce open to motorized cross-country travel.

Disturbance would continue to occur in areas where unrestricted motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation levels increase. User-created routes would continue to be created and impact wildlife that use spruce habitat.

The effects of motorized game retrieval and dispersed camping on spruce habitat are expected to be similar to those discussed above for the Forest in general.
Effects Common to All Action Alternatives
Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist on the ground. Effects on habitat condition and trend are expected to be reduced.

The effects of disturbance to wildlife that use spruce habitat is based on the miles of motorized routes in spruce (Figure 15) and the acres of spruce open to motorized cross-country travel. None of the action alternatives would allow unrestricted motorized cross-country travel. This would have a reduced effect on wildlife using spruce habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternatives A, B and E have the most motorized routes in spruce habitat, followed by Alternatives C and D, respectively. Still, the action alternatives would have a net reduced effect on wildlife using spruce habitat due to the amount of habitat closed to unrestricted motorized cross-country travel.

The effects of motorized game retrieval and dispersed camping on spruce habitat are expected to be similar to those discussed above for the Forest in general.

Hardwood Habitat
Alternate A
Unrestricted motorized cross-country travel would continue in this alternative. This could lead to more user-created routes that could further affect understory vegetation. The effects of motorized game retrieval and dispersed camping on hardwood habitat are expected to be similar to those discussed above for the Forest in general.

The effects of disturbance to wildlife that use hardwood habitat is based on the miles of motorized routes in hardwoods and the acres of hardwoods open to motorized cross-country travel. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation levels increase. User-created routes would continue to be created and would impact wildlife that use hardwood habitat.

Effects Common to All Action Alternatives
Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial affect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.
The effects of disturbance to wildlife that use hardwood habitat is based on the miles of motorized routes in hardwoods and the acres of hardwoods open to motorized cross-country travel. None of the action alternatives would allow unrestricted motorized cross-country travel. This would have a reduced effect on wildlife using hardwood habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in hardwood habitat, followed by Alternatives B, A, E, and D, respectively (Figure 16). Still, the action alternatives would have a net reduced effect on wildlife using hardwood habitat due to the amount of habitat closed to motorized cross-country travel.

Snag Habitat

Alternative A
Snag removal through firewood gathering or other means would remain consistent with current conditions. Some illegal snag cutting would likely occur. Alternative A is the only alternative that would allow unrestricted cross-country motorized travel, which could lead to more illegal snag cutting.

Effects Common to All Action Alternatives
Impacts to snag habitat is expected to be minimal and consistent with the Forest Plan (standards 2301, 2305) for all action alternatives. None of the action alternatives would authorize the cutting or removing of snags. Some illegal snag cutting may occur under all action alternatives. Alternatives B, C, D, and E are expected to have less risk of illegal snag cutting due to less area open to unrestricted motorized cross-country travel.

Riparian Habitat

Alternative A
Unrestricted motorized cross-country travel would continue in this alternative. This could lead to more user-created routes that could further affect riparian vegetation. The effects of motorized game retrieval and dispersed camping on riparian habitat are expected to be similar to those discussed above for the Forest in general.

Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and impact wildlife that use riparian habitat.
Effects Common to All Action Alternatives

Effects on habitat quantity are expected to be reduced for all action alternatives (Figure 17). These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of motorized game retrieval and dispersed camping on riparian habitat are expected to be similar to those discussed above for the Forest in general.

The effects of disturbance to wildlife that use riparian habitat is based on the miles of motorized routes in riparian habitat and the acres of riparian habitat open to motorized cross-country travel. None of the action alternatives would allow unrestricted motorized cross-country travel. This would have a reduced effect on wildlife using riparian habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in riparian habitat, followed by Alternatives B, A, E, and D, respectively. Still, the action alternatives would have a net reduced effect on wildlife using riparian habitat due to the amount of habitat closed to motorized cross-country travel.

Effects to the riparian habitat and associated species are mitigated through a wide variety of standards and guidelines, watershed conservation practices, and State BMPs that protect riparian areas. Forestwide standards and guidelines protect riparian areas, water influence zones, and wetlands. Long-term riparian ecosystem health and ecological function are provided for by not allowing actions that would be detrimental to riparian-ecosystem condition (standards 1301, 1302). Objective 105 strives to prohibit motorized vehicles in wetlands, wet meadows, and riparian areas. Standard 1113 provides direction pertaining to minimizing sediment discharge into streams, lakes, and wetlands during road construction and other site disturbances. Guideline 9107 prohibits land vehicles from entering perennial steams where resource damage would occur. Guideline 9108 restricts vehicle traffic to roads and trails in riparian areas.

Grassland Habitat

Alternative A
Unrestricted motorized cross-country travel would continue in this alternative. This could lead to more user-created routes that could further affect understory vegetation. The effects of motorized game retrieval and dispersed camping on hardwood habitat are expected to be similar to those discussed above for the Forest in general.

Figure 17. Miles of motorized routes within 400 feet of riparian habitat by alternative
The effects of disturbance to wildlife that use grassland habitat is based on the miles of motorized routes in grass cover-type and the acres of grass covertype open to motorized cross-country travel. Alternative A would continue to allow 647 miles of routes in grassland covertype, which would continue to disturb grassland species. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and would impact wildlife that use grassland habitat.

**Effects Common to All Action Alternatives**

Effects on habitat quantity are expected to be reduced for all action alternatives (Figure 18). These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of motorized game retrieval and dispersed camping on grassland habitat are expected to be similar to those discussed above for the Forest in general. The effects of disturbance to wildlife that use grassland habitat is based on the miles of motorized routes in grass covertype and the acres of grass covertype open to motorized cross-country travel.

None of the action alternatives would allow unrestricted motorized cross-country travel. This would reduce effects on wildlife using grassland habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in grassland habitat, followed by Alternatives B, A, E, and D, respectively. Still, the action alternatives would reduce effects on wildlife using grassland habitat due to the amount of habitat closed to motorized cross-country travel.

**Shrubland (Mountain Mahogany) Habitat**

**Alternative A**

Unrestricted motorized cross-country travel would continue in this alternative. This could lead to more user-created routes that could further affect vegetation in mountain mahogany habitat. The effects of motorized game retrieval and dispersed camping on mountain mahogany habitat are expected to be similar to those discussed above for the Forest in general.

The effects of disturbance to wildlife that use mountain mahogany habitat is based on the miles of motorized routes in mountain mahogany and the acres of mountain mahogany open to motorized cross-country travel. Alternative A would continue to allow 5 miles of routes in mountain mahogany habitat, which could disturb species using the habitat. Alternative A would
also continue to allow unrestricted motorized cross-country travel in much of the mountain mahogany habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and would impact wildlife that use mountain mahogany habitat.

**Effects Common to All Action Alternatives**

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of motorized game retrieval and dispersed camping on mountain mahogany habitat are expected to be similar to those discussed above for the Forest in general. The effects of disturbance to wildlife that use mountain mahogany habitat is based on the miles of motorized routes in mountain mahogany and the acres of mountain mahogany open to motorized cross-country travel. None of the action alternatives would allow unrestricted motorized cross-country travel. This would reduce effects on wildlife using mountain mahogany habitat by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. All alternatives have the roughly same amount of motorized routes in mountain mahogany habitat (about 5 miles). The action alternatives would reduce the net effect on wildlife using mountain mahogany habitat due to the amount of habitat closed to motorized cross-country travel.

**Management Indicator Species**

*Black-backed Woodpecker*

The black-backed woodpecker is also a Region 2 sensitive species. The effects to this species are discussed in detail in the biological evaluation. A summary of effects to all sensitive species analyzed is located below on page 218.

*Brown Creeper*

**Alternative A**

Habitat availability would remain the same as existing conditions in Alternative A. Effects on snags are expected to be minimal. The risk of illegal snag removal would be highest in Alternative A because it would allow the most area open to motorized cross-country travel. Brown creeper habitat condition and availability would be expected to remain stable on the Forest. Habitat fragmentation would remain at existing conditions because no new routes would be authorized.

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of brown creepers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Game retrieval would have minimal effects on brown creepers. Most game retrieval would occur outside the brown creeper nesting season. Spring and summer dispersed camping could disturb nesting brown creepers. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed above.
The effects of disturbance are estimated using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. White spruce and ponderosa pine structural stages 4C and 5 offer the best habitat for brown creepers. Alternative A would also continue to allow unrestricted motorized cross-country travel in much of this habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and impact brown creepers through disturbance and habitat alteration. Alternative A would continue to allow 332 miles of motorized routes in primary brown creeper habitat, which could disturb nesting brown creepers.

Alternative A is not expected to reduce the Forestwide population. Forestwide populations are expected to remain stable or increase.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of brown creepers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Brown creepers mostly forage in the forest canopy and would have few changes from routes on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Impacts to snag habitat is expected to be minimal for all action alternatives. None of the alternatives would authorize the cutting or removing of snags. Some illegal snag cutting may occur under all alternatives. Alternatives B, C, D, and E are expected to have less risk of illegal snag cutting due to less area open to unrestricted motorized cross-country travel.

Roads can cause habitat fragmentation for species that tend to use the interior parts of forest patches. More roads tend to reduce the patch size and increase the ratio of edge-to interior area. This reduces the amount of habitat available to species that prefer these interior forest conditions, such as brown Creepers (Reed et al. 1996). Fragmentation of habitat is expected to be reduced in all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Based on the above analysis, brown creeper habitat condition and availability is expected to remain stable on the Forest. All action alternatives contribute to conservation and maintenance of brown creeper habitat (Forest Plan objective 238).

Game retrieval would have minimal effects on brown creepers for all action alternatives. Most game retrieval would occur outside the brown creeper nesting season. Spring and summer dispersed camping could disturb nesting brown creepers. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed above.

The effects of disturbance are estimated using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. White spruce and ponderosa pine structural stages 4C and 5 offer the best habitat for brown creepers. None of the action alternatives would allow unrestricted motorized cross-country travel. This would reduce effects on brown creepers by reducing disturbance impacts.
Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in primary habitat, followed by Alternatives B, A, E, and D, respectively (Figure 19). The action alternatives would reduce the net effect on brown creepers due to the amount of habitat closed to motorized cross-country travel.

Brown creepers are also found in lower densities in other habitats including other structural stages of ponderosa pine. Effects of disturbance to brown creepers in ponderosa pine would be similar to those discussed earlier for ponderosa pine habitat.

None of the action alternatives are expected to reduce the Forestwide population. Forestwide populations are expected to remain stable or increase in all action alternatives. The action alternatives may have a better chance of population increases because of reduced disturbance from motorized cross-country travel. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for brown creeper habitat. Under all alternatives, brown creepers are likely to persist on the Forest.

Golden-Crowned Kinglet

Alternative A

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Loss of habitat to road surface is expected to be proportional to route mileage. Kinglets mostly forage in the tree canopies and would see little effects from narrow routes on the ground. Motorized cross-country travel may create more routes as demand increases, thereby reducing available habitat. Effects on habitat condition and trend are expected to be proportional to route mileage.

Spruce on the Black Hills is naturally distributed as patches at low abundance and there are gaps where spruce habitat is absent or only present in low abundance. However, the kinglets are mobile and disjunct areas of spruce habitat are typically large enough and close enough to permit dispersal and interaction among subpopulations across the Forest. Conditions similar to this are expected to be maintained under Alternative A. Therefore, fragmentation of spruce habitat is not expected to adversely affect the species.

Based on the above analysis, the amount and condition of habitat is expected to remain stable. Alternative A contributes to conservation and maintenance of kinglet habitat (Forest Plan objective 238).
The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Disturbance effects to kinglets are expected to be similar to effects previously described for spruce habitat.

Game retrieval would have minimal effects on kinglets for Alternative A. Most game retrieval would occur outside the kinglet nesting season. Spring and summer dispersed camping could disturb nesting kinglets. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed previously.

Alternative A is not expected to reduce the Forestwide population. Forestwide populations are expected to remain stable or increase.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most designated existed previously but hadn’t been formally designated. Kinglets mostly forage in the tree canopies and would have few effects from routes on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Spruce on the Black Hills is naturally distributed as patches at low abundance and there are gaps where spruce habitat is absent or only present in low abundance. However, the kinglets are mobile and disjunct areas of spruce habitat are typically be large enough and close enough to permit dispersal and interaction among subpopulations across the Forest. Conditions similar to this are expected to be maintained under all action alternatives. Therefore, fragmentation of spruce habitat is not expected to adversely affect the species.

Based on the above analysis, the amount and condition of habitat is expected to remain stable or increase. All action alternatives contribute to conservation and maintenance of kinglet habitat (Forest Plan objective 238).

Game retrieval would have minimal effects on kinglets for all action alternatives. Most game retrieval would occur outside the kinglet nesting season. Spring and summer dispersed camping could disturb nesting kinglets. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed previously.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Disturbance effects to kinglets for all action alternatives are expected to be similar to effects previously described for spruce habitat. Alternatives B and E have the most motorized routes in spruce habitat, followed by Alternatives C and D, respectively. Still, the action alternatives would reduce the net effects on kinglets due to the amount of habitat closed to motorized cross-country travel.

None of the action alternatives is expected to reduce the Forestwide population. Forestwide populations are expected to remain stable or increase in all action alternatives. The action
alternatives may have a better chance of population increases because of reduced disturbance from motorized cross-country travel.

Under all alternatives, golden-crowned kinglets are likely to persist on the Forest. Spruce habitat would continue to be distributed as patches at low abundance and there may be gaps where spruce habitat is absent or only present in low abundance. However, the disjunct areas of spruce habitat would typically be large enough and close enough to permit dispersal and interaction among subpopulations across the Forest. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for kinglet habitat.

Grasshopper Sparrow

The grasshopper sparrow is also a Region 2 sensitive species. The effects to this species are evaluated in detail in the biological evaluation. A summary of effects to all sensitive species analyzed is located below on page 218.

Ruffed Grouse

Alternative A

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in grouse habitat, which could deter from the conservation and maintenance of grouse habitat (Forest Plan objective 238).

The effects of disturbance are estimated by using the miles of routes in aspen habitat and the acreage of aspen open to cross-country travel. Alternative A would continue to allow unrestricted motorized cross-country travel in much of this habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and would impact ruffed grouse. Alternative A would continue to allow 150 miles of motorized routes in aspen habitat.

Game retrieval would have minimal effects on ruffed grouse. Most game retrieval would occur during big game seasons outside the grouse nesting season. Spring and summer dispersed camping could disturb nesting grouse. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed previously.

Effects Common to All Action Alternatives

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

All action alternatives contribute to conservation and maintenance of grouse habitat (Forest Plan objective 238). The action alternatives would reduce the net effects by closing habitat to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The effects of disturbance are estimated by using the miles of routes in aspen habitat and the acreage of aspen open to cross-country travel. None of the action alternative would allow motorized cross-country travel. This would reduce effects on grouse by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in grouse habitat, followed by Alternatives B, A, E, and D, respectively (Figure 20). The action alternatives would reduce the net effects on grouse due to the amount of habitat closed to unrestricted motorized cross-country travel.

Game retrieval would have minimal effects on ruffed grouse for all action alternatives. Most game retrieval would occur during big game seasons outside the grouse nesting season. Spring and summer dispersed camping could disturb nesting grouse. Effects from dispersed camping are expected to be similar to general effects to wildlife discussed previously.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for ruffed grouse habitat. Under all alternatives, adequate habitat is expected to exist and ruffed grouse are likely to persist on the Forest.

**Song Sparrow**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in song sparrow habitat. This could reduce the Forest’s ability to contribute to conservation of song sparrow habitat (Forest Plan objective 238).

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects from disturbance are expected to mimic impacts to riparian habitat discussed earlier in the general wildlife effects section.

Game retrieval would have minimal effects on song sparrows in Alternative A. Most game retrieval would occur during big game seasons outside the nesting season. Spring and summer dispersed camping could disturb nesting song sparrows. Effects from dispersed camping are expected to be similar to those discussed earlier in the general wildlife effects section for riparian habitat.

The amount of riparian area is not expected to change substantially under Alternative A. Objectives, standards, and guidelines are designed to maintain or enhance riparian condition. Some individuals may be disturbed, but song sparrow populations are expected to remain stable in these riparian areas. This alternative would not change any of the standards, guidelines, or objectives that provide for song sparrow habitat. There would be adequate habitat for maintaining populations of song sparrows. Riparian habitats would be maintained through implementation of objectives, standards, and guidelines.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel. For general effects on riparian habitat, see the riparian discussion on page 204.

All action alternatives contribute to conservation of song sparrow habitat (Forest Plan objective 238). Alternatives B, C, D, and E would contribute more to the conservation of habitat by closing areas to unrestricted cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects from disturbance are expected to mimic impacts to riparian habitat discussed earlier in the general wildlife effects section.

Game retrieval would have minimal effects on song sparrows for all alternatives. Most game retrieval would occur during big game seasons outside the nesting season. Spring and summer dispersed camping could disturb nesting song sparrows. Effects from dispersed camping are expected to be similar to those discussed earlier in the general wildlife effects section.
The amount of riparian area is not expected to change substantially in all action alternatives. Objectives, standards, and guidelines are designed to maintain or enhance riparian condition. Some individuals may be disturbed, but song sparrow populations are expected to remain stable in these riparian areas. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines or objectives that provide for song sparrow habitat. Under all action alternatives, there would be adequate habitat for maintaining populations of song sparrows. Riparian habitats would be maintained implementation of objectives, standards, and guidelines.

**Beaver**

**Alternative A**

Acres of riparian areas and miles of streams are not expected to change under Alternative A. The effects on beaver would likely be reflected in the quality of riparian habitat rather than the quantity of riparian habitat. Effects to beavers would likely mirror effects to riparian and wetland areas. Effects on riparian areas are discussed earlier in the general wildlife section.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in beaver habitat. This could reduce the Forest’s ability contribute to conservation of beaver habitat (Forest Plan objective 238).

Direct mortality from collisions is expected to occur, though infrequently. If collisions do occur, they are not likely to affect Forestwide populations. Alternative A would continue to allow unrestricted motorized cross-country travel near most beaver colonies. Impacts would continue to accrue as motorized recreation use levels increase. User-created routes would continue to be created and could impact beavers.

The area open to motorized game retrieval and motorized dispersed camping would be the highest in Alternative A. These types of uses would affect beaver streams if they result in crossing streams to access game or campsites.

**Effects Common to All Action Alternatives**

Acres of riparian areas and miles of streams are not expected to change under all action alternatives. The effects on beaver would likely be reflected in the quality of riparian habitat rather than the quantity of riparian habitat. Direct impacts to riparian and wetland ecosystems typically occur from direct disturbances such as the clearing of vegetation; roads or trails (e.g., stream crossings); and placement of fill material (e.g., development in a floodplain). Effects to beavers would likely mirror effects to riparian and wetland areas. Effects on riparian areas are discussed earlier in the general wildlife section.

All action alternatives would contribute to conservation and maintenance of beaver habitat (Forest Plan objective 238) by closing areas to unrestricted cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for beaver habitat. Under all alternatives, there would be adequate habitat for maintaining populations for beaver. Beaver populations are likely to remain stable or increase on the Forest.
in the future because hardwood ecosystems are expected to remain stable or increase, and riparian and aquatic ecosystem conditions are expected to remain stable.

**Alternative B**
Alternative B would reopen a closed road near beaver colonies along Lytle Creek (Bear Lodge Mountains). More routes would be added than dropped, which could provide more impacts than Alternative A. Motorized game retrieval (elk) and dispersed camping would be allowed along some roads near beaver streams. Users would not be allowed to cross the nearby stream to access game or campsites, which would avoid impacts. Alternative B closes the Forest to unrestricted motorized cross-country travel, which would be a benefit to most beaver streams. Most user-created routes near beaver streams would no longer be used. Alternative B would reduce net effects on beavers.

**Alternative C**
Effects of Alternative C would be the same as Alternative B, since the same routes near beaver colonies would be added, and unrestricted motorized cross-country travel would not be allowed. Motorized game retrieval is allowed in some areas of the Forest for deer and elk. Users would not be allowed to cross the nearby stream to access game or campsites, which would avoid impacts. Dispersed camping would be allowed along some routes near beaver streams. This could affect beavers if users cross beaver streams to access campsites. Still, the overall effects of Alternative C are expected to be reduced due to the closure of most of the Forest to unrestricted motorized cross-country travel.

**Alternative D**
Alternative D would have the least impact to beavers because it does not add new routes near beaver colonies, does not allow motorized game retrieval or dispersed camping off established routes, and closes the Forest to all motorized cross-country travel. Some existing routes near beaver colonies would remain open, so there would still be some level of effects. The overall effects are expected to be reduced due to the closure of motorized cross-country travel, game retrieval, and dispersed camping.

**Alternative E**
Alternative E would keep the existing road system similar to Alternative A, but would close the Forest to all motorized cross-country travel and would not allow motorized game retrieval or dispersed camping off established routes. There would still be some effects from existing roads, but the net effect would be reduced due to the reduction in motorized cross-country travel, game retrieval, and dispersed camping.

**White-tailed Deer**
Different structural stages in ponderosa pine offer different levels of habitat requirements for deer. Open forest conditions (structural stages 1, 2, 3A, and 4A) offer the best forage, including the best potential for understory shrubs. Structural stages 3C, 4C, and 5 offer the best conditions for cover including thermal cover. Structural stages 3B and 4B intermediate forage and cover but not optimum conditions for both.

**Alternative A**
Direct mortality from collisions is expected to occur. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. Collisions are not likely to limit Forestwide populations.
Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in deer habitat. This could reduce the Forest’s ability contribute to conservation of deer habitat (Forest Plan objective 238).

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. White-tailed deer are found in most habitat types on the Forest. The effects of disturbance from routes, game retrieval, and dispersed camping are expected to be similar to those displayed previously in the general effects to wildlife.

Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) directs the Department of Agriculture “to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.” Alternative A would have the most area open to motorized game retrieval and dispersed camping. Access for hunting would remain unchanged in this alternative.

The Forest Plan contains wintertime road density objectives in Management Areas 5.4 and 5.43 (objective 5.4-207 and 5.43-205). These objectives strive for a wintertime open road density of one mile per square mile or less in these management areas. The Forest is currently above the objective in Management Area 5.4 and is currently meeting this objective in Management Area 5.43. Alternative A does not move the Forest towards meeting this objective in Management Area 5.4.

Effects Common to All Action Alternatives

Direct mortality from collisions is expected to occur in all action alternatives. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. Collisions of new routes are expected to be minimal because most are trails with slower traffic. Collisions are not likely to limit Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. White-tailed deer are found in most habitat types on the Forest. The effects of disturbance from routes, game retrieval, and dispersed camping are expected to be similar to those displayed previously in the general effects to wildlife.

Motorized game retrieval and route density can influence how hunters disperse across the hunting units. Alternative C may concentrate hunting in those small portions of hunting units open to game retrieval and reduce harvest in areas outside retrieval areas. Alternatives B, D, and E could encourage road hunting and shift hunters to areas with higher route densities since motorized retrieval of deer would not be allowed off designated routes.

Motorized game retrieval may also affect hunter experience. Many hunters depend on their ATVs to retrieve harvested deer. Hunters that depend on motorized game retrieval would experience a reduced opportunity to do so under Alternative C, and a greater reduction in
opportunity in Alternatives B, D, and E. Alternatives B, D, and E would provide more opportunities for hunters who desire a more primitive type of game retrieval (horse or foot).

None of the alternatives would violate Executive Order 13443 and limit access to hunting areas due to the abundance of existing roads on the Forest that would remain open. The action alternatives would shift off-road hunting opportunities from motorized to nonmotorized by closing areas currently open to unrestricted cross-country travel. Alternative D would shift deer opportunities the most from roaded hunting opportunities to more traditional nonmotorized hunting opportunities.

All action alternatives contribute to conservation of white-tailed deer habitat (Forest Plan objective 238) by closing areas to unrestricted cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan contains wintertime road density objectives in MAs 5.4 and 5.43 (objective 5.4-207 and 5.43-205). These objectives strive for a wintertime open road density of one mile per square mile or less in these management areas. The Forest is currently above the objective in Management Area 5.4 and is currently meeting this objective in Management Area 5.43. All action alternatives continue to meet the objective for Management Area 5.43 (Figure 21). Alternatives B, C, and D reduce the density slightly from current conditions in Management Area 5.43. In the action alternatives, guidelines 5.4-9102 and 5.4-5101 were used in different amounts to contribute to objective 5.4-207, depending on the emphasis of each alternative. Alternatives B and C move the Forest away from the objective for Management Area 5.4 in an effort to provide more motorized recreation opportunities for the public. Alternative D moves the Forest towards the objective for Management Area 5.4 in an effort to limit the level and likelihood of effects on natural and cultural resources, including wildlife, through a smaller motorized travel system. Alternative E would have winter route densities similar to Alternative A (existing condition). (See also Chapter 2 for descriptions, intent and design of alternatives). This is based on miles of Forest jurisdiction routes on National Forest System land.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest.

This project would not change any of the standards, guidelines, or objectives that provide for white-tailed deer habitat. Under all alternatives, there would be adequate habitat for white-tailed deer on the Forest. Open forest conditions in ponderosa pine are expected to remain stable across the Forest, which would maintain available forage, including understory shrubs. None of the alternatives are expected to effect the Forestwide population of white-tailed

![Figure 21. Comparison of winter open route density (miles/square mile) in management areas 5.4 and 5.43 by alternative](image-url)
deer. There may be fewer disturbances under Alternatives B, C, D, and E due to reduced cross-country travel, but the population should continue to be stable in the foreseeable future.

Threatened and Endangered Wildlife Species

Black-footed ferret

All alternatives are expected to have no effect on black-footed ferrets. The only prairie dog town that is likely to have ferrets is the town next to Wind Cave National Park in Norbeck Wildlife Preserve. The Preserve is currently closed to public motorized travel and would continue to be closed under all action alternatives. No new roads are proposed near Wind Cave National Park in any alternative. Alternatives B, C, and D close some roads near Wind Cave National Park, but not where ferrets are likely to occur.

Sensitive Wildlife Species

Effects to Region 2 sensitive species are discussed in detail in a biological evaluation. The effects determinations for Region 2 sensitive wildlife and fish species are summarized below.

The following Region 2 sensitive animal species have a determination of “no impact” for all alternatives

- Ferruginous hawk (*Buteo regalis*)
- Mountain plover (*Charadrius montanus*)
- Northern harrier (*Circus cyaneus*)
- Peregrine falcon (*Falco peregrinus*)

The following Region 2 sensitive animal species have a determination of “may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing” for all alternatives:

- Cooper’s mountain snail (*Oreohelix strigosa cooperi*)
- Regal fritillary (*Speyeria idalia*)
- Northern leopard frog (*Rana pipiens*)
- Black Hills redbelly snake (*Storeria occipitomaculata pahasapa*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Black-backed woodpecker (*Picoides arcticus*)
- Burrowing owl (*Athene cunicularia*)
- Flammulated owl (*Otus flammeolus*)
- Grasshopper sparrow (*Ammomanes savannarum*)
- Lewis' woodpecker (*Melanerpes lewis*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Northern goshawk (*Accipiter gentilis*)
- Three-toed woodpecker (*Picoides dorsalis*)
- Yellow-billed cuckoo (*Coccyzus americanus*)
- Long-billed curlew (*Numenius americanus*)
- Black-tailed prairie dog (*Cynomys ludovicianus*)
- Rocky Mountain bighorn sheep (*Ovis canadensis*)
• American marten (*Martes americana*)
• Fringed myotis (*Myotis thysanodes*)
• Townsend’s big-eared bat (*Corynorhinus townsendii pallescens*)

*Cooper’s Mountain Snail*

**Alternative A**

Direct mortality from vehicles is possible for this alternative. Undiscovered colonies could be impacted if routes and cross-country travel run through them. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered colonies. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on snails are expected to be similar to the general discussion on riparian, hardwood and forested habitat under General Effects to Wildlife and Habitat Components.

The Forest Plan provides direction on managing snail colonies (standard 3103). No new routes are proposed in known sensitive snail colonies. Game retrieval and dispersed camping could occur on known snail colonies.

Road maintenance would likely affect snail colonies in this alternative. Road right-of ways are often brushed, including along State highways. This activity would likely continue for public safety reasons. The effects from these activities are not expected to change from current levels for this alternative.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in snail habitat and crush undiscovered snails. This could reduce the Forest’s ability contribute to conservation of snail habitat (Forest Plan objective 221).

**Effects Common to All Action Alternatives**

Direct mortality from vehicles is possible for all action alternatives. None of the action alternatives propose new routes in known colonies. Undiscovered colonies could be impacted in all action alternatives. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered colonies. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on snails are expected to be similar to the general discussion on riparian, hardwood and forested habitat under General Effects to Wildlife and Habitat Components.

The Forest Plan provides direction on managing snail colonies (standard 3103). No new routes are proposed in known sensitive snail colonies. All designed routes in the action alternatives are consistent with standard 3103. Game retrieval and dispersed camping could occur on known snail colonies. If conflicts arise, standard 3103 would be followed. Therefore, all action alternatives are consistent with the Forest Plan.

Downed woody material is an important habitat feature for snails. Downed wood removal is not authorized under any action alternative. Effects are expected to be minimal.

Road maintenance would likely affect snail colonies in all action alternatives. Road right-of-way are often brushed, including along State highways. This activity would likely continue for
public safety reasons. The effects from these activities are not expected to change from current levels for all action alternatives.

All action alternatives contribute to conservation of snail habitat (Forest Plan objective 221). The action alternatives are expected to have a net benefit to snails by closing areas to unrestricted cross-country travel. Alternative D would have the most net benefit because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Individuals may be directly impacted by vehicles running over them. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for snail habitat. Riparian areas would be maintained. The snail-specific direction (standard 3103) for known snail colonies would be followed for all alternatives.

**Regal Fritillary**

**Alternative A**

Direct mortality from collisions could occur in this alternative. The risk of direct mortality would be consistent with existing conditions. However, Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could cause additional direct mortality and could further affect vegetation in fritillary habitat. This could reduce the Forest’s ability contribute to conservation of fritillary habitat (Forest Plan objective 221).

The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered occurrences. Impacts to fritillary habitat are expected to be similar to those displayed in the general discussion section for grassland habitat under General Effects to Wildlife and Habitat Components. The effects of motorized game retrieval and dispersed camping are also expected to be similar to those discussed in the General Effects to Wildlife and Habitat Components.

Invasive weeds can affect butterflies through competition with larval host plants. Effects are expected to be similar to those displayed in the general discussion under General Effects to Wildlife and Habitat Components.

**Effects Common to All Action Alternatives**

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Direct mortality from vehicles is possible for all action alternatives. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered colonies. Impacts to fritillary habitat are expected to be similar to those displayed in the general discussion section for grassland habitat under
General Effects to Wildlife and Habitat Components. The effects of motorized game retrieval and dispersed camping on regal fritillary habitat are also expected to be similar to those discussed in the General Effects to Wildlife and Habitat Components.

Invasive weeds can also affect butterflies through competition with larval host plants. Effects are expected to be similar to those displayed in the general discussion under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of butterfly habitat (Forest Plan objective 221). The action alternatives are expected to have a net benefit to habitat by closing areas to cross-country travel. Alternative D would have the most net benefit because it has the least amount of habitat with routes and cross-country travel.

Determination and Rationale
All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Based on the few observations ever recorded and the limited amount of suitable habitat, the Black Hills does not appear to have an established population of regal fritillaries. Periodic appearance and disappearance may be a naturally occurring pattern for the species in this region (USDA Forest Service 2000b), and therefore, management could occasionally have effects to a limited number of individuals. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for regal fritillary habitat.

Northern Leopard Frog
Eggs, larval, and adult leopard frogs may be killed or injured by variety of activities such as on-and off-road vehicle traffic associated with recreation or in the course of vegetation management treatments (timber harvest, prescribed burning, wildfire suppression, noxious weed treatment). Implementation of standards and guidelines, watershed conservation practices, and State best-management practices (BMPs) emphasize the protection of riparian and aquatic habitats.

Indirect effects occur to this species in a variety of ways. Motorized vehicle activities may displace or compact soils and remove or disturb ground litter. Compaction by any activity can reduce infiltration capacity. Stream crossings can damage channel stability and increase sediment input. Water quality may be affected by chemical applications or contaminated surface water runoff.

Alternative A
Direct mortality is possible under this alternative. Implementation of standards and guidelines, watershed conservation practices, and State best-management practices (BMPs) emphasize the protection of riparian and aquatic habitats but would not completely avoid the direct effects to this species. Some individual eggs, larval and adult frogs could be crushed by vehicles crossing streams on routes or going cross-country.

The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to leopard frogs. Effects from motorized routes, cross-country travel, game retrieval, and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components, especially those effects to riparian habitat.
Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could further affect vegetation in leopard frog habitat. This could reduce the Forest’s ability to contribute to conservation of leopard frog habitat (Forest Plan objective 221).

**Effects Common to All Action Alternatives**

Direct mortality is possible under all action alternatives. Implementation of standards and guidelines, watershed conservation practices, and State best-management practices (BMPs) emphasize the protection of riparian and aquatic habitats but would not completely avoid the direct effects to this species. Some individual eggs, larval and adult frogs could be crushed by vehicles crossing streams on routes or going cross-country.

Effects from motorized routes, cross-country travel, game retrieval and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components, especially those effects to riparian habitat. Effects on habitat quantity are expected to be reduced for the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate.

All action alternatives contribute to conservation of frog habitat (Forest Plan objective 221). All action alternatives are expected to have a net benefit to habitat by closing areas to cross-country travel. Alternative D is expected to have the most net benefit because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. This species is common in suitable habitat on the Forest. Individuals may be impacted by vehicles crossing wet habitat. Implementation of standards, guidelines, watershed conservation practices, and BMPs would maintain and protect aquatic, riparian and upslope areas in a condition and quantity that continues to support well-distributed, reproductive populations. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for leopard frog habitat.

*Black Hills Redbelly Snake*

**Alternative A**

Direct mortality from vehicles could occur in this alternative. Individuals at undiscovered hibernacula could be affected access by user-created routes and motorized cross-country travel. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel are used here to estimate effects to redbelly snakes. The effects of motorized routes, cross-country travel, game retrieval, and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components, particularly riparian and hardwood habitats.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could further affect vegetation in redbelly snake habitat. This could reduce the Forest’s ability to contribute to conservation of redbelly snake habitat (Forest Plan objective 221).
Effects Common to All Action Alternatives

Direct mortality from vehicles could occur in all action alternatives. No new routes are proposed at known hibernacula (standard 3116), but undiscovered ones could be affected. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel are used here to estimate effects to redbelly snakes. The effects of motorized routes, cross-country travel, game retrieval, and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components, particularly riparian and hardwood habitats.

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

All action alternatives contribute to conservation of redbelly snake habitat (Forest Plan objective 221). Alternatives B, C, D, and E are expected to contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D is expected to conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest if Forest Plan standards are followed. This project would not change any of the standards, guidelines or objectives that provide for redbelly snake habitat. Black Hills redbelly snakes would likely continue to persist across the Forest under all alternatives.

Determination and Rationale

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Individuals may be impacted by being run over by vehicles. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for redbelly snake habitat. Implementation of Forestwide objectives, standards, and guidelines would conserve and enhance suitable Black Hills redbelly snake habitats and the habitats of important invertebrate prey species. Riparian and hardwood areas would be maintained, providing continued habitat for the species.

American Three-Toed Woodpecker

Alternative A

Direct mortality from collisions may occur but is expected to be minimal. Due to the maneuverability of woodpeckers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations. Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could further reduce habitat. Alternative A contributes to conservation of woodpecker habitat (Forest Plan objective 221) by maintaining current conditions.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to motorized cross-country travel, game retrieval and dispersed camping. Effects of motorized routes, cross-country travel, game retrieval, and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components.
Components, particularly spruce and snag habitat. Alternative A allows the most motorized cross-country travel. This would have the most potential for disturbance to three-toed woodpeckers.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of woodpeckers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to motorized cross-country travel, game retrieval and dispersed camping. Effects of motorized routes, cross-country travel, game retrieval, and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components, particularly spruce and snag habitat.

All action alternatives would contribute to conservation of woodpecker habitat (Forest Plan objective 221). Alternatives B, C, D and E are expected to contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D is expected to conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Individuals may be disturbed or killed by vehicles, but it is not expected to threaten populations. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for woodpecker habitat. All alternatives would likely allow the three-toed woodpecker to persist on the Forest.

**Bald Eagle**

Potential impacts from Forest activities could include disturbance at roost or nest sites, changes in prey availability, and impacts to forested habitats used for roosting, nesting, and perching.

**Alternative A**

Vehicle-killed wildlife is a major food source for wintering bald eagles on the Forest. Direct mortality from collisions is possible in this alternative, given that deer carcasses can occur along highly used routes. Collisions are more likely to occur along highways and major gravel roads that allow higher vehicle speeds. Lower speed routes such as those on most of the Forest are much less likely to result in collisions. Due to the maneuverability of bald eagles, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could further reduce habitat.
The effects of disturbance to wintering eagles is estimated by using the miles of routes Forestwide and the acreage of Forest open to cross-country travel. Effects from disturbance are expected to be similar to general effects discussed under General Effects to Wildlife and Habitat Components. This alternative has the most potential for disturbance from motorized travel because it has the most area open to motorized cross-country travel. This alternative contributes to conservation of eagle habitat (Forest Plan objective 221) by maintaining habitat similar to current conditions.

**Effects Common to All Action Alternatives**

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Effects to the known nest at Deerfield Lake are expected to be minimal. To be consistent with standard 3101, no new routes are proposed near the nest.

The effects of disturbance to wintering eagles is estimated by using the miles of routes Forestwide and the acreage of Forest open to cross-country travel. Effects from disturbance are expected to be similar to general effects discussed under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of eagle habitat (Forest Plan objective 221). Alternatives B, C, D and E are expected to contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D is expected to conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Motorized activity may disturb some individuals or flush them from carrion along motorized routes. There is also a slight chance that an eagle could be struck by a vehicle as it is flushed from carrion along a route. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that protect bald eagles or provide for eagle habitat.

*Black-Backed Woodpecker*

Information on effects of motorized use on black-backed woodpeckers is limited. As with many wildlife species, black-backs may be affected by roads through direct mortality, habitat alteration and disturbance.

**Alternative A**

Direct mortality from collisions is possible. Due to the maneuverability of woodpeckers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Motorized cross-country travel would continue to be allowed under this alternative, which could lead to more user-created routes. This could affect snag habitat through increased potential for
illegal cutting of snags and could affect the Forest’s ability conserve and maintain black-backed woodpecker habitat (Forest Plan objectives 221 and 238).

Habitat fragmentation is not expected to be limited under this alternative. Black-backs have adapted to take advantage of the sporadic occurrence of fire and insects. They are highly mobile and able to colonize habitat, especially burned areas.

Black-backed woodpecker populations on the Forest are doing well due to the recent fire and insect activity over the last 8 years. Black-backed woodpecker populations would likely decline from current levels under this alternative because the above average amount of recent insect activity and stand-replacing fires would not be sustained.

Ortega and Capen (2002) found that some forest birds had lower densities near unpaved roads. The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Recently burned areas and ponderosa pine structural stages 4C and 5 offer the best habitat for black-backs. Alternative A would continue to allow unrestricted motorized cross-country travel in much of this habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and would impact black-backs.

Motorized use of roads and trails can also disturb wildlife. Alternative A would continue to allow 348 miles of motorized routes in burned habitat and 332 miles in pine structural stages 4C and 5. Disturbance from these routes is expected to continue at the current level. Black-backs also use other pine structural stages. Effects in other pine structural stages are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components (ponderosa pine habitat).

**Effects Common to All Action Alternatives**

Direct mortality from collisions is possible in all action alternatives. Due to the maneuverability of woodpeckers, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced for the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Habitat fragmentation would not be limiting to black-backs. Black-backed woodpecker populations are often irruptive as they follow outbreaks of wood-boring beetles after fires (Dixon and Saab 2000; USDA Forest Service 2000a). Black-backs have adapted to take advantage of the sporadic occurrence of fire. They are highly mobile and able to colonize habitat, especially burned areas.

Impacts to snag habitat is expected to be minimal for all action alternatives. None of the alternatives would authorize the cutting or removing of snags. Some illegal snag cutting may occur under all action alternatives. Alternatives B, C, D, and E are expected to have less risk of illegal snag cutting than Alternative A due to less area being open to cross-country travel (Figure 22).
Black-backed woodpecker populations on the Forest are doing well due to the recent fire and insect activity over the last 8 years. Black-backed woodpecker populations would likely decline from current levels under all action alternatives because the above average amount of insect activity and stand-replacing fires would not be sustained.

None of the action alternatives would allow unrestricted motorized cross-country travel. This is expected to reduce effects on black-backed woodpeckers by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in primary habitat, followed by Alternatives B, E, and D, respectively (Figure 23). Still, the action alternatives are expected to reduce overall effects on black-backed woodpeckers due to the amount of habitat closed to motorized cross-country travel.

Black-backs also use other pine structural stages. Effects are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components (ponderosa pine habitat).

None of the action alternatives are expected to cause a reduction of black-backed woodpeckers on the Forest. Populations would be more dependent on availability of recently burned forest and insect epidemics.

All action alternatives contribute to conservation and maintenance of black-backed woodpecker habitat (Forest Plan objectives 221, 238). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for black-backed habitat. Under all alternatives, black-backed woodpeckers are likely to persist on the Forest. Populations may return to
levels found by (Mohren 2002) prior to the recent spike in acres burned by fire or killed by insects.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Individuals would be affected by disturbance under all alternatives. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for woodpecker habitat. All alternatives would likely allow the black-backed woodpecker to persist on the Forest.

**Burrowing Owl**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of these owls, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Due to the strong association of nesting burrowing owls with prairie dog towns, management actions and direction affecting black-tailed prairie dogs are likely to affect the suitability of burrowing owl habitat on the Forest. This alternative proposes no new routes. Existing routes would continue to provide access to and through prairie dog towns. This alternative would continue to allow unrestricted motorized cross-country travel on prairie dog towns, which could lead to additional user-created routes in prairie dog towns. Any additional user-created routes may lead to a reduction in habitat for burrowing owls.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects from disturbance are expected to be similar to those shown for grassland habitat under General Effects to Wildlife and Habitat Components. See also, the prairie dog discussion.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of these owls, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations. No new routes are proposed near currently known burrowing owl nests consistent with Forest Plan standard 3204.

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects from disturbance are expected to be similar to those shown for grassland habitat under General Effects to Wildlife and Habitat Components. See also, the prairie dog discussion.

All alternatives contribute to conservation of burrowing owl habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to
cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel. None of the alternatives propose new routes near nest locations, consistent with standard 3204.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Individuals may be affected by vehicle collisions and disturbance. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for prairie dog and burrowing owl habitat.

**Ferruginous Hawk**

**Alternative A**

Ferruginous hawks are not known to nest on the Forest; therefore, motorized recreation activities are unlikely to directly affect this species in all alternatives. Generally, ferruginous hawks may be affected by habitat loss due to conversion of grassland to agriculture and the availability of prey populations, including prairie dogs. Impacts to potential habitat are expected to be reflected in the impacts to grassland and prairie dog towns. For a discussion of general effects to grassland habitat, see General Effects to Wildlife and Habitat Components. A discussion of effects on prairie dogs is presented later in this section. Activities in these areas are unlikely to affect ferruginous hawks due to their low occurrence on the Forest. This alternative is unlikely to affect adjacent prairies outside the Forest boundary.

**Effects Common to All Action Alternatives**

Effects are expected to be similar to Alternative A. Impacts to potential habitat are expected to be reflected in the impacts to grassland and prairie dog towns. For a discussion of general effects to grassland habitat, see General Effects to Wildlife and Habitat Components. A discussion of effects on prairie dogs is presented later in this section. Activities in these areas are unlikely to affect ferruginous hawks due to their low occurrence on the Forest. This alternative is unlikely to affect adjacent prairies outside the Forest boundary.

All action alternatives contribute to conservation of ferruginous hawk potential habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of potential habitat by closing areas to unrestricted motorized cross-country travel. Alternative D would conserve potential habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives would have no impact. Ferruginous hawks have not been documented on the Forest, but might occur here during migration. Potential habitat is naturally limited in the Black Hills, but would continue to exist at current levels. Reducing cross-country travel in grasslands and prairie dog towns is not expected to improve habitat enough to affect ferruginous hawk populations.
**Flammulated Owl**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of these owls, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Motorized cross-country travel in Alternative A could lead to more user-created routes that could further reduce potential habitat. This alternative would continue current snag management. Some snags could be illegally cut for firewood. The amount of area open to unrestricted motorized cross-country travel in this alternative could lead to additional user-created routes, which could lead to a higher potential for illegal snag cutting. If illegal snag cutting increases, potential habitat would decrease.

The effects of disturbance are expected to be minimal due to the owl’s limited occurrence on the Forest. Effects of motorized routes, cross-country travel, game retrieval, and dispersed camping on potential habitat (spruce, ponderosa pine and snags) are discussed under General Effects to Wildlife and Habitat Components.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of these owls, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Impacts to snag habitat is expected to be minimal for all action alternatives. None of the alternatives would authorize the cutting or removing of snags. The action alternatives may have less potential for illegal snag removal than Alternative A because they have less area open to motorized cross-country travel.

The effects of disturbance are expected to be minimal for all action alternatives due to the owl’s limited occurrence on the Forest. Effects of motorized routes, cross-country travel, game retrieval, and dispersed camping on potential habitat (spruce, ponderosa pine and snags) are discussed under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of potential flammulated owl habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of potential habitat by closing areas to unrestricted cross-country travel. Alternative D would conserve potential habitat the most because it has the least amount of habitat with routes and cross-country travel.

The effects described could occur under all action alternatives. However, there would likely be little impact on the number, reproduction, or survival of flammulated owls. This is because a large amount of currently unoccupied but suitable habitat would still be available for owl colonization. Furthermore, the low reproductive output of flammulated owls would necessitate
many years of breeding before the habitat became fully occupied. Therefore, no alternative would likely stifle the establishment of a flammulated owl population in the Black Hills.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. The flammulated owl occurs in the Black Hills region at the eastern end of its breeding distribution, and few occurrences of this species have been documented on the Forest. At present, there is no information suggesting that flammulated owls are established or breeding in the area.

This project would not change any of the standards, guidelines, or objectives that provide for flammulated owl habitat. Due to the low occurrence of this species on the Forest in relation to the amount of potentially suitable habitat, no alternative is likely to affect the colonization by or establishment of flammulated owls on the Forest.

**Grasshopper Sparrow**

As with many wildlife species, grasshopper sparrows may be affected by roads through direct mortality, habitat alteration, and disturbance. Motorized use can also increase the risk of invasive plants that can indirectly affect habitat.

**Alternative A**

Direct mortality from collisions is possible. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

This alternative would not construct any new routes. Alternative A allows unrestricted motorized cross-country travel on much of the grassland habitat, which could lead to additional user-created routes in the future. User-created routes could reduce habitat availability and affect the Forest’s ability to conserve habitat (Forest Plan objectives 221, 238) in the future.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects to grasshopper sparrows are expected to be similar to those shown for grassland habitat under General Effects to Wildlife and Habitat Components.

Grasshopper sparrow population would be expected to remain stable on the Forest under this alternative.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.
Grassland habitat is distributed as patches at low abundance, and there are gaps where grassland habitat is absent or only present in low abundance, especially in the northern and central Black Hills. However, grassland habitat in the southern Black Hills would typically be large enough and close enough to permit dispersal and interaction among subpopulations. These conditions would continue to exist for all action alternatives. Grasshopper sparrow habitat is likely to remain stable or increase in the future for all action alternatives. If standards and guidelines are followed, existing grasslands would likely be adequately conserved until grassland restoration objectives are achieved.

Since a slight increase is expected in the amount of habitat, future distribution would likely be similar to current conditions, with expansion around existing grasslands. Distribution of grasshopper sparrows would likely follow the same pattern as habitat described above.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects to grasshopper sparrows are expected to be similar to those shown for grassland habitat under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation and maintenance of grasshopper sparrow habitat (Forest Plan objectives 221, 238). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

Forestwide population trends are expected to remain stable under all action alternatives. The action alternatives have the greatest potential for population increases, but populations could be limited by other factors such as climate or predation.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for grasshopper sparrow habitat. Under all alternatives, there would be adequate habitat for maintaining populations of grasshopper sparrows.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Some individuals may be affected under all alternatives through direct mortality or disturbance. However, all alternatives may maintain or improve habitat by maintaining or reducing areas open to cross-country travel. These measures may benefit individual grasshopper sparrows. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for grasshopper sparrow habitat. Regional downward trends may persist due to continued grassland habitat loss and degradation off the Forest.

**Lewis's Woodpecker**

**Alternative A**

Direct mortality from collisions is possible. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
Structural stage 4A and 5 most closely resemble the preferred nesting, foraging, and roosting habitat for the Lewis’s woodpecker. Structural stage 4A contains mature stands with less than 40 percent canopy cover. Structural stage 5 stands were subjectively determined to contain late-successional characteristics and could have any amount of canopy cover. Therefore, some but not all acres in structural stage 5 could provide suitable habitat for the Lewis’s woodpecker. Continued motorized cross-country travel could lead to more user-created routes on the Forest, but these routes would likely effect ground vegetation and have little effect on forest overstory. These routes could lead to more potential illegal snag removal, which would reduce habitat for Lewis’s woodpeckers. This alternative is expected to conserve Lewis’s woodpecker habitat, but to a lesser degree than the action alternatives.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Burned areas and ponderosa pine structural stages 4A and 5 offer the best habitat for Lewis’ woodpeckers. Alternative A would continue to allow motorized cross-country travel in much of this habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and would impact Lewis’ woodpeckers.

Motorized use of roads and trails can also disturb wildlife. Alternative A would continue to allow motorized travel on 348 miles of routes in burned habitat and 975 miles of routes in pine Structural Stages 4C and 5. Motorized activity on these routes could disturb Lewis’s woodpeckers nesting near the routes.

Effects Common to All Action Alternatives

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

Snags are a very important component of Lewis’s woodpecker habitat. Impacts to snag habitat is expected to be minimal for all action alternatives. None of the action alternatives would authorize the cutting or removing of snags. The reduction in motorized cross-country travel would likely reduce the potential for illegal removal of snags.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Burned areas (see Figure 22) and ponderosa pine structural stages 4A and 5 offer the best habitat for Lewis’ woodpeckers. None of the action alternatives would allow motorized cross-country travel. This is expected to reduce effects on Lewis’ woodpeckers by reducing disturbance impacts.
Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in primary habitat, followed by Alternatives B, E, and D, respectively (Figure 24). Still, the action alternatives are expected to reduce overall effects on Lewis’ woodpeckers due to the amount of habitat closed to motorized cross-country travel. Effects of motorized game retrieval and dispersed camping are expected to be similar to those shown under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of woodpecker habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Some individuals may be impacted through collisions or disturbance from vehicles. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for woodpecker habitat. All alternatives would provide habitat in mature, open-canopied condition.

**Loggerhead Shrike**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A would continue to allow unrestricted motorized cross-country travel in grassland and shrubland habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue and would impact Lewis’ woodpeckers and their habitat. Effects are expected to be similar to those shown for shrubland and grassland habitats under General Effects to Wildlife and Habitat Components. Effects of motorized game retrieval and dispersed camping are also expected to be similar to those shown in General Effects to Wildlife and Habitat Components.
Effects Common to All Action Alternatives
Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced for the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects are expected to be similar to those shown for shrubland and grassland habitats under General Effects to Wildlife and Habitat Components. Effects of motorized game retrieval and dispersed camping are also expected to be similar to those shown in General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of shrike habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

Determination and Rationale
All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. All alternatives may affect individuals through vehicle collisions or disturbance. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for shrike habitat. All alternatives would maintain or improve grass and shrub communities, which would generally be beneficial to shrikes.

Long Billed Curlew
Alternative A
Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A would continue to allow unrestricted motorized cross-country travel in grassland habitat. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue and would impact long-billed curlews and available habitat. Effects are expected to be similar to those shown for grassland habitats under General Effects to Wildlife and Habitat Components.

Effects Common to All Action Alternatives
Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects are expected to be similar to those shown for grassland habitat under General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of curlew habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**
All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Individuals may be affected by vehicle collisions or disturbance in all alternatives. This project would not change any of the standards, guidelines, or objectives that provide for curlew habitat. Alternative A would maintain grassland habitat and the other alternatives may improve grassland habitat by closing cross-country travel. Therefore, curlews are likely to persist on the Forest.

**Mountain Plover**

**Effects Common to All Alternatives**
None of the alternatives is expected to impact mountain plovers because none has been recorded on the Forest. Impacts to potential habitat are expected to be reflected in the impacts to grassland and prairie dog towns. For a discussion of effects to grassland habitat, see General Effects to Wildlife and Habitat Components. Effects on prairie dogs are discussed later in this document. Activities in these areas are unlikely to affect mountain plovers due to their lack of occurrence on the Forest. The project is unlikely to affect adjacent prairies outside the Forest boundary.

All alternatives contribute to conservation of potential plover habitat (Forest Plan objective 221). Alternative A would maintain current conditions. Alternatives B, C, D, and E would contribute more to the conservation of habitat by closing areas to unrestricted cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**
All alternatives would have no impact. There is very little suitable mountain plover habitat on or near the Forest, and mountain plovers have not been documented in the vicinity. Although grassland habitats in general would be maintained across the Forest, the proportion of grasslands that provide suitable plover habitat (e.g., short, disturbed grasslands) would remain essentially unchanged for all alternatives.
**Northern Goshawk**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat condition and trend are expected to be minimal and consistent with standard 3108. Alternative A proposes no new roads so there would be no new disturbances near goshawk nests (standard 3111). Alternative A would continue to allow unrestricted motorized cross-country travel on much of the Forest, which would continue current disturbance near goshawk nests.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Goshawks forage in most habitat types on the Forest on a variety of prey. Disturbance to foraging goshawks are expected to be similar to those shown for general habitat effects under General Effects to Wildlife and Habitat Components.

Moderately dense mature forest habitat (structural stages 4B, 4C, and 5) constitutes the best nesting habitat. Disturbance can be expected to continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts are expected to continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and would impact goshawks.

Motorized use of roads and trails can also disturb wildlife. Alternative A would continue to allow motorized use on 930 miles of routes in nesting habitat (structural stages 4B, 4C, and 5). Effects of motorized game retrieval and dispersed camping are also expected to be similar to those discussed in the general wildlife section (General Effects to Wildlife and Habitat Components).

Alternative A would continue to conserve goshawk habitat (Forest Plan objective 221) but may be more challenging than the action alternatives if additional user-created routes are created in areas where motorized cross-country travel is allowed.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced and consistent with standard 3108. Impacts to snag habitat is expected to be consistent with the Forest Plan for all action alternatives. None of the action alternatives would authorize the cutting or removing of snags.

All action alternatives are consistent with Forest Plan goshawk standards. No trees are proposed for removal in goshawk habitat so all action alternatives are consistent with standard 3108. Alternative E proposes no new roads so there would be no new disturbances near goshawk nests (standard 3111). In Alternatives B, C, and D, newly designated routes within 0.5 mile of active
goshawk nests are minimized and/or would be closed seasonally from April 1 through August 15 to minimize disturbances at nests (standard 3111).

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Goshawks forage in most habitat types on the Forest on a variety of prey. Disturbance to foraging goshawks are expected to be similar to those shown for general habitat effects under General Effects to Wildlife and Habitat Components.

Moderately dense mature forest habitat (structural stages 4B, 4C, and 5) constitutes the best nesting habitat. None of the action alternative would allow unrestricted motorized cross-country travel. This is expected to reduce effects on goshawks by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in nesting habitat, followed by Alternatives B, E, and D, respectively (Figure 25). Still, the action alternatives are expected to reduce overall effects on goshawks due to the amount of habitat closed to motorized cross-country travel.

Effects of motorized game retrieval and dispersed camping are expected to be similar to those discussed in the general wildlife section (General Effects to Wildlife and Habitat Components).

All action alternatives would contribute to conservation of goshawk habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing. Individuals would be affected under all alternatives as discussed above. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for goshawk habitat. Individual goshawks may be disturbed by motor vehicles but not to the level of affecting populations.

**Northern Harrier**

**Effects Common to All Alternatives**

None of the alternatives is expected to impact harriers due to their limited occurrence on the Forest. Impacts to potential habitat are expected to be reflected in the impacts to grassland and shrublands. For a discussion of general effects to grassland and shrubland habitat, see General...
Effects to Wildlife and Habitat Components. Activities in these areas are unlikely to affect harriers due to their low occurrence on the Forest. The project is unlikely to affect adjacent prairies outside the Forest boundary.

All alternatives contribute to conservation of potential harrier habitat (Forest Plan objective 221). Alternative A would maintain current conditions. Alternatives B, C, D, and E would contribute more to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives would have no impact. No actions would be taken under any alternative that would appreciably affect the survival or reproduction of the northern harrier. To date, northern harriers have never been known to breed or winter on the Forest. Sufficient quality and quantity of habitat would be available for migrating or transient harriers under all alternatives.

**Peregrine Falcon**

**Effects Common to All Alternatives**

The peregrine falcon does not currently breed in the Black Hills and is considered uncommon even during migration. Because of this, all alternatives would have no effects. Potential nest sites would be difficult to access with motorized vehicles due to the stability and inaccessibility of rock cliffs. Potential foraging habitat could be disturbed by motorized travel, but considering the current preponderance of unutilized habitat, it is unlikely such activities would affect future use by peregrines. In summary, none of the alternatives would affect foraging habitat to the extent that it would affect suitability to peregrines.

All alternatives contribute to conservation of potential peregrine habitat (Forest Plan objective 221). Alternative A would maintain current conditions. Alternatives B, C, D, and E would contribute more to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives would have no impact. Peregrine falcons currently do not occur in the Black Hills, and few breeding birds were historically supported here. Nesting habitat is very limited but stable. Designated routes would not affect the amount of nesting habitat. Foraging habitat is widely available and does not appear to be the limiting factor.

**Yellow-Billed Cuckoo**

**Alternative A**

Very little low-elevation riparian woodlands occur on the Forest; therefore, most motorized use would have little or no effect on the yellow-billed cuckoo. However, activities within or near low-elevation riparian areas could have effects.

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
If new user-created routes are created in riparian areas open to motorized cross-country travel, habitat could be adversely affected. Alternative A would continue to conserve riparian habitat (Forest Plan objective 221) but may be more challenging than the action alternatives if additional user-created routes are created in riparian areas open to motorized cross-country travel.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects on yellow-billed cuckoos would be similar to effects on riparian habitat. For disturbance effects in riparian habitat, see the general discussion of riparian habitat in General Effects to Wildlife and Habitat Components.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced for the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects on yellow-billed cuckoos would be similar to effects on riparian habitat. For disturbance effects in riparian habitat, see the general discussion of riparian habitat in General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of cuckoo habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals but are not likely to cause a trend to federal listing or loss of viability in the planning area. A small amount of low-elevation riparian areas occurs on the Forest and could provide habitat for yellow-billed cuckoos. All alternatives provide measures to conserve or enhance riparian areas; however, Alternatives B, C, D, and E generally reduce cross-country travel that could benefit the cuckoo. Alternative D would likely be more beneficial than the other alternatives due to the smallest motorized system and reduced cross-country travel. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for cuckoo habitat.

**American Marten**

**Alternative A**

Direct mortality from collisions is possible. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. There has been at least one report of a marten killed along a primitive road on the Forest. If collisions do occur, they are not likely to affect Forestwide populations.
Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could further reduce habitat. Effects on down woody material are expected to be minimal. This alternative does not authorize the removal of down logs.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Disturbance in spruce habitat is expected to be similar to effects shown for spruce habitat in the general effects section (see General Effects to Wildlife and Habitat Components).

Fecske et al. (2003) identified high value marten habitat in the Black Hills. Alternative A would continue to allow unrestricted motorized cross-country travel in much of the high value marten habitat. Disturbance can be expected to continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts are expected to continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and would impact marten.

Alternative A would continue to allow motorized travel on 386 miles of routes in high value marten habitat. Some disturbance to marten would likely occur from these routes. Effects of motorized game retrieval and dispersed camping are expected to be similar to Forestwide effects shown in the general discussion in General Effects to Wildlife and Habitat Components.

Alternative A would continue to contribute to the conservation of marten habitat (Forest Plan objective 221), it could be more challenging if motorized cross-country travel leads to more user-created routes in marten habitat.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is possible in all action alternatives. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. Collisions on new routes are expected to be minimal because most are trails with slower traffic. There has been at least one report of a marten killed along a primitive road on the Forest. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel. Effects on down woody material are expected to be minimal. None of the action alternatives authorizes the removal of down logs.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Disturbance in spruce habitat is expected to be similar to effects shown for spruce habitat in the general effects section (see General Effects to Wildlife and Habitat Components).
None of the action alternative would allow unrestricted motorized cross-country travel. This is expected to reduce effects on marten by reducing disturbance impacts. Alternative B has the most motorized routes in high value marten habitat, followed by Alternatives C, E, and D, respectively (Figure 26). Still, the action alternatives are expected to reduce overall effects on marten due to the amount of habitat closed to motorized cross-country travel.

Effects of motorized game retrieval and dispersed camping are expected to be similar to Forestwide effects shown in the general discussion in General Effects to Wildlife and Habitat Components.

Roads can cause habitat fragmentation for species that tend to use the interior parts of forest patches. More roads tend to reduce the patch size and increase the ratio of edge-to interior area.

This reduces the amount of habitat available to species that prefer these interior forest conditions, such as marten (Reed et al. 1996). Forest Plan standard 3215 directs us to maintain canopy closure in marten connectivity corridors to reduce fragmentation effects. All action alternatives are consistent with standard 3215. There are no new routes proposed in Alternative E. Newly designated routes in Alternatives B, C, and D are primitive roads or trails that already exist on the ground. Designation of these routes would not reduce the canopy cover in the area.

All action alternatives contribute to conservation of marten habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals but would not cause a trend to federal listing or a loss of species viability range wide. Direct mortality of individuals has occurred from vehicle collisions, and would likely occur in the future. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for marten habitat. Alternatives B, C, D, and E may reduce impacts to marten by reducing areas open to cross-country travel.

**Black-Tailed Prairie Dog**

**Alternative A**

Direct mortality from collisions could occur in this alternative. Alternative A does not propose any new routes in prairie dog towns. Effects from collisions in this alternative are expected to be similar to existing conditions. Alternative A would continue to allow unrestricted motorized
cross-country travel on most prairie dog towns. Motorized cross-country travel could lead to additional mortality.

Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could further reduce habitat. Prairie dog towns are normally sparse in vegetation. Existing motorized game retrieval would continue in Alternative A. This is likely a minor effect since the occurrence of game retrieval on the 386 acres of prairie dog towns is likely low. Dispersed camping in prairie dog towns is expected to have a minor effect because the limited number prairie dog towns combined with their remoteness and sparse conditions do not normally promote frequent camping use.

**Effects Common to All Action Alternatives**

Direct mortality from collisions could occur in all action alternatives. Alternatives D and E do not propose any new routes in prairie dog towns. Effects from collisions in these alternatives are expected to be similar to existing conditions. Alternative B and C would add about 300 yards of user-created route in one prairie dog town. This is not likely to result in a substantial increase in road-related mortality. Collisions are not expected to limit prairie dog populations in all action alternatives. Alternatives B, C, D, and E would close areas to motorized cross-country travel, resulting in a decrease in potential vehicle-caused mortality.

Effects on habitat quantity are expected to be reduced for the action alternatives. These alternatives would have a net beneficial effect from closing prairie dog towns to motorized cross-country travel, allowing unauthorized routes to revegetate. The 300 yards of new route designated in prairie dog towns in Alternative B and C already exist on the ground and would not result in new construction related habitat loss. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. Effects from disturbance are expected to be similar to those discussed for direct mortality above.

Existing motorized game retrieval would continue in Alternative B and C. This is likely a minor effect since the occurrence of game retrieval on the 386 acres of prairie dog towns is likely low. Dispersed camping in prairie dog towns is expected to have a minor effect in all action alternatives. The limited number prairie dog towns combined with their remoteness and sparse conditions do not normally promote frequent camping use.

All action alternatives contribute to conservation of prairie dog habitat (Forest Plan objective 221). Alternatives B, C, D, and E are expected to contribute to the conservation of habitat by closing areas to cross-country travel. Alternatives D and E are expected to conserve habitat the most because they have the least amount of habitat with routes and cross-country travel. None of the action alternatives is expected to reduce the population below the (Forest Plan objective 237) of 200 to 300 acres of prairie dog towns.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Individuals could be affected by roads in prairie dog towns. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for prairie dog habitat.
**Fringed Myotis**

**Alternative A**

Direct mortality from collisions is expected to be minimal in all alternatives. Due to the maneuverability of this species and their hours of activity (nighttime), collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could further reduce habitat. New user-created routes could be created in areas where motorized cross-country travel is allowed and this could reduce habitat.

The riparian ecosystem provides important foraging areas for this bat. For effects on riparian habitat, see the general riparian discussion in General Effects to Wildlife and Habitat Components.

The effects of disturbance in all alternatives are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects shown for wildlife in general discussed in General Effects to Wildlife and Habitat Components. Alternatives with the most area open to cross-country travel (Alternative A) would have the most potential for disturbance.

The cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings (standard 1401). Standard 3102 provides direction to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provides direction to avoid vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be minimal. No new construction is planned as part of this alternative. This alternative is consistent with standard 3207.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species and their hours of activity (nighttime), collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel. Impacts to snag habitat is expected to be minimal for all action alternatives because none of the action alternatives would authorize the cutting or removing of snags.

The effects of disturbance in all action alternatives are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects shown for wildlife in general discussed in General Effects to Wildlife and Habitat Components.
Alternatives with the most area open to cross-country travel would have the most potential for disturbance. Alternative D is expected to have the least disturbance.

For all action alternatives, the cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings for all action alternatives (standard 1401). Standard 3102 provides direction to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provides direction to avoid vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be minimal for all alternatives. Little new construction is planned as part of this project. Most newly designated routes are less than 65 inches in width and currently exist on the ground. All action alternatives are consistent with standard 3207.

All action alternatives contribute to conservation of bat habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing. Individuals may be struck or disturbed by vehicles, though the potential is low. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for bat habitat. Fringed bats are likely to persist on the Forest because caves and mines would be managed to avoid disturbance and maintain conditions and riparian areas would be maintained or enhanced in all alternatives.

**Rocky Mountain Bighorn Sheep**

**Alternative A**

Direct mortality from collisions is possible. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. Collisions of new routes are expected to be minimal because most are trails with slower traffic. If new user-created routes are established in bighorn sheep use areas, it could impact vegetation and sheep habitat.

The effects of disturbance are estimated by using the miles of routes in bighorn sheep use areas and the acreage of use areas open to cross-country travel. Alternative A would continue to allow unrestricted motorized cross-country travel on 337 miles of routes in bighorn sheep use areas. Disturbance would be expected to continue occur in areas where motorized cross-country travel is allowed. Disturbance impacts would be expected to continue to accrue as motorized recreation use levels increase. User created routes would be expected to continue to be created and would impact bighorn sheep.

Effects of motorized game retrieval and dispersed camping are expected to be similar to those shown for wildlife in general in General Effects to Wildlife and Habitat Components.
Effects Common to All Action Alternatives
Direct mortality from collisions is possible in all action alternatives. Most collisions are likely to occur on paved highways and on existing gravel roads that allow higher vehicle speeds. Collisions of new routes are expected to be minimal because most are trails with slower traffic.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance are estimated by using the miles of routes in bighorn sheep use areas and the acreage of use areas open to cross-country travel. None of the action alternative would allow unrestricted motorized cross-country travel. This is expected to reduce effects on bighorn sheep by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative C has the most motorized routes in bighorn sheep use areas, followed by Alternatives B, E, and D, respectively (Figure 27). Still, the action alternatives are expected to reduce overall effects on bighorn sheep due to the amount of habitat closed to motorized cross-country travel.

Effects of motorized game retrieval and dispersed camping are expected to be similar to those shown for wildlife in general in General Effects to Wildlife and Habitat Components.

All action alternatives contribute to conservation of sheep habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel. Under all alternatives, there would be adequate habitat for maintaining bighorn sheep populations.

Determination and Rationale
All alternatives may adversely impact individuals, but are not likely to cause a trend to federal listing or loss of viability in the planning area. Individual sheep could be affected through vehicle collisions or disturbance. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines or objectives that provide for bighorn sheep habitat.

![Figure 27. Miles of motorized routes within bighorn sheep use areas by alternative](image)
Townsend’s Big-Eared Bat

Alternative A

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species and their hours of activity (nighttime), collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A is the only alternative that would allow motorized cross-country travel. This could lead to more user-created routes that could promote access to bat caves and reduce foraging habitat. New user-created routes could be created in areas where unrestricted motorized cross-country travel is allowed and this could reduce habitat.

The riparian ecosystem provides important foraging areas for Townsend’s big-eared bat. For effects on riparian habitat, see the general riparian discussion in General Effects to Wildlife and Habitat Components.

The effects of disturbance in all alternatives are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects shown for wildlife in general discussed in General Effects to Wildlife and Habitat Components. Alternatives with the most area open to cross-country travel (Alternative A) would have the most potential for disturbance.

The cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings (standard 1401). Standard 3102 provides direction to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provides direction to avoid vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be minimal. No new construction is planned as part of this alternative. This alternative is consistent with standard 3207.

Effects Common to All Action Alternatives

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species and their hours of activity (nighttime), collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The riparian ecosystem provides important foraging areas for Townsend’s big-eared bat. For effects on riparian habitat, see the general riparian discussion in General Effects to Wildlife and Habitat Components.

The effects of disturbance in all action alternatives are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects
shown for wildlife in general in General Effects to Wildlife and Habitat Components. Alternatives with the most area open to cross-country travel (Alternative A) would have the most potential for disturbance. Alternative D is expected to have the least disturbance.

The effects of motorized game retrieval and dispersed camping are expected to be similar to those shown for general wildlife habitat in General Effects to Wildlife and Habitat Components.

For all action alternatives, the cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings for all action alternatives (standard 1401). Standard 3102 provide guidance to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provide direction concerning avoiding vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be minimal for all action alternatives. Little new construction is planned as part of this project. Most newly designated routes are less than 65 inches in width and currently exist on the ground. All action alternatives are consistent with standard 3207.

All action alternatives contribute to conservation of bat habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

**Determination and Rationale**

All alternatives may adversely impact individuals, but are neither likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing. Individual bats could be affected by disturbance in all alternatives, though the potential is low. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for bat habitat. Townsend’s big-eared bats are likely to persist on the Forest because caves and mines would be managed to avoid disturbance and maintain conditions and riparian areas would be maintained or enhanced in all alternatives.

**Species of Local Concern**

Effects to most species of local concern are similar to effects shown in General Effects to Wildlife and Habitat Components discussed earlier in this document. Table 44 shows where effects to that species are discussed.

All alternatives are consistent with Forest Plan standards and guidelines pertaining to species of local concern. All alternatives contribute to the maintenance or improvement of habitat for species of local concern (Forest Plan objective 221).

**American Dipper**

**Alternative A**

Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.
Table 44. Black Hills species of local concern and disposition of effects analysis

<table>
<thead>
<tr>
<th>Species</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>American dipper (<em>Cinclus mexicanus</em>)</td>
<td>Evaluated below.</td>
</tr>
<tr>
<td>Black-and-white warbler (<em>Mniotilta varia</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, and Hardwood Habitat.</td>
</tr>
<tr>
<td>Broad-winged hawk (<em>Buteo platypterus</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, and Ponderosa Pine Habitat.</td>
</tr>
<tr>
<td>Cooper's hawk (<em>Accipiter cooperii</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Riparian Habitat, Ponderosa Pine Habitat, and Hardwood Habitat.</td>
</tr>
<tr>
<td>Northern saw-whet owl (<em>Aegolius acadicus</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Ponderosa Pine Habitat and Snag Habitat.</td>
</tr>
<tr>
<td>Pygmy nuthatch (<em>Sitta pygmaea</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Ponderosa Pine Habitat, and Snag Habitat.</td>
</tr>
<tr>
<td>Sharp-shinned hawk (<em>Accipiter striatus</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Spruce Habitat and Ponderosa Pine Habitat.</td>
</tr>
<tr>
<td>Bats (<em>Myotis evotis, Myotis volans, Myotis septentrionalis, Myotis ciliolabrum</em>)</td>
<td>Evaluated below.</td>
</tr>
<tr>
<td>Meadow jumping mouse (<em>Zapus hudsonius campestris</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Riparian Habitat.</td>
</tr>
<tr>
<td>Mountain goat (<em>Oreamnos americanus</em>)</td>
<td>Evaluated below.</td>
</tr>
<tr>
<td>Northern flying squirrel (<em>Glaucous sabrinus</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Ponderosa Pine Habitat, Snag Habitat and Spruce Habitat.</td>
</tr>
<tr>
<td>Butterflies</td>
<td></td>
</tr>
<tr>
<td>Atlantis fritillary (<em>Speyeria atlantis pahasapa</em>); tawny crescent (<em>Phycoides batesii</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Riparian Habitat, Hardwood Habitat and Grassland Habitat.</td>
</tr>
<tr>
<td>Snails (<em>Vertigo arthuri, Catinella gelida, Vertigo paradoxa, Discus shimekii</em>)</td>
<td>Effects reflected in General Effects to Wildlife and Habitat Components, Spruce Habitat, Ponderosa Pine Habitat, Hardwood Habitat, Riparian Habitat and Shrubland Habitat.</td>
</tr>
</tbody>
</table>

The Forestwide Travel Analysis Report (September 2007) identified relative risk to dippers for routes across the Forest. The routes identified with a high relative risk for dippers are used to evaluate effects (USDA Forest Service 2007a).

Alternative A (existing condition) included some roads with a relative high risk for dippers. These roads would continue to be used and would continue to present a risk to dipper nesting and foraging. Alternative A also allows unrestricted cross-country travel on much of the Forest. Cross-country travel would allow continued access on many user-created routes near dipper streams, potentially providing additional impacts. The area open to motorized game retrieval and motorized dispersed camping would be the highest in Alternative A. These types of uses would affect dipper streams if they result in crossing streams to access game or campsites. Game retrieval would not affect nesting dippers because it occurs outside the nesting season, but could affect winter feeding activities.
Effects Common to All Action Alternatives

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. If collisions do occur, they are not likely to affect Forestwide populations.

Loss of habitat to road surface is expected to be minimal for all action alternatives. Little new construction is planned as part of this project. Few designated routes are near dipper streams. Effects on habitat condition and trend are expected to be minimal.

The Forestwide Travel Analysis Report (September 2007) identified relative risk to dippers for routes across the Forest. The routes identified with a high relative risk for dippers are used to evaluate effects (USDA Forest Service 2007a).

Implementation of standards and guidelines, watershed conservation practices, and State BMPs mitigate these impacts at the project level. These features mitigate impacts to nesting sites, foraging habitat and winter habitat by conserving soil, aquatic and riparian systems. The WCP Handbook contains proven watershed conservation practices to protect soil, aquatic, and riparian systems. They are incorporated verbatim into the Forest Plan as standards. The State BMPs carry the same weight as guidelines. Proper implementation of the WCP Handbook practices meets or exceeds State BMPs.

All alternatives contribute to conservation of dipper habitat (Forest Plan objective 221). Alternative A would maintain conditions similar to current conditions. Alternatives B, C, D, and E would contribute more to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. The action alternatives would not change any of the standards, guidelines, or objectives that provide for dipper habitat. This species is likely to persist under all alternatives because aquatic habitat conditions are maintained or enhanced through specific management area protection in Spearfish Canyon and the implementation of standards and guidelines, watershed conservation practices, and State BMPs.

Alternative B

Alternative B would drop one route and add a couple of other routes (near Boulder Creek, Bear Butte Creek) with a relative high risk for dippers. More routes would be added than dropped, which could provide more impacts than Alternative A. Motorized game retrieval (elk) and dispersed camping would be allowed along some roads near dipper streams. Users would not be allowed to cross the nearby stream to access game or campsites, which would avoid impacts.

Alternative B closes the Forest to unrestricted motorized cross-country travel, which would be a benefit to most dipper streams. Most user-created routes near dipper streams would no longer be used. Alternative B is expected to reduce net effects on dippers.

Alternative C

Effects of Alternative C would be the same as Alternative B, since the same routes with relative high dipper risk would be added and dropped, and unrestricted motorized cross-country travel would not be allowed. Motorized game retrieval is allowed in some areas of the Forest for deer and elk. Users would not be allowed to cross the nearby stream to access game or campsites, which would avoid impacts. Dispersed camping would be allowed along some routes near dipper
streams. This could affect dippers if users cross dipper streams to access campsites. Still, Alternative C is expected to reduce overall effects due to the closure of most of the Forest to motorized cross-country travel.

Alternative D
Alternative D would have the least impact to dippers because it closes the most roads with a relative high dipper risk, does not add new routes with a relative high dipper risk, does not allow motorized game retrieval or dispersed camping off established routes, and closes the Forest to motorized cross-country travel. Some existing routes with a relative high dipper risk would remain open, so there would still be some level of effects. Overall effects would be reduced due to the closure of motorized cross-country travel, game retrieval and dispersed camping.

Alternative E
Alternative E would keep the existing road system similar to Alternative A, but would close the Forest to motorized cross-country travel and would not allow motorized game retrieval or dispersed camping off established routes. There would still be some effects from existing roads, but the overall effects are expected to be reduced due to the reduction in motorized cross-country travel, game retrieval and dispersed camping.

Bats
Alternative A
Direct mortality from collisions is expected to be minimal. Due to the maneuverability of this species, collisions are possible, but unlikely. Also, bats are mostly active at night when motorized traffic is minimal. If collisions do occur, they are not likely to affect Forestwide populations.

All of the bats that are species of local concern use caves as part of their habitat requirement. The cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings for all alternatives (standard 1401). Standard 3102 provide guidance to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provide direction to avoid vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be minimal for this alternative. No new routes are proposed in this alternative. This alternative is consistent with standard 3207.

The Forest ecosystem is also important for bats, particularly the occurrence of snags. Effects on snags are expected to be minimal (see General Effects to Wildlife and Habitat Components, Snag Habitat).

The riparian ecosystem provides important foraging and watering areas for bats. For a discussion of effects on riparian habitat, see General Effects to Wildlife and Habitat Components, Riparian Habitat. Bats often forage in meadows and grassland areas. For a discussion of effects to grass/meadow habitat, see General Effects to Wildlife and Habitat Components, Grassland Habitat.
The effects of motorized game retrieval and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components. The effects of disturbance are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects shown for wildlife in general. Alternatives with the most area open to cross-country travel and the most motorized routes (Alternative A) would have the most potential for disturbance.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Due to the maneuverability of this species, collisions are possible, but unlikely. Also, bats are mostly active at night when motorized traffic is minimal. If collisions do occur, they are not likely to affect Forestwide populations.

All of the bats that are species of local concern use caves as part of their habitat requirement. For all action alternatives, the cave ecosystem in general would be managed according to objectives 109, 110, 112, and 113, and standard 1401, as well as the Federal Cave Resources Protection Act of 1988. Ground disturbance would be avoided within 100 feet of natural cave openings for all action alternatives (standard 1401). Standard 3102 provide guidance to protect caves and their microclimate when designing management activities where caves are important bat nursery or hibernacula sites.

Standard 3207 provide direction to avoid vegetative changes within 500 feet of caves and mines that serve as nursery roosts or hibernacula. Vegetative changes are expected to be reduced for all action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. All action alternatives are consistent with standard 3207.

The Forest ecosystem is also important for bats, particularly the occurrence of snags. Effects on snags are expected to be minimal for all action alternatives (see General Effects to Wildlife and Habitat Components, Snag Habitat).

The riparian ecosystem provides important foraging and watering areas for bats. For a discussion of effects on riparian habitat, see General Effects to Wildlife and Habitat Components, Riparian Habitat. Bats often forage in meadows and grassland areas. For a discussion of effects to grass/meadow habitat, see General Effects to Wildlife and Habitat Components, Grassland Habitat.

The effects of motorized game retrieval and dispersed camping are expected to be similar to those discussed under General Effects to Wildlife and Habitat Components.

The effects of disturbance in all action alternatives are related to the ease of access provided to caves and mines used as roosts and hibernacula. Disturbance is expected to be similar to effects shown for wildlife in general. Alternatives with the most area open to cross-country travel and the most motorized routes would have the most potential for disturbance. None of the action alternatives would allow unrestricted motorized cross-country travel. Alternative D is expected to have the least potential for disturbance.

All action alternatives contribute to conservation of bat habitat (Forest Plan objective 221). Alternatives B, C, D, and E would contribute a net benefit to the conservation of habitat by
closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined these species are likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for these species’ habitat. These species are likely to persist on the Forest because all alternatives provide for roosting sites; the amount and availability of foraging areas is maintained; and potential cave hibernacula sites are protected.

**Mountain Goat**

**Alternative A**

Direct mortality from collisions is expected to be minimal. The core habitat areas are within Black Elk Wilderness and Norbeck Wildlife Preserve where motorized travel is not allowed. Goats that wander outside these areas could be hit by vehicles. If collisions do occur, they are not likely to affect Forestwide populations.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in mountain goat habitat.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to motorized cross-country travel. Alternative A would continue to allow unrestricted motorized cross-country travel mountain goat use areas. Disturbance would continue to occur in areas where motorized cross-country travel is allowed. Disturbance impacts would continue to accrue as motorized recreation use levels increase. User created routes would continue to be created and would impact mountain goats. Motorized use of roads and trails can also disturb wildlife. Alternative A has the most motorized routes in mountain goat use areas (51 miles).

The effects of motorized game retrieval and dispersed camping are expected to be minimal. Most of the goat’s main range is in areas where motorized game retrieval and dispersed camping would not be allowed (Black Elk Wilderness and Norbeck Wildlife Preserve). Outside these areas, most game retrieval activities would occur during the big game season when goats are already being disturbed by deer and elk hunters on foot or on open routes.

Impacts to mountain goats are expected to be minimal for all alternatives due to their limited distribution and preference for high elevation rocky habitat.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. The core habitat areas are within Black Elk Wilderness and Norbeck Wildlife Preserve where motorized travel is not allowed. Goats that wander outside these areas could be hit by vehicles. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.
The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. None of the action alternative would allow unrestricted motorized cross-country travel. This is expected to reduce effects on mountain goats by reducing disturbance impacts.

Motorized use of roads and trails can also disturb wildlife. Alternative E has the most motorized routes in mountain goat use areas, followed by Alternatives B, C, and D, respectively (Figure 28). The action alternatives are expected to reduce effects on mountain goats due to the amount of habitat closed to motorized cross-country travel.

The effects of motorized game retrieval and dispersed camping are expected to be minimal for all action alternatives. Most of the goat’s main range is in areas where motorized game retrieval and dispersed camping would not be allowed in any alternative (Black Elk Wilderness and Norbeck Wildlife Preserve). Outside these areas, most game retrieval activities would occur during the big game season when goats are already being disturbed by deer and elk hunters on foot or on open routes.

Impacts to mountain goats are expected to be minimal for all action alternatives due to their limited distribution and preference for high elevation rocky habitat.

All action alternatives contribute to conservation of goat habitat (Forest plan objective 221). Alternatives B, C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for mountain goat habitat. All action alternatives continue the current management of the Black Elk Wilderness and the Norbeck Wildlife Preserve.

Demand Species

Roads have been known to negatively affect elk in various ways (Lyon 1979, Lyon 1983). The loss of habitat to road construction is unknown, but is often estimated at 5 acres per linear mile (Rowland et al. 2004). Roads may affect habitat by reducing the amount of patches of forest cover large enough to function effectively as elk habitat (Rowland et al. 2004). Roads may also affect elk habitat by facilitating the spread of invasive, exotic vegetation (Rowland et al. 2004). Roads and motorized trails can also affect the animals directly. In addition to mortality from collisions with vehicles, elk avoid areas near open roads, are more vulnerable to hunter harvest, and exhibit higher stress levels in areas or higher road density (Rowland et al. 2004). Several studies in the Black Hills have shown elk are adversely affected by roads (Millspaugh et al.)

![Figure 28. Miles of motorized routes in mountain goat use areas by alternative](image)

C, D, and E would contribute to the conservation of habitat by closing areas to cross-country travel. Alternative D would conserve habitat the most because it has the least amount of habitat with routes and cross-country travel.

The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest. This project would not change any of the standards, guidelines, or objectives that provide for mountain goat habitat. All action alternatives continue the current management of the Black Elk Wilderness and the Norbeck Wildlife Preserve.

Demand Species

Roads have been known to negatively affect elk in various ways (Lyon 1979, Lyon 1983). The loss of habitat to road construction is unknown, but is often estimated at 5 acres per linear mile (Rowland et al. 2004). Roads may affect habitat by reducing the amount of patches of forest cover large enough to function effectively as elk habitat (Rowland et al. 2004). Roads may also affect elk habitat by facilitating the spread of invasive, exotic vegetation (Rowland et al. 2004). Roads and motorized trails can also affect the animals directly. In addition to mortality from collisions with vehicles, elk avoid areas near open roads, are more vulnerable to hunter harvest, and exhibit higher stress levels in areas or higher road density (Rowland et al. 2004). Several studies in the Black Hills have shown elk are adversely affected by roads (Millspaugh et al.)
Rumble et al. (2005) found that elk movements increased with increased human activity during the hunting season. They suggested this response to hunters may reflect a pattern of elk responses to human disturbance during other times of the year.

**Alternative A**

Direct mortality from collisions is expected. Collisions are most likely to occur along existing highways and gravel roads that allow higher vehicle speeds. Collisions are less likely to occur on slower speed roads designated.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect vegetation in elk, mule deer, and turkey habitat.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. These species are found in most habitat types on the Forest. The effects of disturbance from routes, game retrieval, and dispersed camping are expected to be similar to those displayed under General Effects to Wildlife and Habitat Components.

Motorized game retrieval can influence how hunters disperse across the hunting units. Alternative A would have the most acreage open to motorized game retrieval which would offer the most flexibility to hunters.

Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) directs the Department of Agriculture “to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.” Alternative A would result in little change to hunter access.

**Effects Common to All Action Alternatives**

Direct mortality from collisions is expected to be minimal in all action alternatives. Collisions are most likely to occur along existing highways and gravel roads that allow higher vehicle speeds. Collisions are less likely to occur on slower speed roads designated as part of this project. If collisions do occur, they are not likely to affect Forestwide populations.

Effects on habitat quantity are expected to be reduced in the action alternatives. These alternatives would have a net beneficial effect from closing much of the Forest to motorized cross-country travel, allowing unauthorized routes to revegetate. Little new construction is planned as part of this project. Most routes currently being considered for designation exist now on the ground. Effects on habitat condition and trend are expected to be reduced due to the lack of cross-country motorized travel.

The effects of disturbance is estimated by using the miles of routes in suitable habitat and the acreage of habitat open to cross-country travel. These species are found in most habitat types on the Forest. The effects of disturbance from routes, game retrieval, and dispersed camping are expected to be similar to those displayed under General Effects to Wildlife and Habitat Components. Higher localized adverse effects are expected in where routes are more dense (loop trail areas) in Alternatives B, C, and D. Elk can be expected to avoid these areas when motorized use is high.
Motorized game retrieval and route mileage can influence how hunters disperse across the hunting units. Of the action alternatives, Alternative C would have the most acreage open to motorized game retrieval, followed by Alternative B. Alternative C may concentrate hunting in those small portions of hunting units open to motorized game retrieval and reduce harvest in areas outside retrieval areas. Alternatives B, D and E could lead to a focus on “road hunting” in order to get an elk near a road.

Motorized game retrieval may also affect hunter experience. Many hunters depend on their ATVs to retrieve harvested elk and deer. Hunters that depend on motorized game retrieval would experience a reduced opportunity to do so under Alternatives B and C, and a greater reduction in opportunity in Alternatives D and E. Alternatives D and E would provide more opportunities for hunters who desire a more primitive type of game retrieval (horse or foot).

None of the action alternatives would violate Executive Order 13443 and limit access to hunting areas due to the abundance of existing roads on the Forest that would remain open. The action alternatives would shift off-road hunting opportunities from motorized to nonmotorized by closing areas open to cross-country travel. Alternative D would shift elk and deer hunting opportunities the most from motorized hunting opportunities to more traditional nonmotorized hunting opportunities.

Migratory Birds
Golden eagles can occur throughout the Forest. Miles of motorized routes on the Forest and acres open to cross-country travel are used to estimate effects. Direct, indirect, and cumulative effects are expected to be similar to those shown under General Effects to Wildlife and Habitat Components. Swainson’s Hawks, prairie falcons, upland sandpipers, and dickcissels typically occur in open grass dominated landscapes. Effects are expected to be similar to those displayed for grassland habitat (see General Effects to Wildlife and Habitat Components, Grassland Habitat). Black-billed cuckoos typically found in hardwoods at lower elevations. Effects are expected to be similar to those displayed for hardwood habitat (see General Effects to Wildlife and Habitat Components, Hardwood Habitat). Red-naped sapsuckers are generally associated with aspen stands. Effects are expected to be similar to those for aspen and hardwood habitat (see General Effects to Wildlife and Habitat Components, Hardwood Habitat).

Cumulative Effects
Past, Present and Reasonably Foreseeable Actions
Activities such as vegetation management, fuels management livestock grazing, recreational activities and other management activities have and would continue on the Forest. These activities would likely occur on private lands as well. The following specific types of activities are relevant to this analysis:

- Activities such as vegetation management, fuels management, livestock grazing, recreational area management, and other management activities have continued and can be expected to continue on the Forest. Motorized access to accomplish these activities can be expected. These activities would likely occur on private lands as well.
- Firewood cutting has occurred in the past and would likely continue on the Forest in the foreseeable future, consistent with Forest plan direction. Firewood cutting likely occurs and would likely continue on private lands in the Black Hills.
• Private landowners may treat forests for lumber or to reduce fire hazards, which could alter wildlife habitat.
• It is expected that urban development would continue on private lands.
• Management of national and state parks adjacent to the Forest would continue. These activities could impact habitat components.
• Prairie dog control efforts on private lands have occurred and can be expected to continue.
• Within the Forest area, a sizeable portion of the riparian habitat is under private ownership. Urban development is expected to continue on private lands.
• Road construction and maintenance and right-of-way brushing can be expected to continue on lands outside the National Forest System.
• Non-native predatory fish have been identified as a risk factor to leopard frog persistence.
• Road construction, reconstruction and decommissioning are expected to continue to move towards Forest Plan objective 309.
• Two trailheads and 25 miles of routes expected to be designated under future projects.

**Alternative A**
Alternative A could have some incremental impacts to habitat quantity and quality because it would allow unrestricted motorized cross-country travel on much of the Forest. Motorized cross-country travel could lead to more user-created routes as the popularity of off-road vehicles increases. More user-created routes could incrementally affect vegetation in addition to those activities mentioned above, which would affect wildlife and wildlife habitat in general.

There could be some incremental impacts to all the activities mentioned above from disturbance. In Alternative A, incremental disturbance impacts would continue to accrue as motorized recreation use levels increase. User created routes would continue to be created and would incrementally disturb wildlife. This would apply to all habitats discussed above under direct and indirect effects.

**Effects Common to All Action Alternatives**
Administrative access to accomplish other management objectives on the Forest would incrementally add impacts from disturbance and habitat loss.

Firewood cutting has occurred in the past and would likely continue on the Forest in the foreseeable future, consistent with Forest plan direction. Firewood cutting likely occurs and would likely continue on private lands in the Black Hills. Since none of the action alternatives in this project authorize cutting of snags, no incremental impact on snags is expected from the action alternatives.

Future expected routes and trailheads would add 25 miles of routes and two trailheads in addition to those identified in the alternatives in this EIS. This would result in additional incremental reduction of about 125 acres of habitat (about 5 acres per mile of route) and would have some incremental increase in disturbance to wildlife.

Privately owned forestlands within the Forest boundary also provide wildlife habitat. Resource management by companies and private citizens depends on a number of factors (e.g., desired goals, market prices, development potential) making it difficult to predict future trends. Landowners may treat forests for lumber or to reduce fire hazards, which could alter wildlife habitat. Urban development is expected to continue on private lands, which could lead to more
roads and additional disturbance to wildlife. These activities may reduce suitable habitat wildlife, which could lead to some reduction in wildlife numbers in the Black Hills. This would likely increase the importance of habitat located on National Forest System land. The action alternatives are expected to offset some of the disturbance to wildlife from these activities on private lands by reducing motorized cross-country travel. The effect would be a net cumulative benefit from all action alternatives.

Management of national and state parks adjacent to the Forest would have an unknown effect on wildlife. National parks and monuments tend to manage for natural conditions, using fire and other processes, which would likely provide conditions under which hardwoods and other habitats evolved. Management in national and state parks would likely contribute to the conservation of wildlife species. The incremental effects of the action alternatives would be additional benefits to wildlife and their habitat resulting from closing areas to motorized cross-country travel.

Hiking and hunting within the Forest would also disturb wildlife to some extent. Humans laughing and yelling can cause disturbances at greater ranges than vehicles if animals become habituated to vehicle noise (Bowles 1995). The motorized impacts in alternative A would incrementally add to these effects by allowing motorized cross-country travel. The action alternatives are expected to incrementally reduce the cumulative impacts of motorized and nonmotorized recreation by closing areas to motorized cross-country travel.

Prairie dog control efforts on private lands may negatively impact associated species. None of the action alternatives proposes new prairie dog control techniques. None of the action alternatives would increase recreational shooting of prairie dogs because all prairie dog towns are currently accessible by existing roads. The new route in Alternatives B and C would not increase the available areas for recreational shooting. Suitable habitats for prairie dogs and associated species would likely persist on the Forest; however, their occurrence would continue to be limited in distribution and abundance. There would be no incremental effects to prairie dog control.

Within the Forest area, a sizeable portion of the riparian habitat is under private ownership. Urban development is expected to continue on private lands. Thus, while the Forest would take actions under all action alternatives that would generally benefit species that use riparian habitat in the Black Hills (close areas to unrestricted motorized cross-country travel, close roads), actions by others may have an offsetting effect.

Road construction, maintenance and right-of-way brushing can be expected to continue on other ownership lands. Road maintenance may increase in Alternative B and C because route mileage would increase. Alternatives B and C could incremental adverse impacts on undiscovered snail colonies from route maintenance. Alternatives C and D maintain or reduce route mileage, which would have a net incremental benefit to undiscovered snail colonies from route maintenance.

Non-native predatory fish have been identified as a risk factor to leopard frog persistence. Increased access could lead to an increase in unauthorized fish stocking. The action alternatives are expected to reduce net incremental impact because reducing the area open to motorized cross-country travel would reduce the opportunity for unauthorized fish stocking.

Alternatives B, C, D, and E would reduce the amount of area open to cross-country travel, thereby reducing some of the effects of past, present and reasonably foreseeable activities on National Forest System lands and offsetting some impacts from other ownership lands.
Incremental impacts from these alternatives are expected to be positive. Alternative D would reduce impacts the most by having the least amount of area open to cross-country travel and the least miles of motorized routes. This would be the case for all habitats discussed under direct and indirect effects.

Plants and Botanical Resources

Introduction

The Black Hills is recognized as a unique ecoregion among 64 terrestrial ecoregions in the continental United States (Hall et al. 2002), encompassing an area of 5,121 square miles (roughly 3 million acres). The varied topography, geology, and climate result in a corresponding variety in plant communities, which include diverse elements such as western ponderosa pine forests, grasslands of the Great Plains, and northern white spruce forests.

The Black Hills are also characterized by Midwest hardwood types, which are well represented by stands dominated by oak, ash, and elm. The Black Hills Community Inventory was the first systematic classification to describe the vegetation of the Black Hills by tiering to the standardized National Vegetation Classification (Marriott et al. 1999, Marriott and Faber-Langendoen 2000). Although further refinement of the Black Hills Community Inventory is needed, approximately 70 native plant communities have been described in the Black Hills ecoregion.

The Black Hills has floristic influences from four of the North American biomes: Cordilleran Forest, Grassland, Eastern Deciduous Forest, and Northern Coniferous Forest. While approximately 30 percent of the plant taxa in the Black Hills have their primary ranges to the west; midwestern, eastern, and northern taxa are also represented in the Black Hills flora (McIntosh 1931). The Forest designated eight Management Area 3.1 Botanical Areas in 1997 to help guide Forest management in conserving areas of high botanical diversity, primarily at the plant community level.

The majority of the plant species of concern (including Region 2 sensitive species and plant species of local concern) in the Black Hills are best described as boreal disjuncts (species that were isolated in the cooler, moister forests and riparian areas of the Black Hills as glaciers retreated and the Great Plains environment became established). The closest populations of these species to occurrences in the Black Hills are generally found in Canada and the northeastern United States.

Applicable Laws, Regulations, Policy, and Forest Plan Direction

Forest Plan Objectives, Standards, and Guidelines. The following Forest Plan objectives, standards, and guidelines provide direction for management of botanical resources, plant species and their habitat on the Black Hills National Forest. Due to the extensive number of objectives, standards and guidelines that are applicable to management of botanical resources, the details of each are not provided here. Please refer to the Wildlife specialist report or the Forest Plan for more information.
Objectives:

- 105: Prohibit motorized vehicle use in wetlands, wet meadows and riparian areas, except at specified locations and time of the year.
- 221: Conserve or enhance habitat for Region 2 sensitive species and species of local concern (SOLC). Monitoring will be conducted at a Forestwide level, not at the project level, and will be done for habitats or populations.
- 213: Maintain or enhance existing riparian area biodiversity, physical structure and size.
- 216: Manage to conserve or enhance the integrity of the following important botanical areas: a) Upper Sand Creek, b) Dugout Gulch, c) Bear/Beaver Gulches, d) Higgins Gulch, e) Englewood Springs, f) Black Fox Valley, g) North Fork Castle Creek, h) McIntosh Fen, and i) Spearfish Canyon.

Standards: 1301, 3106 (a-d), 3115, 3.1-2502, 3.1-2101, 3.1-9102, and 3.1-9104

Guidelines: 4102a and 9108

The Forest Plan tiers to the Forest Service Handbook 2509.25 - Watershed Conservation Practices Handbook. The following Management Measures are applicable to this analysis:

- Management Measure (3)
- Management Measure (6)
- Management Measure (9)
- Management Measure (10)
- Management Measure (11)

Methodology

The analysis of the effects of the proposed action and alternatives on plant species of concern (this includes threatened and endangered species, Region 2 sensitive species, and Black Hills National Forest plant species of local concern), special emphasis areas including M.A. 3.1 Botanical Areas, and wetland/fen areas was based on the best available science and data. Sources of information include attributes contained in GIS concerning relationships between roads and areas of concern (i.e., known plant occurrences, MA 3.1 Botanical Areas and known wetland/fen locations); botanical survey data collected over the years; and personal knowledge by resource specialists.

Indicators

Based on the issues identified in Chapter 1, the following indicators were used to measure the difference between the alternatives:

- Miles of routes through suitable plant habitat types
- Miles of motorized routes
- Acres open to motorized cross-country travel
- Routes that intersect known occurrences of Region 2 sensitive plant species, Black Hills National Forest plant species of local concern, Management Area 3.1 Botanical Areas, and/or wetland/fen areas
- Miles of new proposed roads and trails
- Number of proposed trailheads
Assumptions

The effects analysis was based on the following assumptions. Under any of the action alternatives:

- The public would observe and comply with the proposed transportation system. Specifically, motorized users would use only motorized routes designated and would refrain from using routes not designated.
- More areas open for motorized game retrieval would generally be expected to generate more use of these areas.
- Concentrating vehicle use to reduce effects on routes and areas not designated would increase use and possibly effects on routes and areas that are designated.
- Design criteria would be implemented and adequate funding would be provided for implementation, monitoring, and enforcement.
- Under the action alternatives, use would continue at current levels or increase over time on the designated system with the prohibition of cross-country motorized travel.
- Monitoring of plant occurrences would occur and any discovered impacts would be mitigated.

Design Criteria

As indicated in Table 45 (next page), 13 proposed routes intersect known occurrences of Region 2 sensitive plant species, plant species of local concern, M.A. 3.1 Botanical Areas, and/or fen areas.

Field Surveys

All botanical survey data on Forest were considered for this project. Forestwide survey specifically for Region 2 sensitive species has occurred since 2001, although the list of Region 2 sensitive species was revised in 2003, 2005, and 2007 (USDA Forest Service 2007c). The information gathered from these surveys provided information on distribution and habitat associations for species. A great deal of effort has also been put into botanical survey since 2000 to support design of management activities and projects that are protective of plant species of concern (including Region 2 sensitive plant species and Forest plant species of local concern).

The focus of these surveys was on identifying and mapping community types and determining the probability of an area to support target plant species in addition to locating and recording individual target plant species. These surveys required that 100 percent of highly probable sensitive plant habitat be surveyed along with at least 10 percent of the areas considered to be of lower probable habitat using varying degrees of survey intensities. Areas to survey were stratified using a combination of the Hillshade model, aerial photographs, topographic maps, local knowledge, and professional judgment during field reconnaissance. All botanical survey data is stored in the Forest Database and GIS (USDA Forest Service 2009h).

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14 Over the past several years, the Hillshade model has been field verified and has proven to be very helpful in predicting high probability target plant habitat in some parts of the Black Hills. Hillshade uses the length of time and intensity of the sun in relation to topography to predict shade and therefore moisture content across the landscape. It has been observed in some parts of the Black Hills that moisture is one factor driving the presence of high probability target plant habitat for many target plant species.
Table 45. Routes requiring design criteria, removal or rerouting to avoid impacts to special status plant species or areas

<table>
<thead>
<tr>
<th>Species</th>
<th>Occurrence</th>
<th>Route number</th>
<th>Alt. B</th>
<th>Alt. C</th>
<th>Alt. D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routes to be designed, removed, or rerouted to avoid impacts to Region 2 sensitive species</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearlodge Ranger Dist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Botrychium campestre</em></td>
<td>BOCA5-8</td>
<td>872.3</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Botrychium lineare</em></td>
<td>BOLI7-1</td>
<td>864.1 (outside Dugout Gulch Botanical Area)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Carex alopecoidea</em></td>
<td>CAAL8-12</td>
<td>U71002</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAAL8-31</td>
<td>841.1L</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Cyripedium parviflorum</em></td>
<td>CYPA19-10</td>
<td>863.2C</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Viburnum opulus var. americanum</em></td>
<td>VIOPA2-2, VIOPA2-16</td>
<td>864.1 (in Dugout Gulch Botanical Area)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>03DUG3A, 94S460B</td>
<td>U650017</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Northern Hills Ranger Dist.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Carex alopecoidea</em></td>
<td>CAAL8-22</td>
<td>U710024</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cyripedium parviflorum</em></td>
<td>950070B</td>
<td>U080045</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><em>Platanthera orbiculata</em></td>
<td>01G040</td>
<td>CZ0418</td>
<td>U010076</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLOR4-18</td>
<td>U010071</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Sanguinaria canadensis</em></td>
<td>SAC13-2</td>
<td>567.1F</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>SAC13-2</td>
<td>172.1A</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><em>Viburnum opulus var. americanum</em></td>
<td>VIOPA2-4</td>
<td>U080156</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>980010</td>
<td>CZ4846</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Mystic Ranger Dist.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cyripedium parviflorum</em></td>
<td>CYPA19-2</td>
<td>CZ1790</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Routes requiring design criteria to avoid impacts to Black Hills NF plant SOLC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearlodge Ranger Dist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gentiana affinis</em></td>
<td>07M008A</td>
<td>CZ4927</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hell Canyon Ranger Dist.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gentiana affinis</em></td>
<td>GEAF-4</td>
<td>HC9</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>07B040A</td>
<td>CZ3526</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>07B042</td>
<td>HC1</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Routes requiring design criteria to avoid impacts to M.A. 3.1 Botanical Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearlodge Ranger Dist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dugout Gulch Botanical Area</td>
<td>864.1C</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>864.1</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>864.1A</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Routes requiring design criteria to avoid impacts to fens</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mystic Ranger Dist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Fork Castle Creek fen</td>
<td>385.1A</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Newton Fork fen</td>
<td>304.1L</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

SOLC = species of local concern
Affected Environment

Most of the Forest roads have been surveyed for botanical resources; however, there are areas that have not had surveys completed within the last 10 years. These areas are relatively small (most less than a quarter of a mile long), and spread across the Forest with the highest concentration in the drier habitats of the Hell Canyon Ranger District. The roads in question already exist on the landscape and moving the roads to avoid areas not surveyed would cause more impact to the resource than leaving existing roads where they were. It was agreed that any new construction would require a qualified botanist to review the route prior to construction to ensure protection of any plants previously undocumented.

At this time, approximately 2 percent of the proposed roads in any alternative are not fully surveyed for botanical resources. Per Forest Service Manual direction (USDA Forest Service 2007c), presence of species of concern is assumed in areas where inventory methods are not feasible (due to time and seasonal constraints in this case) and the expected effects analyzed is based on that assumption. The evaluation of effects presented is based on survey of 79 to 83 percent of the proposed routes and 57 to 63 percent of the proposed trailheads.

Riparian, Wetland, and Fen Habitat

Wetlands (including riparian areas, wet meadows, fens, lakes, seeps, springs, etc.) provide nutrients and water to vegetation creating a unique habitat for several species of plants and animals.

Riparian habitat is defined as being located along the edges of streams. It is the transition zone between aquatic habitat and upland terrestrial habitat. There are about 76,900 acres of riparian habitat on the Forest (USDA Forest Service 2005a). Riparian areas include meadows, although not all riparian areas are classified as meadows. Much of the riparian habitat on the Forest is open to cross-country travel and approximately 2,050 miles of motorized routes are within 400 feet of riparian areas.

Wetlands (including riparian areas, fens, seeps, and springs) are habitat for many plant species of concern in the Black Hills (including Region 2 sensitive plant species and Forest plant species of local concern). In the arid western U.S., wetland areas make up a small proportion of the landscape but are critical to maintaining ecosystems on a large scale. An accurate estimate of location, quantity, and quality of wetlands at the Forest level is not currently available.

Fens are a rare kind of wetland that is dependent on an unfailing groundwater supply. The organic layer (peat) takes thousands of years to form and is considered an irreplaceable resource because the formation process is so slow (Cooper 1990). The Forest is currently inventorying fen resources in collaboration with experts from Colorado State University.

White Spruce Habitat

The Black Hills has one of the southern-most populations of white spruce (Picea glauca) in the United States. White spruce is the most shade-tolerant of the Black Hills tree species, enabling regeneration and growth under closed canopy conditions. The cool, moist environments of white spruce stands provide habitat diversity in a ponderosa pine-dominated landscape. Several Region 2 sensitive and Forest plant species of local concern are found in spruce communities. Spruce habitat currently occupies about 26,500 acres on the Forest (USDA Forest Service 2009g). Much of the spruce habitat is currently open to cross-country travel and approximately 100 miles of motorized routes are in spruce habitat.
Hardwood Habitat

Paper birch/hazel forest (*Betula papyrifera/Corylus cornuta* forest) occurs in drainage bottoms with and without streams and on northerly slopes. In the northern Black Hills where precipitation is higher and temperatures are cooler, paper birch/hazel forest extends to lower elevations. Stands are found in mesic (moist) habitat such as shaded, narrow gulches and north-facing slopes. Paper birch/hazel forest often transitions into bur oak/ironwood forest in Black Hills drainages at lower elevations. A number of boreal disjunct plant species, including some Region 2 sensitive and Forest plant species of local concern occur in stands of cool, moist paper birch/hazel forest and bur oak/ironwood forest. The current condition for hardwoods and associated motorized recreation is shown in Table 46.

Table 46. Current conditions for hardwoods and associated motorized recreation

<table>
<thead>
<tr>
<th>Hardwood cover type</th>
<th>Current acres on the Forest*</th>
<th>Miles of Currently open motorized routes within habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen</td>
<td>45,560</td>
<td>150</td>
</tr>
<tr>
<td>Bur oak</td>
<td>12,879</td>
<td>22</td>
</tr>
<tr>
<td>Paper birch</td>
<td>3,212</td>
<td>6</td>
</tr>
<tr>
<td>Other hardwoods</td>
<td>970</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>62,621</td>
<td>179</td>
</tr>
</tbody>
</table>

*(USDA Forest Service 2009g)*

Threatened and Endangered Species

No federally endangered, threatened, proposed or candidate species plant species are known to occur on the Forest (USDI Fish and Wildlife Service 2007a and USDA Forest Service 2009g)

Region 2 Sensitive Plant Species

Region 2 sensitive species are those plant and animal species identified by the Regional Forester for which population viability is currently of concern, as evidenced by significant current or predicted downward trends in population numbers or density, or by significant current or predicted downward trends in habitat capability that would reduce a species’ existing distribution (USDA Forest Service 2007c). The following is a list of plant species designated as sensitive species in Region 2 of the United States Forest Service (USDA Forest Service 2007c) that are known or likely to occur on the Black Hills National Forest.

**Prairie Moonwort** (*Botrychium campestre*) - *Botrychium campestre* ranges from the Great Lakes, across Iowa and Nebraska to eastern Colorado and northward to Alberta and Saskatchewan. Seven occurrences have been confirmed on Forest. Additional sites exist on private land and at Wind Cave National Park. Rangewide, *Botrychium campestre* occurs primarily on well-drained soils in nonforested habitats, occasionally under shrubs in or at the margins of these habitats. It is considered a grassland species associated with sandy grassland habitats in prairies, dunes, railroad sidings, and fields over limestone. *Botrychium campestre* is extremely inconspicuous and is visible, at most, a few weeks during the year. Black Hills sites occur on substrates with at least some component of limestone and are primarily in open grassland habitats, usually with high forb diversity and sometimes with a high percentage of bare and rocky soils. Little bluestem (*Schizachyrium scoparium*) and western snowberry (*Symphoricarpos occidentalis*) occur at the majority of sites. Black Hills occurrences range in elevation from 3,870 to 5,640 feet.
Slender Moonwort (*Botrychium lineare*) - *Botrychium lineare* is historically known from California and Utah and currently from Colorado northward to Washington, Montana, Alaska and the Yukon Territory. Five occurrences have been confirmed on Forest. Western populations of *Botrychium lineare* occur primarily on limestone substrates in a variety of habitats including heavily forested sites and grassy meadows, fen-like seeps and gravelly roadides. All sites occur in open conditions on limestone substrate. Two sites are located on old (estimated 15 to 25 years) native surface roadbeds. A third site is located adjacent to a gravel roadbed in open grassland. The fourth site, located on a large, open, north-facing, little bluestem dominated hillside, is not associated with any road development. The fifth site, also not associated with any road development, is located in an open, forb-dominated area on the bank of a small perennial stream. Elsewhere in its range, this species has often been documented in areas of road disturbances and other human and natural disturbances. Black Hills occurrences range in elevation from 4,200 feet (in Wind Cave National Park) to 6,160 feet.

Foxtail Sedge (*Carex alopecoidea*) - *Carex alopecoidea* is widely distributed from eastern to central Canada, the northeastern United States, the Great Lakes region south to Tennessee, and west to North Dakota and the Black Hills of South Dakota and Wyoming. Rangewide, habitat includes seasonally saturated meadows and openings in alluvial woods and stream banks, usually over calcareous substrates. In the Black Hills, *Carex alopecoidea* is currently known from two general areas: The Cement Ridge area along the South Dakota–Wyoming border, and in the Bear Lodge Mountains in Wyoming. There are approximately 30 occurrences on Forest. *Carex alopecoidea* is primarily found along open, perennial streams, often with old beaver dams or ponds. Occurrences have also been found in spruce-dominated riparian areas and in drainages with dense shrub cover. Plants are primarily documented in the transitional areas between saturated soils and the more mesic upland areas. Black Hills occurrences range in elevation from 3,840 to 5,900 feet.

Lesser Yellow Lady’s Slipper (*Cypripedium parviflorum*) is primarily circumboreal in distribution and rangewide is generally found in shady deciduous and mixed woodlands near streams, shrublands, swamps, bogs, and wet forests. There are approximately 50 occurrences on Forest. Habitat in the Black Hills includes streambanks under both spruce and deciduous overstories, moist cliffs (usually north facing), and moist areas/seeps under white spruce or mixed conifer forest. Occasionally, *Cypripedium parviflorum* is found on upper mesic forest slopes. Black Hills occurrences range in elevation from 3,500 to 6,500 feet.

Stream Orchid (*Epipactis gigantean*) occurs in western North America from British Colombia south to California, and east to Texas. In the colder northern portions of its range, *E. gigantea* may be confined to warm springs habitats (Hornbeck et al. 2003). In South Dakota, it is only known from one occurrence on private and Forest land along Cascade Creek in Fall River County, South Dakota. Rangewide, *Epipactis gigantea* is known from wet meadows, seepage slopes, and the base of cliffs along streams and rivers. In South Dakota and in the Black Hills, it is known only along Cascade Creek at 3,400 feet. It is likely dependent upon the constant moisture and warmth provided by the springs. No other warm springs are known on Forest.

Trailing Clubmoss (*Lycopodium complanatum*) is circumboreal and common across northern latitudes but disjunct or sparse at the southern limits of the species' distribution, such as in the Black Hills. Rangewide, *L. complanatum* is restricted to moist (not saturated) microhabitats within boreal plant communities in ravines, steep drainages, and on moist streamside benches. These occurrences are located in the northern Black Hills on shaded, north-facing, White spruce
dominated slopes often with paper birch or quaking aspen (*Populus tremuloides*). Black Hills occurrences range in elevation from 4,960 to 6,340 feet.

**Lesser Roundleaved Orchid** (*Platanthera orbiculata*) is endemic to the boreal regions of northern North America, with a more southern distribution in the eastern United States. There are approximately 30 occurrences known in the Forest. Black Hills occurrences are found primarily on shady, north-facing slopes in paper birch/hazel or white spruce forests on moist, rich, humus soil. Occurrences in the Black Hills range in elevation from 4,350 to 6,150 feet.

**Sage Willow** (*Salix candida*) occurs from eastern Canada to Alaska and across the northern United States. There is one known occurrence in the Black Hills in McIntosh Fen Botanical Area. There is also a historical collection for the general area “from Loring Siding to Minnekahta” (unknown if the historical collection is from private or Forest Service land). Rangewide, *S. candida* is an obligate wetland species. The one verified extant occurrence on the Black Hills is at 6,000 feet. Habitat includes cold seep or spring-fed saturated substrates produced by unusual hydrologic conditions where sedimentary layers of the Limestone Plateau intersect impermeable schist or shale of the crystalline Central Core. The plant community type associated with the occurrence is wet meadow and fen.

**Autumn Willow** (*Salix serissima*) occurs primarily in northern boreal bogs and fens throughout its range and is a disjunct relic in the Black Hills. There are four known occurrences on Forest. Rangewide, *S. serissima* occurs in fens and wet meadows often dominated by *Carex* species and other *Salix* species. In the Black Hills, *S. serissima* occurs in the same unique hydrologic conditions as *Salix candida*: wet meadows and fens on cold seep or spring-fed saturated substrates produced by unusual hydrologic conditions where sedimentary layers of the Limestone Plateau intersect impermeable schist or shale of the crystalline Central Core. Black Hills occurrences range in elevation from 5,620 to 6,000 feet.

**Bloodroot** (*Sanguinaria canadensis*) occurs in moist forests from Nova Scotia south to Florida and west to Manitoba and Kansas. The currently known range in the Black Hills is limited to the northeast portion of the Black Hills, from the east side of Spearfish Canyon to west of Tilford. There are approximately 20 occurrences in the Black Hills. Rangewide, *S. canadensis* occurs in moist forests. In the Black Hills, it occupies floodplains, forested terraces, drainage bottoms, and north-facing footslopes in open, rich hardwood areas usually comprised of paper birch/hazel forest or bur oak/ironwood forest (*Quercus macrocarpa/Ostrya virginiana* forest). Black Hills occurrences range in elevation from 3,940 to 5,000 feet.

**Highbush Cranberry** (*Viburnum opulus var. americanum*) is widely distributed across north central North America. There are approximately 30 occurrences in the Black Hills. *V. opulus var. americanum* occurs in the Black Hills at mid-elevations in wet, shaded habitats along streams, springs and canyon bottoms. Most of the documented occurrences are in drainage bottoms or low slopes with moist soil conditions with partial shading. Currently known sites are primarily associated with paper birch and ironwood communities, with or without white spruce or quaking aspen. A few sites are found in ponderosa pine/bur oak Forest (*Pinus ponderosa/Quercus macrocarpa* Forest). Paper birch is present at almost all currently known sites. Black Hills occurrences range in elevation from 3,800 to 5,700 feet.

**Selkirk’s Violet** (*Viola selkirki*) is a circumboreal herbaceous species and rangewide it is locally abundant in specialized microsites in coniferous and deciduous forests. There are thirteen known occurrences on Forest with additional occurrences documented from Custer State Park and Mt. Rushmore National Monument. All currently known occurrences on National Forest
System lands are located within the Black Elk Wilderness and/or the Norbeck Wildlife Preserve. Black Hills occurrences are restricted to a concentrated area (about 36 square miles) of the central core on igneous or metamorphic bedrock. Microhabitats are often moist, cold air drainages, in shaded to open areas, and often in the vicinity of granitic rock outcrops. White spruce is usually the dominant overstory with a variable understory. Black Hills occurrences range in elevation from 5,240 to 7,000 feet.

Plant Species of Local Concern

Species of local concern are plant, fish, and wildlife species (including subspecies or varieties) that do not meet the criteria for sensitive status. These could include species with declining trends in only a portion of Region 2, or those that are important components of diversity in a local area. The local area is defined as National Forest System lands within the Forest (FSM 2620.5 Black Hills Supplement 2600-2005-1). All Forest plant species of local concern were considered in this analysis. The following is a list of plant species of local concern on the Black Hills National Forest.

**Southern Maidenhair Fern (Adiantum capillus-veneris)** occurs primarily in tropical and warm temperate regions of the world. In North America, it is mainly distributed across the southern third of the U.S. with disjunct northern occurrences (such as the Black Hills) restricted to moist, calcareous substrates closely associated with warm or hot springs. The single documented Black Hills occurrence is associated with warm springs at Cascade Creek (elevation 3,150-3,450 feet) in the southwestern Black Hills (Fall River County, South Dakota). Plants at Cascade Creek are found in moist to saturated areas on the streambank and in depressions and old channels on the adjacent floodplain. No other warm springs are known on Forest Service-administered land in the Black Hills.

**Leathery Grapefern (Botrychium multifidum)** is found across Canada and along the coast of Alaska, and in Greenland, Europe, and northwest Asia. It is found across the northern tier of states in the U.S.; south to California, Nevada, and Utah in the west; and south to Virginia in the east. Rangewide, *B. multifidum* grows in moist, open or shaded areas, including old pastures, meadows, woodland margins, riverbanks and bottom lands. Eight known occurrences on Forest lands. Most of the know locations are in mossy, mesic sites dominated by white spruce or mixed spruce-pine along small, perennial streams. Plants occur in open to shady areas, often in or near old stream channels where water is no longer flowing on a permanent basis. Seven of the eight occurrences are located in a concentrated area (ca. 16 square miles) of the central core on igneous or metamorphic bedrock, within the Black Elk Wilderness and/or Norbeck Wildlife Preserve. One exception is a single site in the Bear Lodge Mountains (WY) in a steep narrow drainage with paper birch/hazelnut community on sandstone. Plants at the Bear Lodge site are found on moss-covered sandstone boulders and streambank berms near occasional pools of water. Plants have also been found in duff under spruce, in grassy margins along streams, on sand/gravel bars along streams, and in mesic soils near hiking trails. Black Hills occurrences range in elevation from 4,620 to 6,450 feet.

**Southwestern Showy Sedge (Carex bella)** has its primary range in the southwest U.S. and Mexico. Rangewide this species typically inhabits streambanks, meadows and moist woods or open slopes, frequently above timberline. Black Hills occurrences (8 reported; 3 on Forest lands and 5 in Custer State Park) are known from high elevations of the central granitic core in cool, moist, shaded white spruce forests often with paper birch and usually associated with large granite rock outcrops. The three occurrences on Forest are in a one square mile area within the Black Elk Wilderness. Black Hills occurrences range in elevation from 6,600 to 7,100 feet.
Beaked Spikerush (*Eleocharis rostellata*) occurs in coastal salt marshes and in inland saline, alkaline, or strongly calcareous wetland habitats (e.g., around hot springs). The single documented Black Hills occurrence is on calcareous substrates in the year-round flows of warm spring water of Cascade Creek in the southwestern Black Hills, at an elevation of 3,150 to 3,450 feet.

Pleated Gentian (*Gentiana affinis*) is known from western North America, primarily in moist meadows in mountainous or hilly areas. Approximately 30 occurrences are known on Forest, primarily from botanical surveys in 2006 and 2007. Forest occurrences are reported primarily from the central to western Black Hills in a wide range of habitats. Black Hills occurrences have been documented in moist areas near stream margins, springs and fens, montane grasslands, vegetated drainages with cobbles and conifer dominated slopes. Elevation of occurrences range from 4,960 to 6,620 feet. Occurrences are known in McIntosh Fen and Black Fox Botanical Areas.

Broadlipped Twayblade (*Listera convallarioides*) occurs on rich humus in open woods and boggy meadows and prefers cool soil. It is considered a facultative wetland species in South Dakota and eastern Wyoming and has a high tolerance for anaerobic conditions. There are four known occurrences on Forest lands, all of which are restricted to a 20 square mile area in the northern Black Hills. Elevations range from 5,120 to 6,080 feet. Individuals are growing in saturated soil conditions adjacent to creeks and springs, in white spruce dominated forests. One occurrence is in Englewood Springs Botanical Area.

Stiff Clubmoss (*Lycopodium annotinum*) is widely distributed in boreal habitats of North America. Elsewhere in its range, it occurs in swampy or moist coniferous forests, mountain forests, and exposed grassy or rocky sites. There are 10 known occurrences on Forest. Sites occur primarily in the northern Black Hills and are associated with moist microhabitats within remnant boreal white spruce and paper birch/hazelnut communities. Three occurrences are co-located with *Lycopodium complanatum* (Region 2 sensitive species) and two are in the Upper Sand Creek Botanical Area. Black Hills occurrences range in elevation from 5,100 to 6,300 feet.

Alpine Mountainsorrel (*Oxyria digyna*) is widely distributed in arctic and alpine regions of North America and across the western U.S. Associated habitats include rocky areas in mountains, especially near streams, and moist ground in alpine or subalpine areas. The three known occurrences on Forest lands are restricted to the central granitic core of the Black Hills, in a concise area (ca. two square miles) within the Black Elk Wilderness. One additional occurrence is reported from Custer State Park. Plants occur on coarse-textured soils near steep, granite rock outcrops often in rocky gullies. Plants co-occur with *Carex bella* (species of local concern) and/or *Viola selkirkii* (Region 2 sensitive species) at some sites. Black Hills occurrences range in elevation from 6,000 to 7,240 feet.

Arrowleaf Sweet Coltsfoot (*Petasites sagittatus*) is known from Labrador to Alaska, south to Wisconsin, Minnesota, South Dakota (Black Hills), Colorado, Idaho, and Washington. There are 15 fairly recent reports (1999-2007) of occurrences on Forest. Rangewide, *P. sagittatus* is associated with cold, wet, marshy conditions and is a facultative wetland species. Black Hills occurrences are reported from moist to saturated wetland areas along drainages and seeps in conditions ranging from full sun to deep shade under spruce (often with birch or aspen). One occurrence is in Black Fox Botanical Area. Black Hills occurrences range in elevation from 5,120 to 6,600 feet.
Northern Hollyfern (*Polystichum lonchitis*) is a circumboreal, subalpine forest fern that occurs in rock crevices and at the base of boulders, mostly in boreal and subalpine coniferous forests or alpine regions. Twenty known occurrences are reported from Forest lands in the northern Black Hills and Bear Lodge Mountain. *P. lonchitis* is disjunct in the Black Hills from western Wyoming. Black Hills occurrences are associated with moist, often mossy, shaded to partially shaded, northerly-facing slopes, ravines and gulches on primarily limestone substrates. Dominant overstory is birch/hazelnut, sometimes with spruce, ironwood or aspen and often with diverse shrub and forb components. Black Hills occurrences range in elevation from 4,280 to 6,040 feet.

Shining Willow (*Salix lucida* ssp. *caudate*) is widely distributed in the western and northern U.S. and Canada. It is at the eastern limit of its range in South Dakota. Rangewide, *S. lucida* ssp. *caudata* is commonly associated with streambanks, shores, wet meadows, and seeps. The taxon is considered a facultative wetland plant in South Dakota and eastern Wyoming. Two Forest occurrences were confirmed in 2006—one along a small creek in the Bear Lodge Mountains at 4,800 feet (1 original plant and 5 planted from cuttings), and the other is in the northern Black Hills at 5,000 feet (2 plants). A third location documented by confirmed voucher, has not yet been relocated, and a fourth location was planted from cuttings in 2007 (19 plants).

Management Area 3.1 Botanical Areas

The Forest designated eight areas as Management Area 3.1 Botanical Areas in the 1997 Forest Plan: Black Fox, Bear/Beaver Gulches, Dugout Gulch, Englewood Springs, Higgins Gulch, McIntosh Fen, North Fork Castle Creek, and Upper Sand Creek. These areas are comprised of plant communities, associations, and individual plant species of particular quality and interest. M.A. 3.1 Botanical Areas comprise about 1 percent of the Forest and the focus of management is to maintain their botanical features and support public use for educational purposes. M.A. 3.1 Botanical Areas provide habitat for Region 2 sensitive species, Forest plant species of local concern, and other elements of biological diversity. They also provide scenic and other public property values.

**Environmental Effects Analysis**

**Direct and Indirect Effects Common to All Region 2 Sensitive and Forest Plant Species of Local Concern**

Impacts and risks to species on the Forest were estimated based on the best available science and data. Species persistence for Region 2 sensitive plant species and Forest plant species of local concern was evaluated in the Phase II Forest Plan Amendment. Each alternative in this project was evaluated as to whether it is consistent with Forest Plan standards and guidelines applicable to each species.

The construction, use, and maintenance of roads and trails generally disturb plant communities, including Region 2 sensitive species and Forest plant species of local concern. The direct impacts of roads and trails (including trailheads) are possible loss of plant individuals, plant occurrences, and plant communities. Indirect impacts to plant species and plant communities include:
Indirect impacts to plant species and plant communities include:

1. increased introduction of invasive species leading to increased competition for resources and increased potential for impact from invasive species control (i.e. spray from herbicide application)

2. alteration of hydrology patterns and degraded water quality

3. alteration of habitat conditions (such as decrease in canopy cover or change in successional stage, increased soil compaction, accelerated erosion, altered soil microbial/mycorrhizal activity, and nutrient availability)

4. increased access for disturbance vectors (including humans and animals) which lead to increased disturbances such as trampling, cropping, and collecting

5. disruption of pollinators

6. increased dust (causes increased sediment, also plugs stomata (gas exchange structures) on plant leaves)

7. an increase in plant numbers (in some cases) adjacent to roads and trails from a nearby occurrence, mainly due to increased water availability from concentrated runoff

8. habitat fragmentation for some species from roads, which can fragment habitat into smaller patches and increase the ratio of edge to forest interior areas.

Alternative C would have the most miles of motorized routes that could disturb native plant species and plant communities (including Region 2 sensitive plant species and Forest plant species of local concern), followed by Alternatives B, A, E and D, respectively. The impact of the increased number of routes in Alternatives B and C would likely offset the impact of decreasing disturbance to native plant communities by closing areas to motorized cross-country travel. Still, the net impact is expected to be small because of the large area closed to cross-country travel. The miles of routes in Alternative E would remain at the existing level.

Management protective of suitable habitat (such as wetlands, paper birch, and spruce communities) and natural processes within them will also provide protection for native plant species and communities. Target plants are not always observed when present, and many times may simply not be present due to the seasonality of the surveys. Some reasons are that plants may not be in prime growth stage for identification, they may be in dormancy, or they may be difficult to see in surrounding vegetation.

The action alternatives would not allow unrestricted motorized cross-country travel. These alternatives are expected to have a net beneficial effect from closing much of the Forest to motorized cross-country travel. Disturbances from cross-country travel are expected to be reduced and there would be a beneficial effect in reducing invasive weed spread and disturbance-created seedbeds.

All of the action alternatives are expected to have less chance of direct and indirect effects to native plant species and communities (including sensitive plants) than Alternative A because they have less area open to cross-country travel. Of the action alternatives, Alternative C is expected to have the most effects on native plant species and communities (including Region 2 sensitive plant species and Forest plant species of local concern) followed by Alternatives B, E and D, respectively, based on the miles of routes open to motorized travel (see Figure 11).
Motorized game retrieval can affect native plant species and communities through disturbance. The effects of motorized game retrieval are expected to be minor. Most motorized game retrieval involves big game in the fall, which is outside the majority of plant species’ reproductive seasons. Of the action alternatives, Alternative C would allow motorized game retrieval on the most acres followed by Alternative B, D, and E respectively (see Figure 12). Alternative B would reduce impacts from existing conditions because it only allows game retrieval for elk (which has far fewer hunters than would need to retrieve game than for elk and deer) and in a reduced area. Alternative C would reduce impacts from existing conditions because it has less acreage open to motorized game retrieval, but may have more impacts than Alternative B in the retrieval area because it allows retrieval of elk and deer. Alternatives D and E are expected to have no impacts from game retrieval because motorized game retrieval is not allowed.

Motorized dispersed camping can also disturb native plant species and communities. The comparative levels of effects of motorized dispersed camping are estimated using the acreage open to motorized dispersed camping. Of the action alternatives, Alternative C has the most acreage open to motorized dispersed camping, followed by Alternatives B, D and E (see Figure 13).

Motorized trailheads concentrate use in specific areas increasing the impact to plant communities along the edges of these areas. The comparative levels of effects of motorized trailheads are estimated using the number of trailheads. Of the action alternatives, Alternative C poses the most impact to plant communities from motorized trailheads with 34, followed by Alternative B (31), D (23), and E (7) (see Table 7).

Overall, the action alternatives are expected to have less of a net impact on native plant species and communities (including Region 2 sensitive plant species and Forest plant species of local concern) than Alternative A because of the continuation of Forestwide cross-country motorized travel proposed in Alternative A. Alternative D is expected to have the least impact on native plant species and communities because it has the fewest motorized routes and the least area open to motorized cross-country travel, followed by Alternatives E, B, and C.

**Direct and Indirect Effects Common to Region 2 Sensitive and Forest Plant Species of Local Concern with a Habitat Preference of Wetlands, Riparian Areas, Fens and Seeps**

Plant species in wetlands, riparian areas, and seeps are likely to be impacted by changes in hydrology and water quality. Roads and trails in the water influence zone in wetlands can cause increased erosion, which can modify streambank geometry and cause an increase in overland flow. Increases in overland flow will have the net effect of maximizing runoff and minimizing infiltration. While the increased runoff results in overall greater water yield, the storm water is delivered relatively quickly through surface processes rather than through sustained subsurface flows, which are often critical to wetland hydrology (Moore et al. 2006).

Changing normal wetland hydrology (e.g., decreasing site moisture in areas) could impact plants by reducing water available for necessary biological functions. Degradation of water quality in infiltrating surface and groundwater may also affect wetland plant species by altering normal available nutrients. There may also be local changes in the natural soil balance (chemical make-up, nutrients, microbes, etc.) which can impact plants in the area. Roads and trails can lead to soil compaction, especially in areas with moist to saturated soils. Soil compaction can impact
plant occurrences by changing the regular water infiltration through the soil and decreasing oxygen available to plant roots and other essential soil organisms.

More than half the plant species of concern in the Black Hills (Region 2 sensitive and Forest plant species of local concern) are associated with wetland and riparian areas. Consequently, management protective of general riparian and wetland habitat and processes will also provide protection for native plant species and communities (including Region 2 sensitive plant species and Forest plant species of local concern).

Effects to the riparian habitat and associated species are mitigated through a wide variety of standards and guidelines, watershed conservation practices, and state best management practices that protect riparian areas. Forestwide standards and guidelines protect riparian areas, water influence zones, and wetlands. Standard 3106 states that riparian areas or wetlands where populations of Region 2 sensitive species and plant species of local concern are located are to be avoided during ground-disturbing activities. Long-term riparian ecosystem health and ecological function are provided for by not allowing actions that would be detrimental to riparian-ecosystem condition (standards 1301, 1302). Objective 105 strives to prohibit motorized vehicles in wetlands, wet meadows, and riparian areas. Standard 1113 minimizes sediment discharge into streams, lakes, and wetlands during road construction and other site disturbances. Guideline 9107 prohibits land vehicles from entering perennial steams where resource damage would occur. Guideline 9108 restricts vehicle traffic to roads and trails in riparian areas.

Alternative A is the only alternative that would allow unrestricted motorized cross-country travel. This could lead to more user-created routes that could further affect riparian vegetation. The effects of motorized game retrieval and dispersed camping on riparian habitat are expected to be similar to those discussed above for the Forest in general. The effects of disturbance to riparian habitat is based on the miles of motorized routes in riparian habitat and the acres of riparian habitat open to motorized cross-country travel (see Figure 17). Disturbance impacts are expected to continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and impact riparian habitat.

In Alternatives B, C and D, Route 385.1A is proposed to be changed from a closed road to an open road. This route intersects South Fork Castle Creek Fen. If this road is opened as proposed, irreversible impacts could occur to the identified fen. This would be in conflict with Forest Service Handbook 2509.25, 12.4 Management Measure (6), Design Criteria 1e, which states “Avoid any loss of rare wetlands such as fens and springs. NOTE: These wetlands cannot be replaced in-kind”.

Two segments of Route 304.1L are proposed to be changed from a road to a trail in the Bengal fen and riparian area. The effects to the fen and riparian area are expected to be similar to what is currently occurring on the existing road. There may be an incremental increase in impacts if the use increases in the area.

None of the action alternatives would allow motorized cross-country travel, except as noted for Alternatives B and C for motorized game retrieval and dispersed camping. This is expected to reduce impacts on riparian habitat by controlling the number and location of disturbances.

Alternative C has the most motorized routes in riparian habitat, followed by Alternatives B, A, E, and D, respectively; therefore the amount of riparian habitat impacted is the greatest in Alternative C, followed by Alternatives B, A, E, and D respectively.
Direct and Indirect Effects Common to Region 2 Sensitive and Forest Plant Species of Local Concern with a Habitat Preference of White Spruce Plant Communities

Under Alternative A, motorized cross-country travel would be expected to continue in much of the spruce habitat. Disturbance would continue to occur in areas where motorized cross-country travel occurs. Disturbance impacts are expected to continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and impact native plant species in spruce communities.

None of the action alternatives would allow motorized cross-country travel, except as noted for Alternatives B and C for motorized game retrieval and dispersed camping. This is expected to reduce impacts on white spruce communities by controlling the number and location of disturbances.

Alternatives A, B, and E have the most motorized routes in spruce habitat, followed by Alternatives C and D, respectively; therefore the number of white spruce communities impacted is the greatest in Alternatives A, B, and E followed by Alternatives C and D respectively.

Direct and Indirect Effects Common to Region 2 Sensitive and Forest Plant Species of Local Concern with a Habitat Preference of Hardwood Plant Communities

Under Alternative A, motorized cross-country travel would be expected to continue in much of the paper birch/hazel forest and bur oak/ironwood forest. Disturbance would continue to occur in areas where motorized cross-country travel occurs. Disturbance impacts are expected to continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue being created and to impact native plant species in spruce communities.

None of the action alternatives would allow motorized cross-country travel, except as noted for Alternatives B and C for motorized game retrieval and dispersed camping. This is expected to reduce impacts on paper birch/hazel forest and bur oak/ironwood forest communities by controlling the number and location of disturbances.

Alternative C has the most motorized routes in hardwood plant communities, followed by Alternatives B, A, E, and D, respectively (see Figure 16); therefore the amount of paper birch/hazel forest and bur oak/ironwood forest impacted is the greatest in Alternative C followed by Alternatives B, A, E, and D respectively.

Direct and Indirect Effects to Region 2 Sensitive Plant Species

Effects to Region 2 sensitive plant species are discussed in detail in the accompanying Biological Evaluation. The following is a summary of the analysis of effects for each species.

*Epipactis gigantea* (stream orchid) occurs in one location on Black Hills National Forest land, along Cascade Creek. A determination of “no impact” was made for *Epipactis gigantea* in the biological evaluation for this project because 1) no routes are proposed on Forest land along Cascade Creek, 2) undiscovered occurrences are highly unlikely because of habitat requirements, and 3) no effects from motorized cross-country travel, motorized game retrieval, or motorized dispersed camping are proposed.
**Lycopodium complanatum** (trailing clubmoss), *Salix candida* (sage willow) *Salix serissima* (autumn willow) and *Viola selkirkii* (Selkirk’s violet)

All known occurrences of these four Region 2 sensitive species are avoided by the proposed routes. The direct and indirect effects for these four species are discussed here simultaneously.

Direct mortality from vehicles is possible for all alternatives because undiscovered occurrences could be impacted in all alternatives. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered occurrences. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on these four species are expected to be similar to the general discussions on riparian/wetland, white spruce and paper birch/hazel forest previously.

**Site-specific Analysis** - No proposed routes intersect known occurrences or surveyed suitable habitat for these four species in any of the alternatives.

**All Alternatives** - Botanical surveys are not 100 percent accurate, so it is possible any alternative may impact individuals not observed during survey. However, the number would be small and likely to neither result in a loss of viability across the Forest nor cause a trend toward federal listing.

The effects analysis assumes that monitoring of occurrences will occur and that any discovered impacts will be mitigated.

The Forest Plan Phase II Amendment determined these species are likely to persist on the Forest (USDA Forest Service 2005a). This project will not change any of the standards, guidelines or objectives that provide for these four species or the riparian/wetland, white spruce and paper birch/hazel forest. Riparian/wetland communities, white spruce communities, and paper birch/hazel forest would be maintained in all alternatives.

These four species, *Lycopodium complanatum, Salix candida, Salix serissima* and *Viola selkirkii*, have a determination of “may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing” for all alternatives. This determination is based on the following assumptions:

- Known occurrences would not be impacted by this project.
- There is a possibility unknown occurrences may occur in areas not surveyed; routes in these areas would be mitigated as occurrences are found to avoid impacts.

Alternative A would maintain current conditions. Alternatives B, C, D, and E are expected to have less of a net impact on *Lycopodium complanatum, Salix candida, Salix serissima* and *Viola selkirkii* by closing areas to cross-country travel.

**Botrychium campestre** (prairie moonwort), **Botrychium lineare** (slender moonwort), **Carex alopecoidea** (foxtail sedge), **Cypripedium parviflorum** (lesser yellow lady’s slipper), **Platanthera orbiculata** (lesser roundleaved orchid), **Sanguinaria canadensis** (bloodroot), and **Viburnum opulus** var. **americanum** (highbush cranberry)

Known occurrences of these seven Region 2 sensitive species are intersected by the proposed routes. The direct and indirect effects for these seven species will be discussed here simultaneously.
Direct mortality from vehicles is possible for all alternatives because undiscovered occurrences could be impacted in all alternatives. The miles of motorized routes on the Forest and in suitable habitat and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered occurrences. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on these seven species are expected to be similar to the general discussions on riparian/wetland, white spruce and paper birch/hazel forest above.

**Site-specific Analysis:**

**Alternative A**

With Alternative A, occurrences of Region 2 sensitive species and species of local concern located outside of designated closure areas have the potential to be impacted by motorized vehicles because cross-country use of motorized vehicles would continue.

**Alternative B**

- Route 841.1L intersects a known occurrence of *Carex alopecoidea*
- Route 864.1 intersects a known occurrence of *Botrychium lineare* and 2 known occurrences of *Viburnum opulus* var. *americanum*
- Route U71002 intersects a known occurrence of *Carex alopecoidea*
- Routes 863.2C, U080045, and CZ17901 intersect 3 known occurrences of *Cypripedium parviflorum*
- Routes U650017, U0801056 and CZ4846 intersect 4 known occurrences of *Viburnum opulus* var. *americanum*
- Routes CZ0418, U010076, and U010071 intersect 2 known occurrences of *Platanthera orbiculata*
- Routes 567.1F and 172.1A intersect a known occurrence of *Sanguinaria canadensis*

**Alternative C**

- Routes 841.1L and U710024 intersect 2 known occurrence of *Carex alopecoidea*
- Route 872.3 intersects a known occurrence of *Botrychium campestre*
- Route 864.1 intersects a known occurrence of *Botrychium lineare* and 2 known occurrences of *Viburnum opulus* var. *americanum*
- Routes U650017, U0801056 and CZ4846 intersect 4 known occurrences of *Viburnum opulus* var. *americanum*
- Routes 863.2C, U080045, and CZ17901 intersect 3 known occurrences of *Cypripedium parviflorum*
- Routes CZ0418, U010076, and U010071 intersect 2 known occurrences of *Platanthera orbiculata*
- Routes 567.1F and 172.1A intersect a known occurrence of *Sanguinaria canadensis*

**Alternative D**

- Routes U080045, and CZ17901 intersect 3 known occurrences of *Cypripedium parviflorum*
- Routes 567.1F and 172.1A intersect a known occurrence of *Sanguinaria canadensis*
All Alternatives - Botanical surveys are not 100 percent accurate, so any alternative may impact individuals not observed during survey. However, the number would be small and likely to neither result in a loss of viability across the Forest nor cause a trend toward federal listing if known occurrences are not impacted. The effects analysis assumes that monitoring of occurrences will occur and that any discovered impacts will be mitigated.

The Forest Plan Phase II Amendment determined these species are likely to persist on the Forest, if known occurrences persist (USDA Forest Service 2005a). If the prescribed design criteria are applied to the routes identified, this project will be consistent with the Forest Plan.

Based on the above analysis (detailed in the accompanying Biological Evaluation) a determination of “may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing” is made for these seven species for all alternatives. This determination is based on the following assumptions:

Table 47. Species potentially impacted and routes that would be designed, rerouted, or removed to avoid or mitigate impacts to known occurrences in the identified alternatives

<table>
<thead>
<tr>
<th>Species</th>
<th>Occurrence</th>
<th>Route number</th>
<th>Alt. B</th>
<th>Alt. C</th>
<th>Alt. D</th>
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</tbody>
</table>

Unknown populations of Region 2 sensitive plant species and Black Hills plant species of local concern may occur on the Forest. If new populations of Region 2 sensitive species or Black Hills plant species of local concern are discovered in the vicinity of a proposed route prior to implementation or construction of new routes, design criteria would be applied to mitigate or avoid impacts. Routes constructed outside of those considered in this document would require further survey and analysis. The effects analysis assumes that monitoring of occurrences would occur and that any discovered impacts would be mitigated.
Alternative A would maintain current conditions. Alternatives B, C, D, and E are expected to have less of a net impact on Botrychium campestre, Botrychium lineare, Carex alopecoidea, Cypripedium parviflorum, Platanthera orbiculata, Sanguinaria canadensis, Viburnum opulus var. americanum, by closing areas to cross-country travel.

Direct and Indirect Effects to Black Hills Plant Species of Local Concern

Effects to Forest plant species of local concern are discussed in detail in the Botanical Resources Report. The following is a summary of the analysis of effects for each species.

*Adiantum capillus-veneris* (southern maidenhair fern) and *Eleocharis rostellata* (beaked spikerush) occur in one location on Black Hills National Forest land, along Cascade Creek. These species would not be impacted by this project because 1) no routes are proposed on Forest land along Cascade Creek, 2) undiscovered occurrences are highly unlikely because of habitat requirements, and 3) no effects from motorized cross-country travel, motorized game retrieval, or motorized dispersed camping are proposed.

*Botrychium multifidum* (leathery grapefern), *Carex bella* (southwestern showy sedge), *Listera convallarioides* (broadlipped twayblade orchid), *Lycopodium annotinum* (stiff clubmoss), *Oxyria digyna* (alpine mountainsorrel), *Petasites sagittatus* (arrowleaf sweet coltsfoot), *Polystichum lonchitis* (northern hollyfern), *Salix lucida* ssp. *caudata* (shining willow) are avoided by the proposed routes. The direct and indirect effects for these eight species will be discussed here simultaneously.

Direct mortality from vehicles is possible for all alternatives because undiscovered occurrences could be impacted in all alternatives. The miles of motorized routes on the Forest and in suitable habitat (riparian, white spruce, or paper birch/hazel communities) and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered occurrences. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on these eight species are expected to be similar to the general discussions on riparian, white spruce, and paper birch/hazel forest above.

**Site-specific Analysis** - In areas with botanical survey, there are no proposed routes that intersect known occurrences or surveyed suitable habitat for these eight species in any alternatives.

**All Alternatives** - Botanical surveys are not 100 percent accurate, so it is possible that any alternative may impact individuals not observed during survey. However, the number would be small and not likely to impact persistence on the Forest, if known occurrences on the Forest are not impacted.

The Forest Plan Phase II Amendment determined these species are likely to persist on the Forest (USDA Forest Service 2005a). This project is consistent with the Forest Plan for these species and/or their riparian/wetland, white spruce, and paper birch/hazel forest habitat. Riparian/wetland areas, white spruce communities, and paper birch/hazel forest would be maintained in all alternatives.

*Gentiana affinis* (pleated gentian) populations intersect with three routes proposed in Alternatives B and C.

Direct mortality from vehicles is possible for all alternatives because undiscovered occurrences could be impacted in all alternatives. The miles of motorized routes on the Forest and in suitable
habitat (riparian/wet meadow communities) and the amount of habitat open to cross-country travel is used here to estimate effects to undiscovered occurrences. The effects of motorized routes, motorized cross-country travel, motorized game retrieval, and motorized dispersed camping on *Gentiana affinis* are expected to be similar to the general discussion on riparian/wetland areas above.

**Site-specific Analysis** - In areas with botanical survey, there are 3 proposed routes that intersect 3 known occurrences of *Gentiana affinis* in Alternatives B and C, and one additional route that intersects a known occurrence of *G. affinis* in Alternative C.

**Design Criteria** - Three proposed routes intersect three known occurrences of *Gentiana affinis* in Alternatives B and C and one additional route intersects a known occurrence in Alternative C. In order to be consistent with the Forest Plan and therefore ensure the persistence of this species on the Forest, the following should be done in Alternatives B and C:

- Design route HC9 (new route) to avoid impacts to occurrences GEAF-4
- Design route CZ3526 (new route) to avoid impacts to occurrence GEAF 07B040A
- Design route HC1 (new route) to avoid impacts to occurrence GEAF 07B042

In addition, Alternative C has one additional proposed route that should be designed to avoid impacts:

- Design route CZ4927 (new route) to avoid impacts to GEAF 07M008A and riparian impacts

**All Alternatives** - Botanical surveys are not 100 percent accurate, so any alternative may impact individuals not observed during survey. However, the number would be small and not likely to impact persistence of the species on the Forest. The Forest Plan Phase II Amendment determined this species is likely to persist on the Forest (USDA Forest Service 2005a), if known occurrences are not impacted. This project will be consistent with Forest Plan standards that provide for *Gentiana affinis* and its habitat if the design criterion described above is applied.

**Direct and Indirect Effects to Management Area 3.1 Botanical Areas**

The Forest designated eight areas as Management Area 3.1 Botanical Areas in the 1997 Forest Plan. Various disturbances of these areas can cause changes to their environment and damage that may take a long time to restore or may never be restored.

Roads can provide easy access to M.A. 3.1 Botanical Areas by OHVs, even though there are currently road closures in effect for all M.A. 3.1 Botanical Areas. If a road passes through or near a botanical area it may contribute to the introduction of invasive species (including noxious weeds), alteration of hydrology patterns, alteration of habitat condition (such as decrease in canopy cover or change in successional stage), increased access for disturbance vectors (including humans and livestock). The introduction of invasive species, alteration of hydrology patterns, alteration of habitat condition, and increased access for disturbance vectors may lead to increased disturbances. Increased disturbances may include vegetation trampling, cropping, and collecting, disruption of pollinators, increased dust, and sedimentation.

**Site-specific Analysis** - There are two botanical areas affected by proposed routes in Alternatives B and C. Routes 864.1, 864.1A and 864.1C are currently closed routes that are proposed to be opened. Forest Plan guideline 3.1-5103 states the Dugout Gulch Botanical Area has a Recreation
Opportunity Spectrum of Semi-primitive Nonmotorized. Opening this route to motorized vehicles would be in conflict with that guideline.

Route 228.1A is proposed to be changed from a road to a trail in the Englewood Springs Botanical Area. The effects to the botanical area are expected to be similar to what is currently occurring on the existing road. There may be an incremental increase in impacts if the use increases in the area as other areas become closed to ATVs.

Direct and Indirect Effects to Montane Grasslands

Black Hills montane grassland is a plant community type endemic to the Black Hills (that is, it does not occur anywhere outside the Black Hills). This plant community type was described through the Black Hills Community Inventory, which resulted in a community classification for the Black Hills tiered to the National Vegetation Classification (Marriott et al. 1999). Stands of Black Hills montane grasslands are found at higher elevation on the limestone plateau and adjacent central core of the Black Hills. They are dominated by grasses and other graminoids but are typically forb-rich and known locally for spectacular seasonal wildflower displays. Surveys were undertaken in 1998 and 1999 to identify locations of stands and evaluate condition. Twenty-six sites surveyed in depth were ranked moderate to good quality (Marriott et al. 1999).

Disturbances from roads and trails to stands of Black Hills montane grasslands can cause direct impacts by destroying plants and thus altering the extent or species composition of stands. Indirect impacts from roads and trails include degradation by introduction of invasive species (including noxious weeds); alteration of hydrology patterns; alteration of habitat condition (such as decrease in canopy coverage or change in successional stage); increased access for disturbance vectors including humans and livestock leading to increased disturbances to vegetation such as trampling, cropping, and collecting; disruption of pollinators; and increased dust/sedimentation.

Site-specific analysis: Seven stands of Black Hills montane grasslands would be affected by proposed routes in Alternatives B, C, and D: Gillette Canyon Headwaters (294.1, CZ3485, CZ3432, 291.4D, CZ3487, 291.4E, CZ3490), Moskee (820.1), Redbird Draw (HC9, CZ3526), South Fork Castle Creek (294.2M, U160072, 294.2J, CZ4295), Upper Gillette Canyon (U220077, CZ0753, CZ0755), Upper Sand Creek/Cement Ridge (850.2), Warren Peaks (830.1, 830.1B).

Cumulative Effects

The cumulative effects analysis is bounded in time as the next 5 to 15 years. This temporal scale is based on: (1) the time over which one can expect to predict reasonably foreseeable actions and (2) roughly the time until the next Forest Plan Revision. The spatial scale for cumulative effects analysis generally encompasses the area within the Forest boundary. This area was chosen because it encompasses ecosystem components and species that occur on the Forest. A larger area would include the surrounding plains, which includes a vastly different suite of species and ecosystem components.

Activities such as vegetation management, fuels management, livestock grazing, recreational activities and other management activities have occurred and would continue to occur on the Forest. These activities would likely occur on private lands as well. All may affect plant species of concern (Region 2 sensitive plant species and Forest plant species of local concern) and botanical resources through direct mortality, habitat alteration, or spread of invasive species. On the Forest, these potential effects are lessened or negated for known occurrences by avoiding the locations during project design.
Management of national and state parks adjacent to the Forest would have an unknown effect on plant species/communities and other botanical resources. Wind Cave National Park and Jewel Cave National Monument likely contain little spruce habitat because they are located in the southern Black Hills where spruce is sparse or absent. Spruce occurs in Custer State Park, mostly at the north end near recreation sites. These parks emphasize recreational opportunities and will likely manage hardwoods as desired species where possible. National parks and monuments tend to manage to preserve natural conditions, using fire and other processes, which would likely provide conditions under which hardwoods and other habitats evolved. Management in national and state parks will likely contribute to the conservation of plant species/communities and botanical resources.

Privately owned lands within the Black Hills Ecoregion may also provide suitable habitat, but resource management by companies and private citizens depends on a number of factors (e.g., desired goals, market prices, development potential) making it difficult to predict future trends in private habitat diversity and quality. Potential habitat for species, communities, and locations may occur on private lands across the Black Hills. Continued urban development in the Black Hills will likely continue to affect species, communities, and locations, thereby increasing the importance of these botanical resources on National Forest System lands.

For all alternatives, administrative access would be allowed for official Forest business including contractors, permit holders, and emergency vehicles. This means that closed roads could receive use; however, with the exception of emergency vehicles, use of these roads would be addressed in environmental documents associated with specific management activities. Emergency vehicle use would most likely occur on historic road prisms, that is, historically disturbed areas. *Botrychium* spp. would be the most likely species affected by this use because they occur in areas of historical disturbance. Potential impacts could include crushing of individuals, disturbance of the subsurface mycorrhizal community, and alteration of local hydrology. The duration of these impacts could last an indefinite length of time. There could be some incremental impacts to individual plant species, communities, and botanical resources. In Alternative A, incremental impacts would continue to accrue as motorized recreation use levels increase. User-created routes are expected to continue to be created and could incrementally impact plant species, communities, and botanical resources.

Alternatives B, C, D, and E would reduce the amount of area open to cross-country travel to varying degrees, thereby reducing the area and number of Region 2 and species of local concern populations impacted by vehicle use and offsetting some impacts occurring on lands of other ownerships. Alternative D would reduce impacts the most by having the smallest area open to cross-country travel, and the least miles of motorized routes.

**Scenery**

**Introduction**

Scenery is defined as the general appearance of a place and the features of its views or landscapes: the arrangement of predominantly natural features of the landscapes we see. The adjective “scenic” has to do with natural scenery, which affords beautiful views.

“Research has shown that high-quality scenery, especially that related to natural-appearing forests, enhances people’s lives and benefits society...Research findings support the logic that scenic quality and naturalness of the landscape directly enhance human well-being, both physically and psychologically, and contribute to other important human benefits. Specifically
these benefits include people’s improved physiological well being as an important by-product of viewing interesting and pleasant natural appearing landscapes with high scenic diversity.” (USDA Forest Service 1995, p. 17)

In 2003, a National Visitor Use Monitoring project was conducted on the Black Hills National Forest. Recreation use on the National Forest for the fiscal year was calculated at 1,252,175 visits. As part of that project, visitors were interviewed to determine their satisfaction with the Forest. They also identified areas they had visited (Table 14 of NVUM report) - in order of highest use: (1) picnic areas, (2) scenic byways, (3) forest roads, (4) forest trails, and (5) developed campgrounds. The top four activities visitors participated in were: (1) Viewing Wildlife - 62 percent (of respondents), (2) Relaxing - 57 percent, and (3) Viewing Natural Features - 51 percent, Driving for Pleasure – 39 percent (Table 13 of NVUM report).

With regard to the satisfaction of the visitors experience in Wilderness, Developed Day Use Areas, Developed Overnight (Campground) Areas, and General Forest Areas (Tables 11, 17, 18, 19 of NVUM report); the highest importance and satisfaction rating was given for the Scenery and Condition of Environment in each category (Kocis 2004, pp. 6, 11, 13, 14, 18-20).

The natural beauty that makes up the scenery of the Forest is one of the most important elements or resources that draws our recreation visitors. Forest management practices directly affect people’s perceptions of scenic beauty.

**Applicable Laws, Regulations, Policy, and Forest Plan Direction**

**Federal Laws.** Federal laws that require all Federal management to consider scenery and aesthetic resources in land management planning (relevant to this Planning Area; USDA Forest Service 1995, p. B-1) include:

- National Trails System Act of 1968
- National Environmental Policy Act of 1969
- Environmental Quality Act of 1970
- Forest and Rangeland Renewable Resources Planning Act of 1974
- National Forest Management Act of 1976
- Public Rangelands Improvements Act of 1978

**Forest Service Manual Direction.** On March 10, 1997, the Washington Office of the Forest Service provided implementation direction to use the Scenery Management System during forest plan revisions and project level planning. In addition, there was a “white paper” attached that provided guidance in this implementation. On May 2, 2003, the Forest Service manual direction for landscape management (FSM 2380) was amended to provide further clarification to utilize the Scenery Management System in Forest and project planning and implementation, which included the following section:

**FSM 2380.** Provides direction to evaluate the effects on scenery as part of the Forest Plan and project level NEPA process.

**FSM 2380.43 (4)** Conduct and document a scenery assessment for all activities that may affect scenic resources and that require analysis under the National Environmental Policy Act.
FSM 2382.4(8). Applications to Project Management - 8. Determine how scenery management techniques and principles can be used to mitigate any land altering activity or introduced elements on the land, to achieve and maintain desired scenic integrity objectives and landscape character goals.

Forest Plan Direction. The 1997 Revised Land and Resource Management Plan for the Forest, As Amended by the Phase II Amendment (LRMP) included the Scenery Management System as the basis for analyzing the scenic resource (USDA Forest Service 2006a, pp. II-59 - 61). The following Forest Plan objectives, standards, and guidelines provide direction for management to maintain high scenic quality within the landscape seen road and trail corridors, developed recreation sites, administrative sites, and the towns and cities within the Forest:

Forestwide Goal 4 - Provide for scenic quality, a range of recreational opportunities, and protection of cultural resources in response to the needs of the Forest visitors and local communities.

The objectives and guidelines are listed below. Details of each objective and guideline are in the Scenery specialist report in the project record.

Goal 4, Objectives: 401, 402, and 420

Guidelines: 5601, 5602, 5603, 5604, 5608, and 5609

Methodology

Scenery is evaluated by an indicator, scenic integrity, which identifies and measures the distinct aspects of scenic quality. Scenic integrity measures the amount of natural or socially valued appearance in a landscape along with the amount of visual disturbance that contrasts with and detracts from that appearance (the valued scenic character) existing at the time of measurement. It provides information regarding the presence, intensity and dominance of human-caused visual disturbances in the landscape, such as timber harvesting, road construction, mining, utility corridors, recreation facilities, ski areas or other special uses.

Scenic integrity also applies to extreme scenery disturbances caused by natural events whenever these events are outside the historic range of variability (HRV) for the landscape. Large-scale or high intensity events such as catastrophic wildfires, insect/disease outbreaks, or wind/ice storms that exceed the HRV can be highly visible disturbances that can affect people’s perception of the valued scenic character. While those highly visible disturbances that are within the HRV are accepted as a part of the natural processes.

Scenic integrity measures these disturbance effects in degrees of consistency, harmony, dominance, and contrast with the valued scenic character being viewed at the time of measurement. It indicates the presence and magnitude of visual disturbance (contrast in form, line, color, texture, pattern, size or scale) to that valued scenic character. It uses a graduated scale of six levels from “very high integrity” to “no integrity”. The highest scenic integrity ratings apply to scenery that appears natural and unaltered, with little or no contrast to or disturbance of the valued scenery attributes. Scenic integrity levels define the minimum degree of natural or socially valued appearance and disturbance that either exists now (existing scenic integrity), or is a standard or guideline defining minimally acceptable levels (scenic integrity objectives) that would be permitted on future management projects. Scenic integrity levels (USDA Forest Service 2006a, Glossary – p. 61) are defined as:
• **Very High Integrity** - the valued scenery “appears natural or unaltered.” Only minute visual disturbances to the valued scenery, if any, are present. When used as a standard or guideline, this level should be achieved immediately upon project completion.

• **High Integrity** - the valued scenery “appears natural or unaltered,” yet visual disturbances are present; however, they remain unnoticed because they repeat the form, line, color, texture, pattern and scale of the valued scenery. When used as a guideline, this level should be achieved as soon after project completion as possible or within 3 years maximum.

• **Moderate Integrity** – the valued scenery “appears slightly altered.” Noticeable disturbances are minor and visually subordinate to the valued scenery because they repeat its form, line, color, texture, pattern and scale. When used as a standard or guideline, this level should be achieved as soon after project completion as possible or within 3 years maximum.

• **Low Integrity** - the valued scenery "appears moderately altered." Visual disturbances are co-dominant with the valued scenery, and may create a focal point of moderate contrast. Disturbances may reflect, introduce or “borrow” valued scenery attributes from outside the landscape being viewed (such as the size, shape, edge effect and pattern of natural openings; vegetative type changes or socially valued architectural styles). Scenery attributes borrowed from outside the viewed landscape appear compatible with or complimentary to those within. When used as a standard or guideline, this level should be achieved as soon after project completion as possible or within 3 years maximum.

• **Very Low Integrity** - the valued scenery "appears heavily altered." Disturbances dominate the valued scenery being viewed; and they may only slightly borrow from, or reflect, valued scenery attributes within or beyond the viewed landscape (due to their size, shape, edge effect and pattern). However, disturbances must be shaped and blended with the natural terrain (primary landforms) so they do not dominate the overall composition when viewed as background (beyond 3 to 4 miles). Such disturbances might include unnatural appearing openings, roads, landform modifications or structures. If used as a standard or guideline, this level applies immediately upon project completion. However, its use as a management objective or standard/guideline is strongly discouraged; its primary use should be to inventory existing scenic integrity.

Scenic integrity objectives are given in the Forest Plan for each management area (USDA Forest Service 2006a, Chapter 2, pp. 59 – 60)

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Landscape visibility is the portion of landscapes visible from travelways and use areas and that are important to constituents for their scenic quality, aesthetic values, and landscape merits. Travelways and use areas are identified and classified during the Forestwide planning process in order to determine which observer locations, and their importance, to use in the landscape.
visibility analysis. Sensitivity Level 1 travelways that lead to important scenic features, residential areas, resorts, recreation areas, unique natural phenomena, wilderness trailheads, national parks, and State and county parks, attract a higher percentage of users having high concern for scenic quality, thus increasing the importance of those travelways (USDA Forest Service 1995, Chapter 4, p. 7).

**Sensitivity Level 1** travelways that constituents have a high level of concern for scenery around the Forest include: WY State Hwy. 24, I-90, Spearfish Canyon Scenic Byway (U.S. Hwy. 14A), U.S. Hwy. 85, Mickelson Trail No. 104, U.S. Hwy. 385, Centennial Trail No. 89, county road 234 (Nemo Road), SD Hwy. 44, county road 228 (Sheridan Lake Road), Peter Norbeck National Scenic Byway (SD State Hwy. 244, U.S. Hwy. 16/385, U.S. Hwy. 16A, SD State Hwy. 87, SD State Hwy. 89) U.S. Hwy. 16, U.S. Hwy. 16A, SD State Hwy. 40, SD State Hwy. 87, SD State Hwy. 89, Deerfield Trail No. 40, Deerfield Loop Trail No. 40L, U.S. Hwy. 18, and other summer and winter recreation trails nonmotorized trails.

**Sensitivity Level 2** travelways that constituents have a moderate level of concern for scenery in the Forest include county roads and main Forest collector roads, and winter snowmobile trails. Travelways with a low level of constituent concern for scenery in the Forest are Forest development roads.

Use areas are spots that receive concentrated public-viewing use. They include national forest visitor centers, vista points, trailheads, campgrounds, picnic grounds, swim beaches, marinas, resorts, ski areas, and other recreation sites. Use areas also include(s) urban and suburban areas, towns and villages, subdivisions, parks and golf courses on private land, or other public lands within or adjacent to national forests (USDA Forest Service 1995, Chapter 4, p. 7). Use areas with a high level of constituent concern for scenery in and around the Forest include: Deerfield Lake Recreation Area, Pactola Lake Recreation Area, Sheridan Lake Recreation Area, area communities (Custer, Deadwood, Hill City, Hot Springs, Johnson Siding, Keystone, Lead, Rapid City, Rochford, Sundance, Spearfish), Mount Rushmore National Memorial, Jewell Cave National Monument, Wind Cave National Park, Custer State Park, lakes, campgrounds, and trailheads.

Portions of landscapes seldom seen from travelways and use areas are also important to constituents for their aesthetic and scenic values. They may be of even greater importance as special recreation settings and as opportunities for people seeking solitude (USDA Forest Service 1995, Chapter 4, p. 7). Seldom seen use areas with a very high level of constituent concern for scenery in and around the Forest include: Management Area 1.1A Black Elk Wilderness. Seldom seen use areas with a high level of constituent concern for scenery where ‘users expect to experience some isolation from the sights and sounds of people’ in natural appearing landscapes: 3.1 Botanical Areas, 3.2A Inyan Kara Mountain, 3.31 Backcountry Motorized Recreation Emphasis, 3.32 Backcountry Nonmotorized Recreation Emphasis, and 3.7 Late-successional Forest Landscapes Norbeck Wildlife Area (USDA Forest Service 2006a, Chapter 3, p. 3).

**Assumptions**

- Existing roads and trails are most visible in the immediate foreground distance zone when viewed from travelways, due to vegetation and terrain.
- When located on steep slopes at higher elevation, or when the viewer is at a vista (such as Harney Peak) looking down on the landscape, roads and trails can be visible in all the distance zones.
The duration of view, such as a person standing at a vista point, slowly traveling down a path (walking or riding), or traveling at high speed in a vehicle, determine how visible objects, forms, lines, colors, etc., are in the landscape.

Changes in route density may increase, or decrease, the visibility of roads and trails within the foreground and middleground views of U.S., State and county highways. The public may lose, or gain, motorized access to points with panoramic vistas, or areas of unique features.

The analysis of the effects on scenery was based upon:

- Review literature for new research of effect of roads and trails on scenery
- Forest GIS layers for the Scenic Resource and topographic maps
- Validation of assumptions and GIS analysis, thru field reviews of existing roads, existing citizen trails, and identified locations of new trail construction
- Training and experience analyzing the effect of management activities on scenery

Indicators

Effects on scenery, specifically changes from the existing condition - by scenic integrity objective (SIO) - are the key concerns.

**Indicators:**

- Miles of open trails by SIO
- Miles of open roads by SIO
- Acres open to game retrieval by SIO
- Acres open to dispersed camping by SIO

Affected Environment

The Black Hills National Forest provides a strikingly different environment and a cool oasis during the summer months, for those living in the surrounding great plains. As a result, the Forest is a recreation destination that also provides the backdrop for the surrounding private land, and national and state parks. Concern for scenery is high. In the 2004 National Use Visitor Monitoring, three of the top five visitor-use activities directly related to scenery (driving for pleasure, view natural features, viewing wildlife). With regard to the satisfaction of the visitor’s experience when visiting the Forest, the highest importance and satisfaction rating was given for the scenery and condition of environment in each category (Kocis 2004, pp. 6, 11, 13, 14, 18-20)

To verify the existing scenic integrity condition, site visits were made to four areas that are representative of existing OHV routes, to compare Forest Plan scenic integrity objectives (SIOs) with actual effects from OHV use. Representative sites that were visited included:

- **U.S. Hwy. 14A and Camp 5 (SD):** Steep terrain, drainage, trails located in both areas – viewed in the immediate foreground perspective of a hiker and foreground and middleground from a vehicle. Findings were OHV routes on steep slopes were not evident due to a combination of viewer location (approx. 30 to 90 degrees off centerline), vegetation (trees, shrubs and grasses), and narrow width of trail (approx. 60 inches). The existing scenic integrity in this area was high.

- **Thompson Gulch and NFS roads 863 and 864 (WY):** Steep terrain, drainages, trail located up bottom of steep drainage – viewed in the immediate foreground perspective of a hiker. OHV trail up drainage has had limited use and is very narrow – it appears no
different than a game or stock trail. Trails on top of the buttes (near NFS road 864) have had more use, but are not apparent unless you are within 50 feet due to the relatively flat rocky terrain and grass vegetation. The existing scenic integrity in this area was moderate to high.

- **Community of Nemo (Nemo Road) and U.S. Highway 385 from Strawberry Campground to Sheridan Lake South Entrance (SD):** A variety of terrain, vegetation, and trails crossings, or paralleling, the highway – viewed in the immediate foreground, foreground and middleground from a vehicle. Findings included: trails were not evident when viewed in the middleground; trails that crossed the highway in the immediate foreground, at a 60- to 90-degree angle to the Highway, and were evident for such a short period (when the vehicle was traveling at 45 to 55 mph) that they did not readily standout in the landscape. The existing scenic integrity in this area was moderate to high. When trails parallel the Hwy. 385 (such as from junction of Nemo Road to Custer Peak Quarry), the OHV trail is readily evident – the obvious human-caused wheel tracks have eliminated vegetation causing color contrasts and creating lines in the landscape where natural features are expected (in the immediate foreground). As the trail parallels the highway, the view is not fleeting for a short period, but rather the negative visual effects are repeated again and again. The existing scenic integrity in this area was low to moderate.

- **Sheridan Lake (SL) Road (SD).** A variety of terrain and vegetation, trails take off at generally a 90-degree angle from the SL road – viewed in the immediate foreground from a vehicle. Due to the slower speed limit (35 to 45 mph), the observer is able to view trail locations for a greater duration, so they tend to be more evident – primarily due to the soil / vegetation color contrast. The existing scenic integrity in this area was moderate to high.

- **General locations around the Forest.** In areas were vegetation is sparse, roads were more visible. This was particularly true where the viewer was at a higher elevation looking down, or when the viewer was looking at roads that climbed steep terrain parallel to the direction of view.

Generally, existing OHV use is on existing roads that serve other purposes, such as logging, recreation, and permittee access. This access is on developed roads that were constructed for full size vehicles. Constructed road widths are 12 to 16 feet. These roads can be highly visible in the landscape as a ‘line’ that traverses a hillside; in other cases, where there is a large amount of cut and fill, there can be a strong color contrast between the exposed soil and the surrounding vegetation and can stand out a ‘form’ in the landscape – an example of this can be seen across from a Mickelson Trail Trailhead, between Custer and Pringle along U.S. Hwy. 385. As these roads are used for multiple purposes, whether by OHVs or highway vehicles, there is little to no effect on the existing condition by the current use of OHVs on these routes.

Where OHV riders are creating their own trails, these routes are not designed with resource protection in mind. The width of these routes tends to be that of the vehicle riding on them. When these roads are located on steep slopes and go straight up the hill, color contrasts from soil, vegetation and vertical lines straight up the slope create negative visual effects from these trails. In locations where OHVs go through wet areas, “braided” or multiple parallel trails are often evident. In situations where OHVs are moving at a higher rate of speed and turn, or have momentum pushing down (such as when coming down a hill) and then turning, more soil was displaced (ruts were created) and wider trails were evident (5 to 10 feet). These effects are
predominantly evident in the immediate foreground, but can also be visible in other distance zones. As one travels cross-country through the Forest on foot, bike, or horseback and crosses one of these trails, they will dominate the immediate foreground similar to crossing a road. However, the disturbed area of these trails reviewed at representative sites was generally less than the width of a standard roadway in the Forest, which is 12 feet or more.

Environmental Effects Analysis
Direct and Indirect Effects

Alternative A

Direct Effects - The existing visual condition with regard to motorized use on existing roads would not change and there would be no effect. Cross-country motorized use would continue in an unregulated manor. Visual impacts are generally not evident in the foreground, middleground, and background distance zones. Negative visual impacts are evident in the form of vegetation loss, color contrasts, and unnatural appearing lines in the immediate foreground. These impacts are most evident from braided (parallel) trails, hill climbs (steep topography), and mud bogging (rutting moist areas / meadows creating color contrasts) and damaging plant communities that are specifically enjoyed for their scenic beauty. The type of visual impacts would likely incrementally increase as the amount of motorized use also increases. The existing level of scenic integrity would be reduced over time. Over time more effects will be evident in the foreground of U.S., State, and county highways, particularly where use is funneled by topography vegetation, or surrounding private land.

Areas being managed for nonmotorized recreation (where people specifically go to view scenery on a macro-scale) whether unique vegetation or interesting landforms, will be affected. The smaller the nonmotorized use area, the larger the effect of cross-country unregulated motorized use will have on it.

Effects of Game retrieval and dispersed camping on scenery is expect to stay at the same level (as an increase in big game hunting tags, which this activity is generally linked to, is not expected to increase).

Indirect Effects – Negative effects on scenery of unregulated cross-country travel may be more visible from private land both inside and outside the national forest boundary. Invasive (non-native) plants could be introduced and spread along new trails and areas that have had limited motorized use in the past – thus degrading the natural beauty of an area. The increasing variety, quantity, and spread of invasive species are becoming more evident in the Forest. Visually they often stand out in the immediate foreground due to their size, shape, and color. Many observers recognize their impact on the environment and the competition they have with native plants and view them as a negative visual (and ecological) element in the landscape.

Table 48. Indicators by for Alternative A (existing condition)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Scenic integrity objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Miles of open trail</td>
<td>9</td>
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<tr>
<td>Miles of open road</td>
<td>325</td>
</tr>
<tr>
<td>Unauthorized routes</td>
<td>583</td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.
Effects Common to all Action Alternatives

**Direct Effects** – The elimination of unrestricted motorized cross-country travel should halt further visual impacts from this activity. Areas that currently display the effects of this activity should become less evident over time.

Concentrated use areas, 3 to 5 acres in size, would be located in existing rock pits or quarries. No additional impacts from this new use should change the existing condition. New trailheads would be designed and constructed to meet the assigned SIO as directed in the Forest plan for recreation facilities.

Effects Common to all Action Alternatives B, C, D

**Direct Effects** - The route construction process creates a cleared path across the landscape by excavating and filling material to create a level running surface vehicles can operate on, known as the “template”. This surface, devoid of vegetation, generally is quite visible as a line across the landscape. The wider the route surface, and the steeper the side slope of the landform it is on, the greater the potential for the road to be visible and the less natural it will appear. Conversely, the narrower the route and the flatter the side slope, the less visible the route will be. However, when an observer is above looking down on a route, it can still be highly evident due to the color contrast with the surrounding vegetation.

Trails less than 65 inches in width generally would have less visual impact due to their narrow width than a road. However, with the concentration of use on these trails, use will increase, and there would likely be limited vegetation in the center of the trail that would help the trail blend in. In addition, as vehicles meet and pass one another, the vegetation along the sides of the trails would be impacted and may result in the trails being more visually evident in the landscape.

Single-track trails may be the least evident in the landscape; however, they can be highly evident and create visual impacts if routes traverse steep slopes or have sharp turns 90 degrees or greater. Any trail that is in an open area and has numerous paths side by side (i.e., a ‘braided’ pattern) can be highly evident and have a negative visual impact. Negative visual impacts take the form of color contrast and vertical (unnatural appearing) lines in the foreground distance zone.

Trails open to all (trails used by rock crawlers) could increase use and spectators resulting in additional visual impacts in the immediate foreground (due to vegetation loss). These trails are generally in isolated locations with difficult access. Although in places they are on steep terrain, surrounding vegetation generally reduces their visibility in the landscape.

Roads that are closed to motorized use, are generally not obliterated by eliminating the road template and returning the hillside to the natural contours. As a result, roads are generally still evident as an unnatural form and line in the landscape.

**Proposed Motorized Routes That Could Have Negative Visual Impacts in Designated Nonmotorized Areas (Management Areas 4.1)**

- Route No. 875.2A - Opening closed road, HIGH to MODERATE scenic integrity objective
- Route No. 875.2B - Opening closed road, HIGH to MODERATE scenic integrity objective
- Route No. 875.2D - Opening closed road, MODERATE to LOW scenic integrity objective
- Route No. 875.2E - Opening closed road, MODERATE scenic integrity objective
- Route No. 875.2F - Opening closed road, MODERATE scenic integrity objective
- Route No. 875.2G - Opening closed road, MODERATE scenic integrity objective
Proposed Motorized Routes That Could Have Negative Visual Impacts

- Route No. U260027 – New single-track route that takes off from private land, up a steep slope, in the immediate foreground of Sheridan Lake Road, HIGH scenic integrity objective

Indirect Effects – Any new routes near private land have the potential to be highly visible from any given individual parcel of private land. As a result, individual landowners adjacent to National Forest lands may be individually adversely impacted.

Alternative B

Direct Effects - The quantity of visual impacts from motorized use would be reduced, due to the closing of unauthorized routes and the elimination of unrestricted cross-country motorized use; however the concentration and increased level of use on these designated routes may result in greater visual impacts along them.

Many hunters retrieve game by using motorized vehicles such as pickup trucks and four-wheelers. This endeavor usually involves traveling slowly to minimize vehicle damage and potential for personal injury. A highway vehicle normally makes only one round-trip to retrieve a harvested game animal. When vehicle speed is limited to less than 5 miles per hour, visual impacts are usually limited to bent grass and crushed decaying small logs and branches. Hunters retrieving game with off-highway vehicles (ATV, UTV, etc.) may have to make multiple trips, depending on the size of the animal and the ATV manufacturer’s loading recommendations. Due to repeated driving over the same ground, the potential for more visual impact in the form of displaced soil and covering vegetation is greater than a highway vehicle, but should no longer be evident the following year. Visual impacts from game retrieval would be concentrated to the areas it is allowed – approximately one-fourth the existing level – assuming the same levels of animal hunting tags issued by State fish and game departments in each area.

Repeated vehicle trips over the same ground to access a dispersed campsite can affect soil and vegetation at various levels (see Soils – Affected Environment section). Visual effects from dispersed camping are primarily rutted and/or exposed wheel tracks and areas devoid of vegetation; both creating color contrast in the immediate foreground that draws the eye. These effects may heal in a year; however, repeated use would compact soil, retard revegetation, and take more than a year to heal itself. With the ban on open fires outside of developed camping areas, dispersed camping use in South Dakota would be expected to increase only modestly. The level of visual impacts from dispersed camping should stay the same or increase, due to the proximity and concentration of camps next to the roads.

Trailheads are generally considered an important cultural element, as they provide access to recreation and scenery viewing opportunities. Although they create an open area, they are normally located on relatively flat ground and the surrounding vegetation limits their visibility in the landscape. In addition, they provide an access point to the surrounding natural landscapes and recreation activities. New trailheads would require careful location and site design to limit their visibility and maximize their utility.

Indirect Effects – No indirect effects were identified.
Table 49. Indicators for Alternative B

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Scenic integrity objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Miles of open trail</td>
<td>66</td>
</tr>
<tr>
<td>Miles of open road</td>
<td>311</td>
</tr>
<tr>
<td>Game retrieval (acres)</td>
<td>21,230</td>
</tr>
<tr>
<td>Dispersed camping (acres)</td>
<td>7,286</td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.

Alternative C

Direct Effects - Of the action alternatives, Alternative C, with the combination of open roads and trails, would provide the greatest potential for visual impacts from motorized use, in all distance zones, and all alternatives, as it has the greatest number of miles of authorized motorized routes.

This alternative should have fewer impacts from game retrieval and dispersed camping than Alternative B, as it disperses the use over a wider area. Visual impacts from game retrieval would likely be less than half the existing level. With dispersed camping distance from the road increased to 300 feet, the overall visual impacts should be less evident than Alternative B, due to the greater distance. However, the visual impacts from access and egress to the camps may be similar to Alternative B.

Indirect Effects – No indirect effects were identified.

Table 50. Indicators for Alternative C

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Scenic integrity objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Miles of open trail</td>
<td>86</td>
</tr>
<tr>
<td>Miles of open road</td>
<td>307</td>
</tr>
<tr>
<td>Game retrieval (acres)</td>
<td>32,461</td>
</tr>
<tr>
<td>Dispersed camping (acres)</td>
<td>21,029</td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.

Alternative D

Direct Effects - Alternative D would provide the greatest overall reduction in miles of open routes. This alternative has the greatest potential to reduce the existing visual impacts from motorized use in the landscape; however, like Alternatives B, C, and E, this alternative would concentrate use, and corresponding impacts, along roads and trails. No motorized game retrieval and dispersed camping would occur, so visual impacts should be limited to the immediate foreground of roads across the Forest. With the fewest miles of motorized use, this alternative has the least potential to create negative visual effects from motorized use across the Forest.

Indirect Effects – No indirect effects were identified.
Table 51. Indicators for Alternative D

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Scenic integrity objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Miles of open trail</td>
<td>25</td>
</tr>
<tr>
<td>Miles of open road</td>
<td>240</td>
</tr>
<tr>
<td>Game retrieval (acres)</td>
<td>closed</td>
</tr>
<tr>
<td>Dispersed camping (acres)</td>
<td>closed</td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.

Alternative E

Direct Effects - Effects on the visual resource would be similar to Alternative A, with the exception that no cross-country travel (and the resulting impacts) would occur.

Indirect Effects – No indirect effects were identified.

Table 52. Indicators for Alternative E

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Scenic integrity objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Miles of open trail</td>
<td>9</td>
</tr>
<tr>
<td>Miles of open road</td>
<td>325</td>
</tr>
<tr>
<td>Game retrieval (acres)</td>
<td>closed</td>
</tr>
<tr>
<td>Dispersed camping (acres)</td>
<td>closed</td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.

Summary

Alternative A would continue the current level of impacts, as well as future incremental impacts to scenic quality because it would allow the highest level of motorized cross-country travel. Unauthorized routes would continue to be created and would incrementally impact scenery in general.

Alternatives B and C would reduce the amount of area open to cross-country travel, and Alternatives D and E would eliminate such use. This would reduce some of the effects of past activities and offset some impacts from private lands. Incremental impacts with regard to cross-country travel should cease. Past impacts should be less evident in the future.

Alternatives B and C would increase the miles of authorized routes, resulting in a concentration of motorized use along them, particularly in areas with a high number of routes. Incremental impacts from such use may increase.

Alternative D would decrease the miles of authorized routes, also resulting in a concentration of motorized use along them, particularly in areas with a high number of routes. Incremental impacts from such use may decrease.

Alternative E would maintain the current miles of authorized routes and corresponding level of impacts. Use would also be concentrated along these routes, similar to Alternatives B, C, and D. Impacts from this use are expected to stay at the same level, or increase incrementally.
Cumulative Effects

The geographic scope of the cumulative effects analysis selected is the entire Forest. Some general similarities are common to the scenery resource on lands administered by other agencies including Custer State Park and units of the National Park Service. A temporal scale of 10 years is based on (1) the time over which one can expect to predict reasonably foreseeable actions, and (2) the time over which one can expect to predict effects of ongoing and proposed activities.

The cumulative effects analysis for the scenery resource generally considers impacts of the alternatives when combined with past, present, and foreseeable future actions and events including: (1) designated Forest transportation facility maintenance; (2) closure or rehabilitation efforts on routes not open for public use or not maintained for administrative use; (3) vegetation treatments to meet timber and fuels reduction objectives; (4) urban interface growth and increased Forest use; and (5) future road or trail realignment, reconstruction, or decommissioning. Management actions can influence or contribute to changes in user concentrations, creation of unauthorized routes, maintenance needs and levels, the effectiveness of closures, and rehabilitation or some level of recovery of closed routes. Cumulatively, these actions can influence overall maintenance of, or return toward, a natural appearing condition.

The designation of a transportation system does not limit the ability of the Forest to use Closure Orders to close an area or trail if unacceptable resource damage is identified. This management tool can limit the duration and extent of undesirable resource impacts that are beginning to occur. Effects to the scenery resource, such as loss of vegetation – creating visual lines across the landscape, and soil erosion – which create color contrasts that dominate the landscape, may be reason to issue closure orders if corrective actions are not successful.

The urban interface along the northeastern portion of the Forest, from Spearfish to Hill City, is one of the rapidly growing areas in the State of South Dakota. The rapid growth has likely contributed to the popularity of off-highway vehicles. The demand for motorized recreation will likely continue to increase (see Chapter 1). Therefore, it can generally be anticipated that demand would continue to concentrate or increase use levels on open routes (see Chapter 1) within this general area. With the reduction in miles of routes open to these vehicles, use and visual impacts will be concentrated along these routes. However, it is assumed that by reducing the number and miles of routes, inspections and maintenance of routes would address identified areas of concern in a timely way and impacts to the scenic resources would be kept to a minimum.

Implementing this travel management decision, which could potentially concentrate use, would cause a need for ongoing maintenance, and there may be a need for rerouting the location of some facilities and/or rehabilitating some routes. Rehabilitation activities, beyond normal maintenance, usually require additional environmental analysis (specific to the location), and those decisions could result in disturbance activities that may be highly evident (such as obliterating a road and returning the landscape to the natural topographic contours). However, the long-term effects of rehabilitation actions would generally be expected to reduce impacts to scenic resources, and help to reduce evidence of human-built routes across the landscape.

Activities such as vegetation management, fuels management, livestock grazing, recreational activities, and other management activities have occurred and would continue to occur on the Forest. These activities would likely occur on adjacent private lands as well. Other routes that are open only for administrative use (maintenance level 1) would have limited use. When closed roads are open for logging activity, any vegetation that has grown up on them would be
removed, and these roads would be more evident during that period of use. All may affect scenery by changing the natural and human-built environment. Road construction, reconstruction, and decommissioning conducted as part of managing the Forest-designated transportation system are expected to continue. These activities would generally be expected to have various levels of effects to scenery, as has been identified in the Forest Plan EIS (USDA Forest Service 1996) and in the Phase II Amendment EIS (USDA Forest Service 2005).

As indicated in the Direct and Indirect Effects section above, implementation of any of the action Alternatives (B, C, D, and E) would be expected to reduce the amount of area open to cross-country travel as compared to Alternative A. Rehabilitation of existing unauthorized routes or other disturbed areas associated with current OHV use is not a part of the proposed action or alternatives. Rehabilitation efforts at disturbed locations may occur through the implementation of future Forest projects. Over time, various disturbed areas could generally be expected to establish some level of vegetation and reduce visible effects and evidence of past OHV use. Some locations with no remaining surface soil layers, or which are compacted from vehicle use, may no longer be able to readily support vegetation establishment. In addition, the road template of constructed routes would continue to be evident, unless obliterated through rehabilitation efforts, for decades to come (in some areas the road template has been evident for some 100 years, before natural processes can finally act to reclaim it).

Management of national and state parks adjacent to the Forest (Wind Cave National Park, Jewel Cave National Monument, Custer State Park) emphasizes recreational opportunities in scenic landscape settings. National parks and monuments tend to be managed to preserve natural conditions, using fire and other processes. This would likely provide conditions under which hardwoods and other habitats evolved. Management in national and state parks would likely contribute to the conservation of wildlife species. All of this would provide for variety in, and enjoyment of, the scenery.

On lands managed by the Black Hills National Forest, most of the riparian areas (where many of the hardwood, aspen, and meadows are most evident) are under private ownership. Development is expected to continue on private lands. While the Forest would take actions under all alternatives that would generally improve scenery in riparian areas, some actions on privately held lands could have an offsetting effect.

Table 53. Motorized use in total miles by all scenic integrity objectives

<table>
<thead>
<tr>
<th>Open trails</th>
<th>Miles by alternative</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high SIO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High SIO</td>
<td>9</td>
<td>66</td>
<td>86</td>
<td>25</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Moderate SIO</td>
<td>12</td>
<td>266</td>
<td>311</td>
<td>128</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Low SIO</td>
<td>15</td>
<td>324</td>
<td>293</td>
<td>164</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Very low SIO</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Unauthorized routes on NFS lands</td>
<td>4,375</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Open roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very high SIO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>High SIO</td>
<td>325</td>
<td>311</td>
<td>307</td>
<td>239</td>
<td>325</td>
<td></td>
</tr>
<tr>
<td>Moderate SIO</td>
<td>1,848</td>
<td>1,224</td>
<td>1,292</td>
<td>1,041</td>
<td>1,317</td>
<td></td>
</tr>
<tr>
<td>Low SIO</td>
<td>1,906</td>
<td>1,758</td>
<td>1,806</td>
<td>1,438</td>
<td>1,906</td>
<td></td>
</tr>
<tr>
<td>Very low SIO</td>
<td>29</td>
<td>28</td>
<td>28</td>
<td>21</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

Note: This table does not include roads and trails on other ownerships or managed by other jurisdictions.
Cultural Resources

Introduction
Cultural resources provide information about past human behavior and activities. They are found in a variety of physical forms that include, but are not limited to, material objects, archaeological sites, historic architecture, traditional cultural properties, and cultural landscapes. Cultural resources are nonrenewable assets that frequently consist of ephemeral materials susceptible to destruction or deterioration. The principal authorities that govern how the Federal Government is to manage and protect cultural resources are summarized in the following pages.

In 1966, Congress declared through the National Historic Preservation Act (NHPA; 16 U.S.C. §470-1(3)) that the Federal Government “administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations”. This need was made more explicit when the NHPA was amended in 1980 and Section 110 was added to expand and underscore Federal agency responsibility for identifying, protecting, and avoiding unnecessary damage to historic properties. Many historic properties are fragile and once damaged or destroyed, they cannot be repaired or replaced.

Section 106 of the NHPA compels Federal agencies to take into account the effect of its undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (36 CFR §60). The Travel Management Rule (Appendix A) requires that the effects on cultural resources be considered, with the objective of minimizing damage, when designating roads, trails, and areas for motor vehicle use on National Forest lands (36 CFR §212.55(a), §212.55(b)(1)).

Prehistoric Context
The Black Hills are part of the greater culture area of the Northwestern Plains (Sundstrom 1989). Human occupation of this area has been divided into six broad cultural periods (Frison 1991):

- Paleo-Indian 11,500 B.P. to 7,000 B.P.
- Early Archaic 7,000 B.P. to 5,000 B.P.
- Middle Archaic 5,000 B.P. to 3,000 B.P.
- Late Archaic 3,000 B.P. to 1,500 B.P.
- Late Prehistoric 1,500 B.P. to 500 B.P.

A variety of prehistoric site types has been identified within the Black Hills. Among the more common types are artifact scatters, lithic reduction sites (workshops), lithic procurement areas (quarries), hearths, stone circles, and rock features (cairns). Sites consisting of rock shelters, petroglyphs, and pictographs are fewer in number but particularly noteworthy. Sundstrom (USDA Forest Service 1996b:3d-1) calculated that 113 such site types had been identified within the Black Hills by 1996. Isolated finds that do not constitute archaeological sites are not uncommon.

The Black Hills National Forest Cultural Resources Overview identifies cultural sites that represent all of the above prehistoric phases of occupation in the Black Hills (USDA Forest
Identifiable tribal groups living within the Black Hills area during the Protohistoric period include the Arapaho, Cheyenne, Crow, Kiowa, and Sioux.

**Historic Context**

Historical chronological stages appropriate for the entire Black Hills are as follows:

- Protohistoric
  - A.D.1600-1851
- Military Exploration
  - 1851-1874
- Euro-American Settlement
  - 1874-1920
- Depression/New Deal
  - 1920-1941
- World War II
  - 1941-1945
- Modern
  - 1946 to present

Sporadic use of the Black Hills by Euro-Americans began in the early 1800s and consisted mainly of fur trappers and traders (Sundstrom 1989). The western half of South Dakota, including the Black Hills, portions of southern North Dakota, and nearly the entire area of the Powder River Basin in Wyoming and Montana, were recognized as unceded Indian Territory by the 1868 treaty between the United States and the Sioux and Arapaho. More intense Euro-American occupation in the Black Hills began shortly after gold was discovered in the Black Hills in 1874. It was this discovery that brought a full-scale influx of Euro-American prospectors and miners to the Black Hills.

In addition to gold, several other minerals began to be extracted from the Black Hills in the late 19th and early 20th centuries. These minerals were largely contained in the pegmatite dikes exposed throughout the Black Hills. These pegmatite dikes frequently form resistant ridges and were mined from the surface. Typically, the rock was blasted from the pegmatite dikes using dynamite placed in either hand or machine drilled holes. The blasted rock was then sorted by hand and transferred to other locations for processing. After mining was complete, the extraction of rock typically left small open pits or cuts where the pegmatite dikes were once present.

Historic settlement in the Black Hills by Euro-Americans is generally auxiliary to this history of the mining industry. Homestead patents are common from the late 1800s through the 1920s. Industries such as the ranching and logging industry became common in the early 1900s; however, much of the land was not patented and remained public land.

Historic sites are very common in the project area. A significant percentage of the proposed travel routes surveyed for this analysis are located in the Central Hills, or Mystic Ranger District, where mining sites and associated materials and features are common. Historic sites in the area of potential effects may also include railroad grades (mostly abandoned), recreation residences, Forest Service administrative sites, Civilian Conservation Corps materials and structures, homesteading and other early historic settlements, sites associated with logging activities, and more rarely, cemeteries.
Applicable Laws, Regulations, Policy, and Forest Plan Direction

National Historic Preservation Act

The Forest Service is directed to identify, evaluate, treat, protect, and manage historic properties by several laws; however, the NHPA provides comprehensive direction to Federal agencies about their historic preservation responsibilities. The NHPA extends the policy in the Historic Sites Act of 1935 (49 Stat. 666; 16 U.S.C. §§461-467) to include resources that are of State and local significance, it expands the National Register of Historic Places (NRHP), and it establishes the Advisory Council on Historic Preservation (ACHP) and State Historic Preservation Offices (SHPO). NHPA Section 106 directs all Federal agencies to take into account effects of their undertakings (actions, financial support, and authorizations) on properties included in or eligible for the National Register. The ACHP’s regulations (36 CFR §800) implement Section 106 of the NHPA. Section 110 of the NHPA sets inventory, nomination, protection, and preservation responsibilities for federally owned and administered historic properties.

USDA Forest Service Policy Regarding Travel Management NHPA Compliance

In 2005, the Forest Service issued the “USDA Forest Service Policy for Section 106 of the NHPA Compliance in Travel Management: Designated Routes for Motor Vehicle Use” (USDA Forest Service 2005e). This policy was developed in consultation with the ACHP. It outlines minimal requirements for considering possible effects to historic properties that may be associated with designating routes and areas as part of a national forest’s transportation system.

Executive Order 11593

Executive Order 11593, entitled “Protection and Enhancement of the Cultural Environment”, also includes direction about the identification and consideration of historic properties in Federal land management decisions. The Order, issued May 13, 1971, directs Federal agencies to inventory cultural resources under their jurisdiction, to nominate to the National Register of Historic Places all federally owned properties that meet the criteria, to use due caution until the inventory and nomination processes are completed, and to assure that Federal plans and programs contribute to preservation and enhancement of non-federally owned properties.

The Black Hills National Forest’s Land and Resource Management Plan

The Forest Plan (USDA Forest Service 2006a) specifically lists the standards and guidelines that would be employed Forestwide in order to ensure protection and enhancement of cultural resources. The following Forest Plan standards and guidelines are directly applicable with the Travel Management analysis:

- Guideline 6101 considers long-term forest management needs in determining appropriate use of effects mitigation or avoidance of heritage resources during project planning.
- Guideline 6104 utilizes heritage resources for a variety of public uses and enjoyment.
- Guideline 6106 advises the Forest to incorporate information, data, and ideas in the Black Hills Heritage Resources Overview (USDA Forest Service 1996b) and the Forest’s Heritage Resources Database during all planning and implementation activities.
- Standard 7101 requires sensitive information about American Indian religious sites and sacred areas to be kept confidential.
• Standard 7103 recognizes American Indian traditions of gathering herbs, medicinal and edible plants, and other materials for religious purposes, and it makes provisions for those who wish to gather such plants and materials.

**Methodology**

**Assumptions**

• Unauthorized routes and areas may have already affected historic properties within route/area prisms.
• Under the action alternatives, use will continue at current levels or increase over time on the designated system with the prohibition of cross-country motorized travel.
• Given identical environmental variables there is no measurable difference in potential impact that might be caused to cultural resources from different vehicle classes (i.e., full-size four-wheel drive vehicles, off-road vehicles, and motorcycles).
• All cultural resources identified within the area of potential effect for all alternatives adding travel opportunities to the Forest’s transportation system are considered historic properties for the purposes of this undertaking, unless they already have been determined not eligible in consultation with the SHPO or through other agreed on procedures (36 CFR §60.4; 36 CFR §800).
• This undertaking includes no ground-disturbing components associated with the closure and rehabilitation of existing roads and trails that are not included in the Forest’s transportation system. All rehabilitation measures will be conducted at a later date under separate NEPA and NHPA analyses.

**Literature Inventory**

A literature search, often referred to in the vernacular as a “Level I inventory”, of the Black Hills Travel Management area of potential effect (defined below) was performed for this project by multiple Forest Service personnel prior to 2008. A variety of sources was referenced to compile a thorough background summary of past surveys conducted within the area of potential effect. The Forest’s GIS database contains spatial data, which were utilized to determine which properties were within the area of potential effect. The same geodatabase provided the information needed to determine which areas within the area of potential effect had previously been surveyed for cultural resources. I-Web, the Forest Service’s formal database for tracking cultural resources, was also used to obtain site and survey information. Once all potential sites within the area of potential effect had been identified, site records and project reports were referenced from the Forest’s extensive paper files. Finally, Forest Service personnel accessed the Archaeological Resources Management System database, managed by the Archaeological Research Center, Rapid City, SD, and the Wyoming Cultural Resources Office database. The data archived in those repositories were then compared with the Forest’s data and any necessary updates or edits were accomplished.

**Field Survey**

A Level III field survey was conducted for this project\(^\text{15}\). Visual inspections were conducted using pedestrian transects spaced no more than 30 meters. Intensive field survey was conducted for this project during the 2008 and 2009 field seasons. Field personnel varied in number

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\(^{15}\) The term “Level III” is defined here as an intensive pedestrian survey that covers 100% of the linear area of potential effect.
between two and six people. The project area was surveyed with a series of parallel, pedestrian transects. More intensive coverage was frequently used when attempting to relocate existing sites, areas with a suspected high potential for archaeological materials, and areas where ground visibility was low and a more intensive inspection was warranted. Field crews tracked the areas surveyed with handheld GPS units.

Indicators

- Number of historic properties within unauthorized routes at risk from ongoing use.
- Degree to which the integrity of historic property values are diminished.

The existing condition of cultural resources identified in the area of potential effect provides baseline information with which to assess potential effects of adding routes to the National Forest transportation system. The first-order indicator of existing conditions is the total number of historic properties located within the project area—regardless of effects. Currently, 308 cultural resource sites have been identified within the project area Forestwide. That number includes all properties where any segment of an unauthorized route bisects the boundary of a historic property, regardless of scale or impact.

A second, more important indicator of existing conditions is the number of at-risk historic properties currently identified within the project area. This group is a subset of the 308 total properties cited in the last paragraph. An “at-risk historic property” is defined here as:

A property that the Forest Heritage Resources Manager identifies as susceptible to being adversely affected as a result of designating a motor vehicle off-highway vehicle route or specifically defined area (e.g., trailhead or game retrieval area), or using or maintaining the designated motorized recreation transportation system. An at-risk historic property is identified based on property and condition characteristics and proximity to designated travel routes or specifically defined areas.

The number of historic properties determined to be “at risk” is based on their condition and proximity to the project area. The “at risk” category used in subsequent analyses consists of cultural resource sites with identified or potential direct, indirect, or cumulative effects. The nature of any identified or potential effects to at-risk properties is analyzed and tabulated below. The integrity measures listed in the adverse effect criteria at 36 CFR §800.5(a) were used to characterize the severity of any identified effects:

**Criteria of adverse effect:** An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. (36 CFR §800.5(a)(1))
The data reported below differentiate between direct and indirect effects. The NEPA regulations state that “effects” and “impacts” as used in the 40 CFR §1500 regulations are synonymous (40 CFR §1508.8).

Different disturbance agents can combine in a variety of ways to create a potential threat to historic properties. The results of field surveys and the literature searches demonstrated a number of identified and potential adverse effects to cultural resources should certain routes be added to the National Forest transportation system. The present analysis assesses the potential for both direct and indirect effects. The more common threats identified in the area of potential effect are summarized in Table 54. The list is not exhaustive. Other disturbances have been noted, but those threats specified in the table below constitute the most common disturbances documented.

### Table 54. Examples of potential site disturbances as a result of motorized vehicle travel

<table>
<thead>
<tr>
<th>Direct effects</th>
<th>Indirect effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Routes bisect and disturb primary locus of cultural resource sites.</td>
<td>• Driving off-established routes on cultural sites</td>
</tr>
<tr>
<td>• Routes cross and disturb features at cultural resource sites.</td>
<td>• Ground-disturbing activities associated with motorized vehicle camping within boundaries of cultural resource sites that contain significant cultural features.</td>
</tr>
<tr>
<td></td>
<td>• Graffiti painted on historic structures accessed by motorized vehicles.</td>
</tr>
<tr>
<td></td>
<td>• Vandalism to historic mine sites accessed by motorized vehicle (e.g., bullet holes, theft, and structural damage).</td>
</tr>
<tr>
<td></td>
<td>• Evidence of vandalism or illicit digging activity within prehistoric cultural resource sites accessed by motorized vehicles.</td>
</tr>
</tbody>
</table>

A simple calculation of the number of at-risk historic properties provides only general information about potential effects. It does not sufficiently disclose the scale and severity of potential effects on any given property, or address the type of mitigation measures that may be necessary to eliminate or lessen all direct and indirect effects. The magnitude of effect to a historic property’s integrity determines the severity of any direct, indirect, or cumulative effects. The following effects analyses identify the scale and severity of identified or potential effects. Severity of effect is determined based on a professional assessment of the data available to date. A four-category system is used: no or negligible effects, minor effects, moderate effects, and major effects. These categories represent a progressive scale that provides a qualitative assessment of the severity of any direct, indirect, or cumulative effects to the integrity of a cultural resource site.

Working definitions for the four severity categories are provided in Table 55. The column on the right provides additional insight as to what activities would be necessary to mitigate potential effects. The four categories represent relative (as opposed to absolute) units based on professional assessments.
Table 55. Severity of effects to cultural resources

<table>
<thead>
<tr>
<th>Severity of effects</th>
<th>Working definition</th>
<th>Explanatory notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>Route bisects some portion of the cultural resource site but the effect on NRHP values is insignificant.</td>
<td>If the effect on integrity measures is determined to be negligible, there is essentially no measurable effect on the cultural resource; therefore, no mitigation measures would be prescribed. No distinction is made between no disturbance and negligible disturbance. The majority of sites determined to be within the area of potential effect have been bisected in varying degrees by some length of motorized vehicle route; therefore, it is more appropriate to describe the most innocuous effects as negligible as opposed to none. In either case, no mitigation measures are necessary, so the outcome is identical.</td>
</tr>
<tr>
<td>Minor</td>
<td>Effects on cultural resources are assessed as relatively minor. Integrity of the NRHP values may diminish if measures are not taken to alleviate the potential effect.</td>
<td>If the severity of effect is determined to be minor, some relatively minor disturbance has been noted within the boundaries of cultural resource site and some type of mitigation measure may be required. In nearly all cases, the preferred method of protection would be to include the site in a well-defined monitoring plan designed to ensure that the minor degree of disturbance (or potential for disturbance) initially noted does not exhibit a tendency to increase in severity over time. It is assumed for minor effects that an adaptive management strategy may be used. An adaptive management strategy means that progressively more complex and potentially costly protective measures would be employed to eliminate a sustained potential for adverse effects. Signs, for example, may be erected as a first measure. If signs do not curtail potential adverse actions, more aggressive measures would be taken. Barriers may be prescribed when it appears as though the action responsible for the disturbance is well entrenched and not likely to be curtailed by the simple installation of a sign. The threshold between a minor and moderate threat is therefore more subjective than others.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Materials associated with NRHP values exhibit some degree of damage or alteration, but NRHP integrity can be retained or improved if the detrimental activity is curtailed.</td>
<td>If the severity of effect is determined to be moderate, more extensive site disturbance has been noted and some type of protective measure is necessary to eliminate the potential for adverse effects and comply with NHPA mandates. In most cases the preferred method would be to cap the site with a geotextile material and cover the fabric with a protective barrier most frequently composed of crushed rock, thereby eliminating the potential for effects to cultural resources. An adaptive management strategy may be used where progressively more complex and potentially costly protective measures would be employed to eliminate a sustained potential for adverse effects.</td>
</tr>
<tr>
<td>Major</td>
<td>Effects on cultural resources are severe. If that particular route is added to the system without mitigation measures, the action would result in adverse effects to the NRHP values.</td>
<td>An effect severity rating of major indicates that the integrity of cultural resource site values would be affected in a significant way unless appropriate mitigation measures are implemented. A major value is reserved for those cases where a cultural resource site exhibits evidence of an adverse effect associated with past activities either directly or indirectly associated with the motorized use of an unauthorized route and these adverse effects would continue or increase if the route or area is added to the National Forest transportation system. Mitigation measures associated with direct or indirect effects of major severity require a substantial investment of time and resources to implement. In most cases, the only viable option may be rerouting the road or trail around the resource. Other mitigation measures may necessitate scientific data recovery which can be expensive and requires additional consultation under 36 CFR §800.</td>
</tr>
</tbody>
</table>
Affected Environment

The objective of this section is to define the nature and scope of the cultural resource inventory identified and analyzed within the project area of potential effect. The parameters established in this section guide the effects assessment reported in the subsequent Environmental Effects Analysis section.

Section 106 of the National Historic Preservation Act requires Federal land-managing agencies to take into account the effects of their undertakings on historic properties. The regulation defines a historic property as:

… any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. (36 CFR §800.16(l)(1))

Based on the definition provided, the term “historic properties” has a more specific meaning than do the terms “cultural resources” and/or “cultural resource sites”. The former refers specifically to cultural properties that have been formally determined eligible for the NRHP using NRHP criteria (36 CFR §60.4). In the context of this document and pursuant to 36 CFR §800.16(l)(2), the term, it also includes all potentially eligible cultural resource sites within the area of potential effect. Exceptions are those resources that have been formally determined not eligible for the NRHP in consultation with the State Historic Preservation Officer (SHPO) through regulatory procedures (36 CFR §60.4; 36 CFR §800). The terms “cultural resources” and/or “cultural resource sites” are used here in a more general sense to denote all archaeological and historical sites, regardless of their NRHP significance.

For the Forest to determine the potential effects of the proposed action on historic properties, it is first necessary to identify the area of potential effect. The 36 CFR §800 regulations define an area of potential effect as:

… the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. (36 CFR §800.16(d))

As described previously on page 296, the Forest Service, in consultation with the ACHP, developed a policy statement outlining how the agency would satisfy NHPA requirements as it proceeds with its analyses designating a revised system of motorized routes (USDA Forest Service 2005e). The policy stated that only certain elements of the 2005 Travel Management Rule are to be considered undertakings with the potential to affect historic properties, triggering evaluation under Section 106 of NHPA and 36 CFR §800. These categories are as follows:

- Construction of a new road or trail;
- authorization of motor vehicle use on a route currently closed to vehicles; and
- formal recognition of a user-developed (unauthorized) route as a designated route open to motor vehicles.
The Policy Statement also clearly excludes certain aspects of the project from analysis:

Existing, formally established system (classified) roads and trails, already open to motor vehicle travel, generally need not be re-evaluated for purposes of this rule. Their designation on a motor vehicle use map will not generally be considered an undertaking for the purposes of NHPA and not subject to Section 106 review.

The same document also defines, in part, what components of the project will be included in the area of potential effect:

The area of potential effect (APE) for the road, trail, or area shall include corridors or zones adjacent to the road, trail, or area that the Forest determines to be subject to direct or indirect effects due to local environmental factors or the proximity of particularly sensitive resources. This will include the road, trail, or area surfaces, passing or parking areas, and campsites or other features established as part of the road or trail. It shall also include additional affected areas or properties if the designation would facilitate increased access to those historic properties.

The Forest Service is proposing to add a number of user-created and other nonsystem routes for designation. All routes the Forest is considering adding to the transportation system that are not currently designated system routes are included in the area of potential effect of this project and their effects on historic properties have been analyzed. Intensive survey has been completed for all nonsystem routes under analysis and the results of those surveys are reported in documents sent to the South Dakota and Wyoming State Historic Preservation Offices (USDA Forest Service 2009e, 2009f). The data and analyses reported in those documents are summarized in the following section.

For purposes of this undertaking, the area of potential effect is defined as a 200-foot-wide corridor centered on linear, nonsystem motor vehicle features (i.e., roads, trails, corridors, routes). The area of potential effect for this project includes 920 miles of routes within the extant APE (South Dakota and Wyoming). At present, a total of 34 trailheads have been proposed across the Forest. Seven of these currently have existing developments, the rest do not. These locations are each considered to be in the APE and have been inventoried and analyzed accordingly.

Alternatives B and C of the EIS make provisions for dispersed camping and limited, motorized cross-country retrieval of legally harvested game. Refer to the alternative descriptions in Chapter 2 for details. The effects of these proposals are also analyzed in this document.

For purposes of this analysis, no distinction is made between roads (greater than 65 inches wide) and trails (less than 65 inches wide) regarding their potential to adversely affect historic properties. Assumptions are listed earlier in this section concerning potential impacts that might be caused by different vehicle classes. No attempt is made to identify or analyze cultural resources on lands other than National Forest System lands as this undertaking would not encompass other lands.

**Environmental Effects Analysis**

In this section, data are presented to demonstrate the effects analysis for each of the five alternatives. The disclosure of sensitive data related to the specific location and/or character of a historic property is regulated pursuant to stipulations in 36 CFR §800.11(c) and Section 304 of the National Historic Preservation Act, in addition to 43 CFR §7.18 and Section 9 of the
Archaeological Resources Protection Act. Accordingly, cultural resource sites are analyzed and reported collectively on a Forestwide scale. Route-specific cultural resource data are included in two comprehensive reports submitted to the South Dakota and Wyoming SHPOs (USDA Forest Service 2009e, 2009f).

The current status of the cultural resource field survey in relation to the area of potential effect is tabulated in Table 56. A total 765 of 920 miles of routes (i.e., roads and trails) had been previously surveyed using methods comparable with contemporary professional standards. The remaining 155 miles were surveyed during the 2008–2009 — a total of 15,460 acres for this project. The result was that 100 percent of the routes within the linear area of potential effect have received field survey.

Table 56. Cultural resources survey in area of potential effect

| Miles of previously surveyed routes | 765 |
| Miles of routes surveyed for current project | 155 |
| Miles of routes in area of potential effect (total) | 920 |

Direct and Indirect Effects

**Alternative A**

The following discussion provides a summary of existing conditions within the area of potential effect. About 864,000 acres of the Forest currently open to motorized cross-country use would remain open under Alternative A. Motorized cross-country travel is presently undertaken for a variety of purposes including retrieval of big game harvested by hunters, dispersed camping, and general OHV recreational traffic.

The area of potential effect as defined in the previous section does not adequately assess the effects of Alternative A. The alternative includes no prohibition on cross-country travel and therefore does not limit potential effects to a well-defined area. Consequently, the baseline data presented for Alternative A should be considered the **minimal** effects to cultural resources that can be expected under the no action alternative. An estimate of the potential long-term effects on historic properties under Alternative A is provided in the Cumulative Effects section below.

The first-order indicator of existing conditions is the total number of cultural sites located within the area of potential effect—regardless of effects. A total 308 sites and 28 isolated finds have been identified in the linear area of potential effect (excluding areas of proposed game retrieval and dispersed camping). That number includes 14 previously unknown sites and 8 new isolated finds identified as a result of the 2008–2009 field survey. By definition, isolated finds are not eligible for the NRHP. For that reason, the isolated find subset is disregarded throughout the remainder of this analysis.

About half of the cultural resources within the area of potential effect of this project have been evaluated for eligibility to the NRHP. The current NRHP status of each of the 308 sites is reported in Table 57. In cases where the Forest could not locate a SHPO concurrence letter and demonstrate beyond reasonable doubt NRHP eligibility, the Forest chose to err on the side of caution and considered the site “unevaluated” and, therefore, potentially eligible until the formal NRHP status can be determined.
The 101 cultural resource sites in the area of potential effect formally determined not eligible for the NRHP according to 36 CFR §63 criteria do not meet the definition of a historic property and are therefore considered “not at risk” in the following risk assessment. Available data were reviewed for each of the remaining 207 historic properties or potential historic properties to determine whether the proposed addition of any route to the transportation system would diminish the integrity of the property's NRHP values (i.e., location, design, setting, materials, workmanship, feeling, or association). Table 58 summarizes the risk assessment for all cultural resources identified within the area of potential effect. Of the extant cultural resource sites currently identified, 41 could potentially be directly and/or indirectly affected by adding a corresponding route to the transportation system. Current patterns suggest that roughly 15 percent of the cultural resource sites identified within the area of potential effect are potentially susceptible to direct or indirect effects.

Table 58. Risk assessment of cultural resources identified in area of potential effect

| Total properties identified within area of potential effect determined not at risk | 267 |
| Total properties identified within area of potential effect determined potentially at risk | 41 |
| Total properties identified within area of potential effect | 308 |

Table 59 provides a summary of the severity of effects as they have been assessed for the 308 sites in the area of potential effect. The data categorize anticipated severity of effects if no action is taken to avoid adverse effects. Sites not eligible for the NRHP are all tallied in the “negligible” category.

Table 59. Summary of effects severity

<table>
<thead>
<tr>
<th>Negligible</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>267</td>
<td>35</td>
<td>5</td>
<td>1</td>
<td>308</td>
</tr>
</tbody>
</table>

Forty-one of 308 cultural resource sites identified within the area of potential effect may potentially be affected (i.e., at risk) if no action is taken to manage motor vehicle use. Table 60 provides a breakdown according to the type of effect (i.e., direct and indirect) for the 41 potentially at-risk sites.

Table 60. At-risk sites within area of potential effect tabulated according to direct and indirect effects

<table>
<thead>
<tr>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>12</td>
<td>41</td>
</tr>
</tbody>
</table>
It is important to stress that the calculations reported reflect a minimum number of potentially at-risk sites. The analysis reflects only those sites that have been identified within a 200-foot corridor of the unauthorized route. More accurately, the effects of taking no action to manage motorized vehicle use on the Forest would be expected to result in significantly higher numbers of at-risk sites.

Alternative A would have the most impacts to cultural resources because it is the only alternative that would allow unrestricted motorized cross-country travel to occur without any form of protection measures prescribed to reduce or eliminate threats to the integrity of historic properties. The effects of soil compaction, rutting, erosion, structural damage, illegal artifact collecting, and vandalism is expected to continue—and likely increase—under the current management plan. The no action alternative would result in continued degradation of known historic properties.

**Alternative B**

Alternative B would designate 4,129 miles of system routes open to motor vehicle use. Existing system roads compose 3,510 of these miles and are not considered undertakings requiring Section 106 review pursuant to USDA Forest Service/ACHP policy (USDA Forest Service 2005e). Proposed actions in this alternative that are considered undertakings subject to Section 106 review include:

- Reopen a closed route 223 miles
- Designate a new route from an existing unauthorized route 396 miles

Alternative B would add 619 miles of unauthorized routes to the transportation system. A total of 225 cultural resource sites have been identified within the linear area of potential effect of Alternative B. Of the 225 properties identified, 190 currently exhibit little or no evidence for potential effects as a result of motorized travel. Potential direct and/or indirect effects requiring the implementation of protection measures have been identified for 35 historic properties.

Table 61 provides a more detailed assessment of the 35 historic properties susceptible to direct and/or indirect effects under Alternative B. The table quantifies the type of effect, severity of effect, and the protection measures prescribed to eliminate or minimize any potential for adverse effects.

**Table 61. Effects analysis for historic properties associated with Alternative B**

<table>
<thead>
<tr>
<th>Type of effects</th>
<th>Severity of effects</th>
<th>Minimum required protection measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>25</td>
<td>Minor 30 Monitor 30</td>
</tr>
<tr>
<td>Indirect</td>
<td>10</td>
<td>Moderate 4 Site capping 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major 1 Reroute 1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
<td><strong>Total 35</strong></td>
</tr>
</tbody>
</table>

Direct effects are the most common type associated with Alternative B. These consist of potential impacts due to activities directly associated with motorized vehicle use. The potential for direct effects to site integrity have been identified for 25 cultural resource sites. Severity of effects has been assessed as minor in Alternative B for 30 (86 percent) of the 35 at-risk properties. In these cases, the nature or degree of effects is problematic, ambiguous, or
indeterminate (e.g., past effects vs. ongoing effects). Monitoring is prescribed for this subset to better assess the potential for long-term adverse effects. At the end of a two-year period following publication of the motor vehicle use map, where monitoring indicates that adverse effects are ongoing or likely to develop, the Forest will consult with the appropriate SHPO and Tribal governments to determine what protection or treatment measures would adequately minimize or eliminate the potential for adverse effects.

Five historic properties have been identified within the Alternative B area of potential effect as requiring well-defined protection measures if the corresponding travel routes are formally selected for designation in the record of decision. All five routes have the potential to directly affect the integrity of historic properties in an adverse manner. The severity of effects for four of the five historic properties is considered moderate. Should the corresponding routes be designated on the motor vehicle use map, the Forest would, at minimum, cap the threatened portions of the sites with a geotextile cloth topped with a protective layer of gravel or rock. Capping the sites would meet minimum requirements although other more extensive measures may be selected. Severity is assessed as major for the fifth site. In that case, the Forest would reroute the road/trail around the site in order to circumvent the property all together. All protection measures prescribed for moderate and major at-risk sites would be implemented before the associated routes bisecting the sites were added to the MVUM. Prior to the successful installation of prescribed protection measures, the associated road/trail(s) would remain closed to all types of motorized use.

Alternative B would limit dispersed camping to a distance of 100 feet from the centerline of the closest system route—the same distance as the linear area of potential effect as defined above. Currently, a total 864,000 acres of Forest are open to cross-country motorized travel and dispersed camping (Table 7). Confining these motorized activities to 100-foot corridors would result in a measureable reduction in the potential for adverse effects to cultural resources. Under Alternative B, dispersed camping (motorized) would be limited to 63,500 acres, resulting in a 93 percent reduction in the quantity of acres on which dispersed camping would be permitted. In this case, the undertaking would implement a restriction on areas where no such restriction has previously existed. Reducing the acreage available for dispersed camping as proposed in Alternative B would reduce the potential for adverse effects to historic properties.

Cross-country travel is currently permitted on roughly 864,000 acres of the Forest for purposes of retrieving harvested game via motorized vehicle. Alternative B would result in a measureable reduction in the potential for adverse effects to historic properties by reducing the number of acres available for motorized game retrieval to roughly 179,000. In this case, the undertaking would implement a restriction on areas where game may be retrieved by motorized vehicles where no such restriction has previously existed. Motorized retrieval of harvested elk as proposed in Alternative B would be considered casual use and have little potential to generate adverse effects to historic properties pursuant to 36 CFR §800.3(a)(1).

Alternative C

Alternative C would designate 4,353 miles of system routes open to motor vehicle use. Existing system roads compose 3,499 of these miles and are not considered undertakings requiring Section 106 review pursuant to USDA Forest Service/ACHP policy (USDA Forest Service 2005e). Proposed actions in this alternative that are considered undertakings subject to Section 106 review include:
• Reopen a closed route 330 miles
• Designate a new route from an existing unauthorized route 524 miles

Alternate C would add 854 miles of unauthorized routes to the transportation system. A total 260 cultural resource sites have been identified within the linear area of potential effect of Alternative C. Of the 260 properties identified, 227 currently exhibit little or no evidence for potential effects as a result of motorized travel. Potential direct and/or indirect effects requiring the implementation of protection measures have been identified for 33 historic properties.

Table 62 provides a more detailed assessment of the 33 historic properties susceptible to direct and/or indirect effects under Alternative C. The table quantifies the type of effect, severity of effect, and the protection measures prescribed to eliminate or minimize any potential for adverse effects.

Table 62. Effects analysis for historic properties associated with Alternative C

<table>
<thead>
<tr>
<th>Type of effects</th>
<th>Severity of effects</th>
<th>Minimum required protection measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>23</td>
<td>Monitor 29</td>
</tr>
<tr>
<td>Indirect</td>
<td>10</td>
<td>Site Capping 4</td>
</tr>
<tr>
<td></td>
<td>Major 0</td>
<td>Reroute 0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>Total 33</td>
</tr>
</tbody>
</table>

Direct effects are the most common type associated with Alternative C. These consist of potential impacts due to activities directly associated with motorized vehicle use. The potential for direct effects to site integrity have been identified for 23 cultural resource sites. Severity of effects has been assessed as minor in Alternative C for 29 (88 percent) of the 33 at-risk properties. In these cases, the nature or degree of effects is problematic, ambiguous, or indeterminate (e.g., past effects vs. ongoing effects). Monitoring is prescribed for this subset to better assess the potential for more long-term adverse effects. At the end of a two-year period following publication of the motor vehicle use map, where monitoring indicates that adverse effects are ongoing or likely to develop, the Forest will consult with the appropriate SHPO and Tribal governments to determine what protection or treatment measures would adequately minimize or eliminate the potential for adverse effects.

Four historic properties have been identified within the Alternative C area of potential effect as requiring well-defined protection measures if the corresponding travel routes are formally selected for designation in the record of decision. All four routes have the potential to directly affect the integrity of historic properties in an adverse manner. The severity of effects for each of the four historic properties is assessed as moderate. Should the corresponding routes be designated on the motor vehicle use map, the Forest would, at minimum, cap the threatened portions of the sites with a geotextile cloth topped with a protective layer of gravel or rock. Capping the sites would meet minimum requirements although other more extensive measures may be selected. All protection measures prescribed for moderate and major at-risk sites would be implemented before the associated routes bisecting the sites were added to the motor vehicle use map. Prior to the successful installation of prescribed protection measures, the associated road/trail(s) would remain closed to all types of motorized use.
Alternative C would limit dispersed camping to a distance of 300 feet from the centerline of the closest system route. Currently, a total 864,000 acres of Forest are open to cross-country motorized travel and dispersed camping (Table 7). Confining these motorized activities to 300-foot corridors would result in a measurable reduction in the potential for adverse effects to cultural resources. Under Alternative C, dispersed camping (motorized) would be limited to 184,000 acres, resulting in a 79 percent reduction in the quantity of acres on which dispersed camping would be permitted. In this case, the undertaking would implement a restriction on areas where no such restriction has previously existed. Reducing the acreage available for dispersed camping as proposed in Alternative C would reduce the potential for adverse effects to historic properties.

Cross-country travel is currently permitted on roughly 864,000 acres of the Forest for purposes of retrieving harvested game via motorized vehicle (Table 7). Alternative C would reduce the number of acres available for motorized game retrieval to roughly 385,500. Although Alternative C would implement a restriction on areas where game may be retrieved by motorized vehicles where no such restriction has previously existed, the number of vehicles that could legally drive cross country—and potentially threaten the integrity of historic properties—remains significant. To ensure that historic properties are not affected as a result of the action, the Forest has consulted with the Wyoming and South Dakota SHPOs in an effort to develop a management plan designed to minimize the potential for historic properties to be adversely affected by motorized game retrieval.

According to statistics compiled by the South Dakota Game, Fish and Parks Department\footnote{http://www.sdgfp.info/Wildlife/hunting/Harvest/Projections.htm}, 919 elk and 7,575 deer were harvested in the Black Hills Hunting Unit in 2008 (includes archery and firearms). That number includes all elk and deer harvested across an area much larger than the Black Hills National Forest proper. There are roughly 435,000 acres of National Forest System lands within the State of South Dakota’s Black Hills Hunting Unit.

Data provided by the State of South Dakota suggest that 82 percent of elk hunters responding to a survey had hunted on public lands—but the data do not distinguish between State and Federal lands. No corresponding data were reported for the deer harvest; therefore, it is difficult to assess the total number of elk and deer harvested on Forest lands.

The number of elk and deer harvested on Forest lands located in the State of Wyoming are more difficult to calculate because the designated hunt areas are nearly eight and 20 times respectively the size of the Forest lands\footnote{http://gf.state.wy.us/wildlife/hunting/stats/harvest/2008/index.asp}. Employing the numbers provided by the State of Wyoming of 59 elk and nearly 4,000 deer harvested from those hunting units, assuming an equal spatial distribution (no other data are available), roughly 8 elk and 200 deer would have been harvested on Forest lands in the State of Wyoming.

Eighty-two percent (318,000 acres) of the proposed 385,500 acres of game retrieval areas has been surveyed for cultural resources. The Forest’s GIS records show that 1,464 cultural sites have been identified within the same area. Of that number, 189 sites (13 percent) have been determined eligible for the NRHP, 180 sites (12 percent) remain unevaluated, and the remaining 1,095 sites (75 percent) are not eligible for the NRHP.

The Forest has developed a monitoring plan in an effort to accurately assess the potential for random adverse effects to historic properties as a result of motorized game retrieval in the areas.
identified. A percentage of the historic properties located within the proposed retrieval areas would be monitored each of the first two years if—and after—motorized game retrieval is approved. The Forest would submit a monitoring report to the appropriate SHPO and Tribal governments after the close of the second season. In the event that monitoring reveals damage to historic properties, the Forest would consult with the SHPO and Tribal staffs regarding an appropriate mitigation measure. After the second year of monitoring has been completed, the Forest would initiate consultation to discuss the merits of additional monitoring based on the results of the first 2 years.

**Alternative D**

Alternative D would designate 3,197 miles of system routes open to motor vehicle use. Existing system roads compose 2,939 of these miles and are not considered undertakings requiring Section 106 review pursuant to USDA Forest Service/ACHP policy (USDA Forest Service 2005e). Proposed actions that are considered undertakings subject to Section 106 review include:

- Reopen a closed route 90 miles
- Designate a new route from an existing unauthorized route 168 miles

Alternate D would add 258 miles of unauthorized routes to the transportation system. Eighty-eight cultural resource sites have been identified within the linear area of potential effect of Alternative D. Of the 88 properties identified, 74 currently exhibit little or no evidence for potential effects as a result of motorized travel. Potential direct and/or indirect effects requiring the implementation of protection measures have been identified for 14 historic properties.

Table 63 provides a more detailed assessment of the 14 historic properties susceptible to direct and/or indirect effects under Alternative D. The table quantifies the type of effect, severity of effect, and the protection measures prescribed to eliminate or minimize any potential for adverse effects.

**Table 63. Effects analysis for historic properties associated with Alternative D**

<table>
<thead>
<tr>
<th>Type of effects</th>
<th>Severity of effects</th>
<th>Minimum required protection measures</th>
</tr>
</thead>
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<tr>
<td>Direct</td>
<td>11</td>
<td>Minor</td>
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<tr>
<td></td>
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<td>Monitor</td>
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<tr>
<td>Indirect</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
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<tr>
<td><strong>Severity</strong></td>
<td><strong>Total 14</strong></td>
<td><strong>Total 14</strong></td>
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<td><strong>required</strong></td>
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<td><strong>measures</strong></td>
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Direct effects are the most common type associated with Alternative D. These consist of potential impacts due to activities directly associated with motorized vehicle use. The potential for direct effects to site integrity have been identified for 11 cultural resource sites. Severity of effects has been assessed as minor in Alternative D for 13 (93 percent) of the 14 at-risk properties. In these cases, the nature or degree of effects is problematic, ambiguous, or indeterminate (e.g., past effects vs. ongoing effects). Monitoring is prescribed for this subset to better assess the potential for more long-term adverse effects. At the end of a two-year period following publication of the motor vehicle use map, where monitoring indicates that adverse effects are ongoing or likely to develop, the Forest will consult with the appropriate SHPO and
Tribal governments to determine what protection or treatment measures would adequately minimize or eliminate the potential for adverse effects.

A single historic property has been identified within the Alternative D area of potential effect as requiring well-defined protection measures if the corresponding travel route is formally selected for designation in the record of decision. The associated route has the potential to directly affect the integrity of the property in an adverse manner. The severity of effects for the property is considered moderate. Should the corresponding route be designated on the MVUM, the Forest would, at a minimum, cap the threatened portions of the site with a geotextile cloth topped with a protective layer of gravel or rock. Capping the site would meet minimum requirements although other more extensive measures may be selected. All protection measures prescribed for moderate and major at-risk sites would be implemented before the associated route bisecting the site was added to the MVUM. Prior to the successful installation of prescribed protection measures, the associated road/trail(s) would remain closed to all types of motorized use.

**Alternative E**

Alternative E would retain the current 3,776 miles of existing system routes. No additional routes or areas would be added to the NFTS and cross-country travel would be prohibited. Under this alternative, both motorized dispersed camping and motorized game retrieval would be illegal.

The USDA Forest Service policy, in consultation with the ACHP, states that, “existing, formally established system (classified) roads and trails, already open to motor vehicle travel, generally need not be re-evaluated for purposes of this rule. Their designation on a motor vehicle use map will not generally be considered an undertaking for the purposes of NHPA and not subject to Section 106 review.”

Alternative E would result in a measurable reduction in the potential for adverse effects to cultural resources by minimizing the potential for adverse effects produced by motorized vehicles.

**Effects Common to All Action Alternatives**

Alternatives B, C, and D have the potential to adversely affect at-risk historic properties due to the presence of eligible and unevaluated sites near, or bisected by, travel routes. It is likely that a long-term result of reducing or eliminating cross-country travel under the action alternatives would result in increased use of the designated system. This could be of concern for cultural resource sites not yet discovered due to factors such as dense vegetation or subsurface concealment. On the other hand, Alternatives B, C, and D would each reduce or prohibit unauthorized motor vehicle cross-country travel, thereby reducing the potential for adverse effects to historic properties. Each of the action alternatives would result in an overall reduction in the potential for adverse effects to cultural resources.

Forest Plan standards and guidelines as summarized in the legal authorities section above would be maintained under each of the three action alternatives provided the stipulations outlined are effectively implemented. Under all of the action alternatives, consultation with the appropriate SHPOs and American Indian governments has been conducted and will continue in accordance with Federal law and USDA Forest Service policy. The Forest will develop and implement appropriate management plans and strategies as required by the LRMP. Sensitive information regarding archaeological sites as well as American Indian religious and sacred sites has been kept confidential as mandated by law and Standard 7101 of the Forest Plan. Alternative A, the no
action alternative, is the only alternative that would deviate from Forest Plan direction and applicable cultural resource statutes. Compliance with all relevant laws, regulations, and policies could be maintained in Alternatives B, C, D, and E, although resource investments and the complexity of mitigation measures associated with each alternative vary significantly.

The action alternatives proposed in the Travel Management Plan could result in both beneficial and adverse effects on Native American interests. Beneficial effects may be produced by an increased potential for solitude and enhanced resources associated with traditional-use areas. Conversely, road closures may limit access to those same areas. The American Indian Religious Freedom Act reinforces the policy of providing access and use of Forest lands to American Indians for traditional rites and ceremonies. Regardless of the alternative selected, the Forest would continue to consult with American Indian individuals and groups to identify and resolve potential access and traditional-use issues.

The Forest has proposed designating 34 trailheads on the motor vehicle use map. All 34 locations were surveyed for the presence of cultural resources. Eight of the proposed trailhead locations were located on or very near cultural resources sites. One consisted of an isolated find, which by definition is not eligible for the NRHP. Four additional sites had been determined not eligible for the NRHP with SHPO concurrence. Two sites are eligible for the NRHP with SHPO concurrence. The NRHP significance of the eighth site has not yet been determined. To minimize any potential for adverse effects, it would be necessary to eliminate, relocate, or mitigate three trailheads. If the Forest determines that relocation or mitigation is necessary for any of the three trailheads, the appropriate consulting parties would need to be informed to ensure that 36 CFR §800 mandates are met.

Cumulative Effects

Past, present, and reasonably foreseeable future activities within the analysis area include timber harvest, recreation, road construction and maintenance, range improvement projects, mining activities, and a host of other projects, each of which may use the Forest’s transportation system. These activities have occurred in the past, are ongoing, and in all likelihood will continue to occur in the foreseeable future. The NHPA and 36 CFR §800 regulations outline the procedural mandates for protecting historic properties from impacts caused by Federal actions such as those cited. Adverse effects can be avoided or minimized through the implementation of appropriate site-specific mitigation measures through consultation with the ACHP, the appropriate SHPOs and Tribal governments, and the public.

The geographic scope of the cumulative effects analysis is limited to the Forest’s administrative boundary because impacts to cultural resources accumulate at their specific locations, irrespective of actions in surrounding areas. The cumulative effects analysis excludes designated wilderness, and research natural areas where motorized uses are currently prohibited.

Cumulative effects are not anticipated under the action alternatives because the National Forest transportation system would be well defined and all identified and potential effects (both direct and indirect) would be mitigated. This assertion presupposes the assumptions listed in the Methodology section above as well as the General Assumptions disclosed at the beginning of Chapter 3.

The data reported in Table 59 demonstrate that the no action alternative would have unmitigated, long-term adverse effects on cultural resources. A minimum of 41 historic properties would be adversely affected if no mitigation action was taken. Another 267 sites identified within the
linear area of potential effect could potentially be affected in the absence of any long-term management actions or oversight.

Cross-country travel is more likely to occur under Alternative A than the action alternatives. As a result, cumulative effects would likely occur under Alternative A. Although potential cumulative effects for the no action alternative are difficult to accurately assess and quantify, one can calculate the average number of historic properties per acre that would be susceptible to cross-country motorized travel. This exercise has previously been attempted in Section 3-10.1 of the Forest’s Phase II Amendment to the 1997 Revised LRMP (USDA Forest Service 2005a). More than 6,000 cultural resource sites had been identified on the Forest as of 2005. Additional cultural resources not yet identified unquestionably exist. The same reference estimates that 11,000 cultural sites (archaeological and historic) may exist on the Forest, producing a theoretical site density of one site for every 110 acres. If present trends are maintained, roughly 15 to 25 percent of the sites identified on the Forest may be eligible for the NRHP. Based on these data, an estimated 2,750 historic properties may potentially be affected if no attempt is made to manage cross-country motorized travel. Any further attempts to quantify cumulative effects would be highly speculative.

**Consultation**

**Advisory Council on Historic Preservation**

The Forest consulted with the Advisory Council on Historic Preservation (ACHP) for this project in the context of developing a programmatic agreement with the Wyoming SHPO. Pursuant to 36 CFR §800.14(b), a programmatic agreement is used for historic properties located in the State of Wyoming as an alternative means of compliance with the National Historic Preservation Act’s implementing regulations. That agreement outlines the Forest Service’s intent to complete NRHP evaluations prior to project implementation for all cultural sites located in the Wyoming area of potential effect whose NRHP significance remains undetermined (USDA Forest Service 2010a). The ACHP responded in the negative to the Forest’s invitation to participate in the development of the programmatic agreement.

**State Historic Preservation Officers**

The NRHP implementing regulations identify the SHPO as one of several primary consulting parties when federally authorized or federally funded undertakings have the potential to affect cultural resources (36 CFR §800.2(c)). Similarly, Section 2361.21 of the USDA Forest Service Manual (USDA Forest Service 2008e) states that the agency official shall consult with the SHPO when:

1. Seeking review and comments for forest and grassland projects and programs in accordance with NHPA Section 106.
2. Seeking a consensus determination of National Register eligibility for cultural resources in accordance with NHPA Section 106.

The cultural resources analysis completed for this project involves lands located in two states: South Dakota and Wyoming. Consequently, two State Historic Preservation Offices were consulted under the Section 106 process. Two separate Section 106 reports were written, each of which reported the identification, evaluation, and assessment of effects for cultural resources located within their respective state boundaries (USDA Forest Service 2009e, 2009f). The Forest
consulted on NRHP evaluations for 14 new cultural resource sites identified in South Dakota. No new cultural resources were identified in the State of Wyoming.

The Forest developed a programmatic agreement with the Wyoming SHPO in which the Forest agreed to complete NRHP evaluations prior to project implementation for all unevaluated cultural sites located in the Wyoming area of potential effect (USDA Forest Service 2010a). Consultation was also completed with the South Dakota and Wyoming SHPOs regarding the Forest’s proposed monitoring plans for the linear routes under analysis in the action alternatives. In addition, the South Dakota SHPO was consulted on a proposed monitoring plan to ensure that motorized game retrieval that has been proposed for large, well-defined areas in Alternative C would result in no adverse effect to cultural resources.

The Forest received concurrence from the South Dakota SHPO regarding the Forest Service’s recommendation that, if the stipulations delineated in the report for this travel management project are effectively followed and/or implemented prior to project implementation, the undertaking would result in no adverse effects to historic properties. The effects analysis for lands located in the State of Wyoming will be submitted to the Wyoming SHPO, pursuant to the programmatic agreement developed between the Forest Service and the Wyoming SHPO, once the NRHP evaluations have been completed, but prior to project implementation.

Tribal Consultation

The NRHP implementing regulations identify American Indian tribes as one of several primary consulting parties when federally authorized or federally funded undertakings have the potential to affect cultural resources (36 CFR §800.2(c)). Similarly, Section 2361.22 of the Forest Service Manual states that the agency official shall consult with Indian tribes in recognition of their government-to-government relationship.

Section 101(d)(2) of the NHPA establishes criteria for designating Tribal Historic Preservation Officers to assume the functions of a State Historic Preservation Officer on Tribal lands.

Executive Order 13007, Indian Sacred Sites, issued May 24, 1996, directs Federal land management agencies, to the extent permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and use of Indian sacred sites, to avoid affecting the physical integrity of such sites wherever possible, and, where appropriate, to maintain the confidentiality of sacred sites. Federal agencies are required to establish a process to assure that affected Indian tribes are provided reasonable notice of proposed Federal actions or policies that may affect Indian sacred sites.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, issued November 6, 2000, directs Federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. Public Law (PL) 108-99 and 108-477 added language that directed the Office of Management and Budget and all Federal agencies to consult with Alaska Natives and Alaska Native Corporations on the same basis as Indian tribes under Executive Order 13175.

The Black Hills National Forest regularly consults with tribal governments regarding projects authorized under the NHPA and the NEPA. Sixteen different tribes from five states have
expressed traditional cultural, spiritual, or geographical interests in the Black Hills. Each tribe was sent a copy of the Black Hills National Forest Travel Management Plan DEIS (USDA Forest Service 2009e) on March 12, 2009, with an invitation to comment and a Forest Service contact. Invitations were subsequently extended to each of the 16 tribes to attend a formal government-to-government consultation meeting that the Forest hosted near Custer, SD, on April 21. The primary purpose of that meeting was to discuss any questions or issues that tribal representatives may have had pertaining to the Travel Management Project. One tribe sent a representative to the meeting. A separate tribe submitted a formal comment on the project and that comment is addressed in the Response to Comments (Appendix I). No other tribal government representatives submitted comments on the undertaking.

The Forest conducted additional consultation with all 16 tribes in which input was requested regarding the Forest’s intent to develop a programmatic agreement with the Wyoming SHPO. That agreement (USDA Forest Service 2010a) outlines the Forest’s intent to complete NRHP evaluations prior to project implementation for all cultural sites located in the Wyoming area of potential effect whose NRHP significance remains undetermined. The Forest received a statement from one tribe that expressed no objection to the proposed agreement. No other tribes submitted a response.

Public Consultation
The Forest consulted with the public via a variety of media outlets in the context of developing a programmatic agreement with the Wyoming SHPO. Pursuant to 36 CFR §800.14(b), a programmatic agreement is being used for historic properties located in the State of Wyoming as an alternative means of compliance with the National Historic Preservation Act’s implementing regulations. That agreement outlines the Forest’s intent to complete NRHP evaluations prior to project implementation for all cultural sites located in the Wyoming area of potential effect whose NRHP significance remains undetermined (USDA Forest Service 2010a). The Forest received one telephone inquiry on the topic, but no comments of any nature were formally or informally submitted in response to the invitation to comment.

Rangeland Management (Grazing)

Introduction
This project is Forestwide in scope and affects the range program on all four ranger districts. The Black Hills is a highly productive area from the standpoint of forage resources with an average of approximately 466 million pounds of forage produced across the Forest each year. At an average proper-use level of 50 percent, up to 233 million pounds of forage is available for harvest each year by livestock and wildlife (USDA Forest Service 1996a).

Applicable Forest Plan Direction
Several goals, objectives, standards, and guidelines, both Forestwide and specific to selected management areas for rangelands and range management are in the current forest plan. Though they all pertain to our planning effort, we will deal with those that address travel management most directly.

- Forestwide objective 301 says, “Produce on a sustained basis and make available up to 233 million pounds of forage for livestock and wildlife use each year (weather permitting).
a. Livestock use will be up to 127 million pounds of forage per year or approximately 128,000 AUMs.

b. Wildlife use will be up to 106 million pounds of forage per year or approximate population levels of 70,000 deer and 4,500 elk or other combinations that use the same amount of forage.”

- Forestwide objective 302 says maintain rangelands in satisfactory range condition.

**Methodology**

The focus of this analysis is on the potential effects to livestock grazing operations (see following assumption on access by grazing permittees) and rangeland resources. Operations on allotments can be affected by travel management in a variety of ways including impacts to livestock use, health, and distribution patterns, allotment improvements, and rangeland health.

Two indicator measures were developed to analyze and compare the degree to which the alternatives may result in effects. These are total miles of motorized routes (all classes) and acres of the Forest with unrestricted access.

**Indicators**

- Miles of motorized routes
  - Total miles of motorized routes relates to the route density across the Forest and within grazing allotments and is an indicator of multiple effects that result from motorized vehicle routes. Associated with increased route density there is an increase in public access and a corresponding increase in a wide range of associated human activities outside developed use areas. Route density increases access to areas for recreation such as dispersed camping, picnicking, hunting, OHV riding, and related activities.
  - Increased route density reduces areas for livestock to avoid vehicle and human interactions. Vehicle access and associated human uses sometimes leads to effects on livestock such as inadvertent spooking and livestock running from perceived danger as well as some intentional chasing by motorized vehicle users. These conditions sometimes lead to altered grazing use patterns, livestock stress, weight loss and related health problems.
  - Dispersed camping and other associated uses such as game retrieval, OHV riding and trail heads are sometimes concentrated in watering and high forage locations which may lead to changed livestock use patterns and avoidance of some forage areas. Trailheads tend to concentrate use and we are likely to see at least a short-term increase in disturbance and use patterns of livestock.
  - Routes open for public motor vehicle use reduce forage availability on allotments because vegetation is not available on route beds that remain open. Associated uses such as dispersed camping off routes and game retrieval may also impact vegetation and reduce available forage (USDA Forest Service 2008a).

- Acres accessible
  - Unrestricted access (open cross-country travel) allows access to management gates (those not on roads and trails) furthering the opportunity for unauthorized livestock movement into areas outside the prescribed pastures. The access increases the likelihood of gates left open or damaged, allowing livestock to...
move off the allotment or to enter pastures ahead of schedule or return to those already grazed, areas too wet for grazing, or road corridors. This can lead to vegetation, soil, or water quality concerns and vehicle collisions.

- Unrestricted access through meadows within grazing allotments can affect the amount and condition of forage and livestock use patterns. Forage availability can be reduced because vegetation is not available in areas where unrestricted access has affected the forage. The impact to grazing is intensified when routes affect meadows, which are primary forage areas. Livestock sometimes reduce use in areas in response to human presence, which may cause change in utilization of primary forage.

- Unrestricted access through meadows have the potential to affect the ecological condition which could result in a loss of productivity of primary forage areas and water sources and reductions in forage available for by both livestock and wildlife utilization (USDA Forest Service 2008).

Assumptions

For this analysis, the following assumptions were applied:

- Public education and enforcement of regulations would generally limit public travel to designated routes.
- Administrative access would be allowed for official Forest Service business including contractors and permit holders. This would include a grazing permit holder exercising the legitimate obligations and requirements of their grazing permit or those acting for them in this pursuit.
- The effects analysis assumes that the design criteria would be implemented for the chosen alternative.

No special field surveys were conducted for this specific project. Knowledge of the field resources comes from many years in the field implementing and reviewing projects on this Forest. A GIS mapping exercise was used to overlay the resource with the alternatives, examine the benefits and locate possible conflicts.

Affected Environment

Of the 233 million pounds of forage available for harvest on the Black Hills, 127 million pounds found in designated allotments is allocated to permitted livestock under Forest Plan direction. The remaining 106 million pounds is retained for use by various wildlife species. The nonharvested production (233 million pounds) is for long-term ecosystem health and sustainability, visual quality, flash fuel for planned fire use, and so forth (USDA Forest Service 2005a). There are approximately 128,000 animal unit months (AUMs) in the designated 135 allotments (USDA Forest Service 1996a) allocated for livestock under term grazing or other permits.
Environmental Effects Analysis

Direct and Indirect Effects

Alternative A
This alternative would continue the current effects of traffic of all kinds on the Forest to the resource. This truly is a no change alternative, except without the overall restriction on travel new unauthorized routes and trails would continue to be pioneered. This would mat down and take out vegetation and add to the harassment of livestock, neither of which moves us closer to the goals and objectives of the Forest Plan. This alternative contains the highest concentration of motorized routes when unauthorized routes are considered, and allows unrestricted access to the highest number of acres.

Alternatives B, C, D, and E
In the following order, Alternatives C, B, E, and D would result in progressively lower densities of motorized routes on National Forest System lands and unrestricted access to fewer acres, with C having the most and D the least. Trailheads differ slightly with Alternative C, B, and D in decreasing order of the number of trailheads and effect to the resource, and Alternative E having the current number of trailheads. All alternatives reduce total miles of motorized routes from Alternative A when the unintended routes are considered (Table 64). These reductions would have a beneficial effect on livestock management, range resources and grazing management in the following ways:

- The alternatives that have additional trailheads, concentrations of motorized routes, new routes or the opening of closed routes could affect allotment administration and livestock management in a localized area, but is unlikely to have major long-term negative impacts. Cattle guards or self-closing gates may be needed (see Appendix B for Design Criteria) to assist in keeping livestock in an assigned pasture.
- The dispersed camping corridor on each side of the motorized routes where it exists is considered in this analysis in the acres of the unrestricted access and considered in each alternative.
- Game retrieval in some alternatives and administrative access although allowing off-road access would reduce the extent and timing of that access. The extent would be minimal and timing much more controlled as compared to the current and expected future unrestricted use.
- The miles of routes are a direct tie to weed spread thus reducing quality and quantity of forage due to the competition between invasives and other vegetation (see the Invasive Plants discussion for additional information).
- **Alternative B:** In Table 64 the indicators shows that Alternative B has fewer total miles of motorized routes, trailheads and less acres of unrestricted access than Alternative C, but more of each than D or E. This puts B in the middle of the pack being an improvement over Alternative A.
- **Alternative C:** As stated, all action alternatives are an improvement over the existing situation. Alternative C has the least positive effects as you look at the indicators due to the total miles of motorized routes, trailheads and the accessible acres through dispersed camping and game retrieval (see Table 64).
- **Alternatives D and E:** The indicators in Table 64 show that the effects of Alternatives D and E would be very similar. Alternative D has the most positive effect with fewer motorized route miles and Alternative E is second. Both of these alternatives have fewer miles of
motorized routes than the other alternatives, but the real benefit is the lack of acres available for unrestricted access as shown by the second indicator. There are more trailheads in Alternative D than in E but Alternative D would likely still have the most positive effect.

Table 64. Comparison of indicator measures and alternatives for range

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<td>Total miles of open NFS motorized routes</td>
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<td>4,129</td>
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<td>3,776</td>
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<td>Unauthorized route miles</td>
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<td>Total miles of motorized routes</td>
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<td>4,353</td>
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<td>3,776</td>
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<td>Acres open to dispersed camping (motorized)</td>
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<td>63,500</td>
<td>184,000</td>
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<td>0</td>
</tr>
<tr>
<td>Acres accessible game retrieval (motorized)</td>
<td>864,000</td>
<td>179,000</td>
<td>385,500</td>
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<td>0</td>
</tr>
<tr>
<td>Number of motorized-use trailheads</td>
<td>7</td>
<td>31</td>
<td>34</td>
<td>23</td>
<td>7</td>
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Cumulative Effects

Cumulative effects as discussed here are effects on the resource that result from incremental impacts of actions when added to the past, present, and reasonably foreseeable future actions. This analysis is bounded to include the Forest and the adjacent lands because the effects of other actions on and/or near the Forest boundary affect the Forest resources. Each travel management action alternative would result in beneficial effects to varying degrees; however, the nature, extent, duration, and intensity of these effects vary across alternatives. The potential effects on range management and access to developments were evaluated. Guideline 9104 states motorized vehicles may be used on restricted areas and roads to accomplish administrative purposes. Therefore, motorized vehicle access to range developments or to administer allotments and manage livestock would be the same for the action alternatives (B, C, D, or E) as it is for current management (Alternative A) and contribute to the cumulative effects. Harvest and fuels management projects are expected to provide beneficial effects to allotments. In some instances, such as where conifer canopy is opened up or removed entirely, there may be an increase in herbaceous vegetative productivity and complexity, thereby benefiting both the plant community and potentially providing increased forage productivity for wildlife and livestock. There may also, be some short-term adverse effects to livestock management during project implementation such as impacts to fencing or gates and changes in livestock distribution patterns. The forage available on the Forest has likely increased in the recent years from fires that have affected the Forest land base and the canopy cover that has been reduced by mountain pine beetle. These cumulative disturbances could be expected to benefit the amount of forage that is available to livestock use on the Forest currently and for several years out.

Grazing allotment management plans for allotments are proposed to be revised to incorporate current standards. These proposed actions are expected to move allotments towards desired conditions. Present and future treatments of noxious weeds are beneficial to rangeland health with a long-term beneficial effect to forage availability. Firewood gathering is expected to continue as it in the past and is presently occurring and the effects are going to be similar. Foreseeable future recreation projects are expected to have minor negative effects to grazing. Changes in the amount of motorized routes and the possible change in the motorized vehicle use map are expected to affect allotment management and grazing in the same ways as discussed.
earlier in this section. Other projects such as meadow restoration are expected to have beneficial effects.

Activities off the Forest such as continued urban development will continue and will have negative effects on the grazing program with increases in traffic and the loss of open space. Treatment of weeds on private lands would positively affect range resources.

Invasive Species (Noxious Weeds)

Introduction

This project is Forestwide in scope concerning motorized travel and affects the invasives program on all four ranger districts. Noxious weeds are typically non-native plants that adversely affect native plant communities by aggressively competing for nutrients, water, and sunlight. As a result, sensitive plants, forage quantity and quality, and soil stability are negatively impacted (USDA Forest Service 2005a). Background information regarding the status of noxious weeds on the Forest is presented in the 1996 Final EIS (USDA Forest Service 1996) and the Final Environmental Impact Statement for the Phase II Amendment (USDA Forest Service 2005a).

Invasive species have been considered one of the four threats because of the alarming rates of spread and they are adversely affecting people and the ecosystem. In the U.S., there are 2,000 non-native plants, of which about 400 are invasives. Invasive plants now cover about 133 million acres in all ownerships nationwide and are marching at the rate of about 1.7 million acres per year. About 3.5 million acres of National Forest System land are infested. They have invaded grasslands, which can lose their livestock carrying capacity; in addition, wildlife habitats can be destroyed (USDA Forest Service 2004b). Other invasive species can invade aquatic habitats. Please refer to the Fisheries section in this chapter for a discussion on aquatic nuisance species.

Applicable Forest Plan Direction

Several goals, objectives, standards, and guidelines, both Forestwide and specific to selected management areas for invasives are in the current forest plan. Though they all pertain to our planning effort, we will deal with those that address travel management directly.

- Forestwide objective 231 is intended to prevent new infestations and reduce established noxious-weed infestations. Treat at least 8,000 acres per year during the next 10 years to limit noxious weed infestations.
- Forestwide standard 4301 requires managers to determine noxious weed introduction or spread risk and implement appropriate mitigation measures for all proposed projects or activities.

Methodology

In this analysis framework, the focus is on motorized travel and access, while the analysis is on the potential for invasive weed spread and disturbance effects, by the different alternatives. Two indicator measures are used to analyze and compare the degree to which the alternatives may result in effects: less miles of routes or less area of unrestricted access the less spread of weeds. These are miles of motorized routes (all classes) and acres of unrestricted access.
**Indicators**

- **Miles of roads**
  - Road shoulders are particularly susceptible to weed invasion. Road construction and maintenance activities mix soil layers, increasing soil microbial activity. Weeds exploit these newly available nutrients efficiently (Best et al. 1980, Belcher and Wilson 1989). This may be one reason that the density of weedy plants increases as the intensity of site disturbance increases (Jensen 1995). Parenedes and Jones (2000) found that the presence of exotic plant species was highly correlated with sunlit sites and frequent, severe disturbances, like those resulting from motorized traffic and road maintenance activities such as grading.
  - Motorized route corridors are prolific sources of weed seeds that may be carried to other locations (Tyser and Worley 1992) or that may colonize adjacent vulnerable habitats. Vehicle undercarriages can trap and transport weed seed (Sheley and Petroff 1999). A study in Kakadu National Park in Australia found that weed seed was transported into the park on tourist vehicles and was more likely to be transported by four-wheel-drive vehicles that had been driven off-road (Lonsdale and Lane 1994). A review of literature shows that native plant cover and species diversity increase with distance from routes, while the presence of exotic species declines with increased distance from road (Gelbard and Harrison 2003; Tyser and Worley 1992; Frenkell 1970; Johnson et al. 1975). Thus, plant communities adjacent to more improved motorized routes (e.g., paved, gravel) that receive high vehicle traffic might be expected to be more invaded than those adjacent to infrequently used primitive motorized routes (e.g., four-wheel-drive tracks; Parendes and Jones 2000).
  - A number of mechanisms have been proposed as explanations for these patterns. Vehicles and road-fill operations transport exotic plant seeds into un-infested areas, and road construction and maintenance operations provide safe sites for seed germination and seedling establishment (Schmidt 1989; Lonsdale and Lane 1994; Greenberg et al. 1997; Trombulak and Frissell 2000). Clearing of vegetation and soils during construction, addition of road fill, and grading of native surface roads create areas of bare and deeper soil that allow exotic seeds to become established (Frenkell 1970; Trombulak and Frissell 2000).

- **Acres Accessible**
  - In many respects, the effects of unrestricted access are similar to that of the motorized route corridors discussed above. Though you do not have the construction and maintenance there is still disturbance. With cross-country travel, there is movement of seed similar to that of motorized route corridors. Compaction is still a factor and can affect the native, less aggressive, plants.
  - Dispersed camping, game retrieval, and trailheads would allow movement of seed similar to that of motorized route corridors. Compaction particularly in the area of trailheads is still a factor and can affect the native, less aggressive, plants.

**Assumptions**

For this analysis, the following assumptions were applied:

- Public education and enforcement of regulations will generally limit public travel to designated routes.
• Administrative access is allowed for official Forest Service business including contractors and permit holders. This would include weed treatment by Forest Service crews, county weed crews under agreement, and contractors acting under their valid contract.

No special field surveys were conducted for this specific project. Knowledge of the field resources comes from many years in the field implementing and reviewing projects on this Forest. A mapping exercise was used to overlay the resource with the alternatives, to locate possible conflicts and review the benefits.

Affected Environment

The Forest has implemented a Noxious Weed Management Plan (USDA Forest Service 2003) to increase the scope of noxious-weed management. The weed management plan directs the Forest to implement prevention, education, administration, planning, and integrated control in the Forest weed management effort. The Noxious Weed Environmental Assessment (USDA Forest Service 2003) was prepared to describe direct, indirect, and cumulative impacts concerning the weed-management plan. This section summarizes information from that document.

Forest personnel have identified approximately 170,000 acres of existing noxious weed infestations. Road construction and maintenance activities are expected to increase weed spread as can other management practices. Motorized-vehicle use is a vector for spread, as well as logging, domestic livestock and wildlife. These factors and others not listed are expected to affect approximately 7,700 acres of spread (USDA Forest Service 2003) all disturbances can contribute to weed spread.

Environmental Effects Analysis

Direct and Indirect Effects

Alternative A

This alternative would continue the current effects of motorized traffic of all kinds on the Forest to the resource. This is a no change alternative, except without the overall restriction of travel new unauthorized routes and trails would continue to be pioneered. This would continue the spread of weeds through seed dispersal and the current rate of disturbance and in fact increase it neither of which moves us closer to the goals and objectives of the Forest Plan. This alternative contains the highest concentration of motorized routes and allows unrestricted access to the highest number of acres.

Alternatives B, C, D, and E

In the following order, Alternatives C, B, E, and D would result in progressively lower densities of motorized routes on National Forest System lands and unrestricted access to fewer acres with C having the most and D being the least miles and acres (Table 64, above). All alternatives reduce motorized routes from the amount in Alternative A when considering the unauthorized routes (Table 64). Trailheads differ slightly with Alternative C, B, and D in decreasing order of the number of trailheads and effect to the resource, with Alternative E having no change from the current number of trailheads and no change from the current effect. These reductions would have a beneficial effect on invasive weed spread and disturbance to create seedbeds:

• The potential effects on weed management and access for treatment were evaluated. Guideline 9104 is common to all alternatives and states motorized vehicles may be used
on restricted areas and roads to accomplish administrative purposes. Therefore, motorized vehicle access to treat and monitor noxious weeds will be the same for the action alternatives (B, C, D, or E) as it is for current management (Alternative A).

- The alternatives that have additional trailheads, concentrations of motorized routes, new routes or the opening of closed routes could affect invasive weed spread and disturbance creating seedbeds but as long as the design criteria are followed for seeding, the long-term effects should be minimal.
- The dispersed camping corridor on each side of the motorized routes where it exists is considered in this analysis in the acres of the unrestricted access and considered in each alternative.
- Game retrieval in some alternatives and administrative access although allowing virtually unrestricted access will reduce the extent and timing of that access. The extent would be minimal and timing much more controlled as compared to the current and expected future unrestricted use.
- **Alternative B:** In Table 64, the indicators shows that Alternative B has less miles of motorized routes, trailheads and less acres of unrestricted access than Alternative C, but more of each than D or E. This puts B in the middle of the pack being an improvement over Alternative A.
- **Alternative C:** As stated, all action alternatives are an improvement over the existing situation. Alternative C has the least positive effects as you look at the indicators, due to the miles of motorized routes, number of trailheads and the unrestricted acres that are accessible through dispersed camping and game retrieval (see Table 64).
- **Alternative D and E:** The indicators in Table 64 show that the effects of Alternatives D and E would be very similar. Alternative D has the most positive effect with fewer motorized route miles and Alternative E is second. Both of these alternatives have less miles of motorized routes than the other alternatives, but the real benefit is the lack of acres available for unrestricted access as shown by the second indicator. There are more trailheads in Alternative D than in E but Alternative D would likely still have the most positive effect Table 64.

**Cumulative Effects**

The incremental effect of the travel management alternatives when added to the impacts from all past, present, and reasonably foreseeable future projects comprise cumulative effects. This includes the Forest and the adjacent private and public lands because noxious weeds know no boundaries. Each travel management action alternative would result in beneficial effects to varying degrees; however, the nature, extent, duration, and intensity of these effects would likely vary across alternatives. Future changes in the amount of motorized routes and the possible change in the motor vehicle use map are expected to affect weeds and weed spread in the same manners as discussed earlier in this section. The incremental effects of natural disturbances and resource-management practices including timber and rangeland management on private and public lands on noxious weeds are also expected to continue and increase the amount and spread on weeds. Historic resource management activities have influenced the vegetation composition and structure of the Forest, and as such are encompassed in the existing conditions against which projected changes are measured for each alternative. Many other sources spread weeds such as timber management, fuels treatments, transport by animal (both domestic and wildlife), and other types of recreation, to name a few. These increase the number of weeds by spreading seed or creating seedbeds. Current public and private noxious weed management programs exist are expected to continue and likely increase in the foreseeable future within the cumulative-effects
study area for travel management. The additional treatment acres from the amended Forest Plan are not anticipated to exceed acceptable thresholds to the environment or to result in long-term adverse impacts (USDA Forest Service 2005a).

Climate Change

Introduction

Greenhouse gases are becoming a concern because they can trap heat in the atmosphere, thus warming the climate. A major concern is the amount of carbon that is being released into the atmosphere in several of these gases, particularly through human activities. The U.S. Environmental Protection Agency (EPA) classifies the following as greenhouse gases: water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and ozone (O3). These gases occur naturally in the atmosphere, but human activities have changed their atmospheric concentrations. Several other gases do not have a direct global warming effect but indirectly affect solar radiation absorption by influencing the formation or destruction of greenhouse gases. These include carbon monoxide (CO), and oxides of nitrogen (NOx; U.S. EPA 2009). This discussion will focus primarily on motor vehicle emissions containing CO2, N2O, CO and NOx, and will generally refer to all as greenhouse gases.

Climate change and warming caused by an increase in greenhouse gases can be relevant to Forest Service land management in two ways. These include assessing and reducing greenhouse gas emissions (mitigation) and coping with the effects of climate change (adaptation). Mitigation reduces greenhouse gas emissions either directly onsite or by offsetting emissions generated elsewhere. Mitigation can include such activities as reducing the potential for deforestation or catastrophic loss, reforesting denuded lands, managing forests to increase carbon uptake by trees, and utilizing biomass and wood products where carbon is sequestered.

Adaptation assesses ongoing or potential impacts to natural resources from changes in climate, and takes actions to help plant and animal communities adapt to these changes. Proactive forest management anticipates certain long-term effects will result from changing climate based on research. It is important to recognize that there is a high degree of uncertainty in some current predictions. There are several possible approaches to adaptation, including promoting resilience in forest and rangeland plant communities, and responding with changed management strategies.

The Forest Service has recently adopted a Strategic Framework for Climate Change (USDA Forest Service 2008f). This framework includes seven goals, including advancing the understanding of climate change, enhancing the capacity of forests and grasslands to adapt, managing forests and grasslands to reduce greenhouse gases, and reducing the environmental footprint of the agency.

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The agency recognizes climate change is one of the greatest challenges to human wellbeing and sustainable management of forests and grasslands because the rates of change will likely exceed many ecosystems' ability to adapt. To continue to fulfill its mission, the Forest Service must fully integrate the consideration of climate change into its planning and actions.
Applicable Laws, Regulations, Policy, and Forest Plan Direction

There are currently very few requirements in law or regulation limiting greenhouse gas emissions that could pertain to this project. Executive Order 13514 of October 5, 2009 and Forest Service policy regarding environmental management systems (EMS) set goals to reduce certain greenhouse gas emissions, and to reduce petroleum-based fuel use and improve fuel efficiency of the agency vehicle fleet, respectively. There are currently no requirements in law or regulation to reduce greenhouse gas emissions from public use of motorized vehicles on National Forest System lands.

Affected Environment

The U.S. releases about 1.5 gigatons of carbon annually into the atmosphere. The Intergovernmental Panel on Climate Change (IPCC) developed the Global Warming Potential (GWP) concept to compare the relative ability of various greenhouse gases to trap heat in the atmosphere. The reference gas used is carbon dioxide. We are aware of no data quantifying greenhouse gas emissions from the Black Hills National Forest or the larger Black Hills area in general.

Environmental Effects Analysis

Direct, Indirect, and Cumulative Effects

It is difficult to estimate the numbers of passenger and recreational vehicles that might use the motorized transportation system under any of the alternatives in this EIS. It is worth noting that current EPA emissions limits for off-highway motorcycles and ATVs are much higher than those for standard passenger vehicles, for emissions components including nitrogen oxides and carbon monoxide. These emissions, plus carbon dioxide, methane, and nitrous oxide emissions generated by public motorized vehicle travel on National Forest System lands are expected to contribute to the global concentration of greenhouse gases that affect climate change. Projected climate change impacts include air temperature increases, sea level rise, changes in the timing, location, and quantity of precipitation, and increased frequency of extreme weather events such as heat waves, droughts, and floods. The intensity and severity of these effects are expected to vary regionally and even locally, making any discussion of potential site-specific effects of this project on forest resources speculative.

Because greenhouse gases from vehicle emissions mix readily into the global pool of greenhouse gases, it is currently neither possible to distinguish the effects of this project from the effects of all other greenhouse gas sources worldwide, nor expected that attempting to do so would provide a practical or meaningful analysis of project effects. Emissions associated with this project are expected to be extremely small in the global atmospheric CO₂ context, making it impossible to measure the incremental cumulative impact on global climate from emissions associated with this project. Potential regional and local variability in climate change effects add to the uncertainty regarding the actual intensity of this project’s incremental effects on global climate change. In summary, the incremental contribution of any of the alternatives is considered negligible because none of the alternatives would result in measurable direct and indirect effects on total greenhouse gas quantities or global climatic patterns.
Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). Effects from implementation of each of the alternatives on specific resources are disclosed elsewhere in this chapter. Any of the alternatives would be implemented with design criteria to protect basic soil productivity. Decreases in long-term soil productivity from implementation of any of the alternatives are not anticipated.

The Forest Plan provides minimum management requirements for resource protection to ensure that long-term productivity is not impaired by short-term uses. Any alternative would be implemented consistent with these requirements. Project and Forest Plan monitoring would verify that protective measures are being implemented, and would continually gauge their effectiveness.

Unavoidable Adverse Effects

Some adverse effects are unavoidable with the implementation of any action alternative described in this analysis. Applying the design criteria described in Appendix B would reduce these effects to the extent possible. Effects of the alternatives to individual resources are described in detail elsewhere in this chapter. Please refer to each analysis section for details on unavoidable adverse effects.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road. Effects of implementing the alternatives are described in detail elsewhere in this chapter, but are summarized here as appropriate.

There would be no irreversible commitments of resources from implementation of any of the alternatives.

Irretrievable commitments of resources could include the following:

- Soil productivity and timber productivity would be lost where trail construction would occur.
- Wildlife habitat could be lost or modified for certain species under any of the action alternatives. Habitat values would recover in these areas as motorized recreation traffic is rerouted for other purposes by other decisions.
- Noxious weeds and invasive species could become established and persist under the action alternatives, if not addressed proactively or treated aggressively. The alternatives include design criteria to minimize the introduction of new occurrences of these species.
- Scenic values would be modified to some degree under each alternative.
- Recreation experiences would vary under each alternative. Motorized and nonmotorized recreationists alike would see changes to their experiences in different parts of the Forest in the form of opportunities offered and conflicts with other users.
Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs, “to the fullest extent possible, agencies shall prepare environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.” The alternatives and analysis described herein comply with the following laws, regulations, and executive orders, as is disclosed in this document or in supporting documentation.

- Multiple Use-Sustained Yield Act of 1960
- National Historic Preservation Act of 1969
- National Environmental Policy Act of 1969
- Clean Air Act of 1970
- Clean Water Act of 1970
- Endangered Species Act of 1973
- National Forest Management Act of 1976
- Executive Order 11593-Property of Historic, Archeological, or Architectural Significance
- Executive Order 11644-ORV Management
- Executive Order 11988; 10 CFR 1022-Floodplains
- Executive Order 11989-ORV Management
- Executive Order 11990-Protection of Wetlands
- Executive Order 12898-Environmental Justice
- Executive Order 12962-Recreational Fisheries
- Executive Order 13007-Native Americans’ concerns

This project does not involve impounding or diverting water, or adverse impacts to Federally listed threatened or endangered species; therefore, formal consultation with the U.S. Fish and Wildlife Service is not required.

No ground-disturbing actions would occur in known eligible historic places. The Forest Service has complied with requirements of Section 106 of the National Historic Preservation Act.

A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice. Executive Order 12898 provides that, “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” No adverse effects from the proposed action or alternatives have been identified on minority or low-income populations.

Environmental Justice

Executive Order 12898 directs Federal agencies to focus attention on human health and environmental conditions in minority and low-income communities. The purpose of the executive order is to identify and address, as appropriate, disproportionately high and adverse environmental effects on human health or on minority populations and low-income populations.

In the Phase II FEIS, Tables 3-59 and 3-60 highlight the demographic statistics for identifying potential communities of concern. None of the counties in the study area contain low-income or
minority populations as defined by Executive Order 12898. No additional outreach or analysis has been performed, as there will be no disproportionate negative effect on such communities under any of the alternatives.

Additional evaluations of minority and low-income population data indicate that there is no evidence to suggest that the proposed action will have a disproportionate adverse effect on low-income populations. Evaluations also show that minority populations for the counties in the study area are unlikely to meet the Environmental Justice criterion for a minority population and unlikely to experience disproportionate adverse effects as result of the proposed action.

Civil Rights Impact Assessment
The Civil Rights Policy for the USDA, Departmental Regulation 4300-4 dated May 30, 2003, states that the following are among the civil rights strategic goals; (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities. The travel management planning process is designed to prevent disparate treatment and minimize discrimination against minorities, women and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

The travel management plan is not discriminatory towards persons with disabilities, because the decision will apply equally to all groups. Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. However, there is no legal requirement to allow people with disabilities use of motor vehicles on roads, trails, or other areas that are closed to motor vehicles for people of all abilities. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. The effects of actions outlined under this plan will be distributed evenly amongst the population since access on routes designated as route closure do not prohibit or inhibit use on the basis of race, color, sex, national origin, religion, age, disability or marital or familial status. See the Social and Economics section of this EIS for further discussion about the distribution of visitors by age, disability, and minority status; existing information indicates that visitor demographics are similar to that of the State and regional populations in general.
Chapter 4. Consultation and Coordination

Preparers and Contributors
The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes
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Association for Mato Paha Preservation
Biodiversity Conservation Alliance
Black Hills Forest Resource Association
Black Hills Group - Sierra Club
Black Hills Mountain Lion Foundation
Black Hills Powersports
Black Hills Regional Multiple Use Coalition
Black Hills Sportsman’s Club and South Dakota Wildlife Federation
Blue Ribbon Coalition
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Custer Conservation District
Federal Highways Administration
GT Powersports, Inc.
High Country Ranch
Hill City Area Chamber of Commerce
Inyan Kara Riders
Lawrence County Recreation
Mad Mountain Adventures
Medicine Mountain

Medicine Mountain Scout Ranch
Missouri Breaks Audubon
Mountain Shadows Neighborhood
Norbeck Society
Odadota Mountain Ranch
Off-Road Riders Association
Palmer Gulch Campground
Peaceful Pines Residents
PH Audubon Society
Prairie Hills Audubon Society
Recreational Adventures Co.
Rock Mountain Research Station
South Dakota Department of Game, Fish and Parks
South Dakota Off-Highway Vehicle Coalition
Silver City Area Forest Users
Spearfish Canyon Owners Association
Spearfish Canyon Society
Sturgis Yamaha
Sundance Chain Gang Mountain Bike Association
United States Environmental Protection Agency Region 8
Wyoming Game and Fish Department

Tribes

Yankton Sioux Tribe
Crow Creek Sioux Tribe
Northern Cheyenne Tribe
Rosebud Sioux Tribe
Sisseton-Wahpeton Sioux Tribe
Three Affiliated Tribes
Flandreau Santee Sioux Tribe
Cheyenne River Sioux Tribe
Mandan Hidatsa and Arikara Tribes
Eastern Shoshone Tribe

Oglala Sioux Tribe
Northern Arapaho Tribe
Lower Brule Sioux Tribe
Spirit Lake Sioux Tribe
Standing Rock Sioux Tribe
Grey Eagle Society
Cheyenne/Arapaho Tribes of Oklahoma
Santee Sioux Nation
Kiowa Ethnographic Endeavor for Preservation
Sicangu Lakota Treaty Council Office
Distribution of the Environmental Impact Statement

This environmental impact statement has been distributed to, or made electronically available to, over 700 individuals and groups who specifically requested a copy of the document or commented at scoping or on the DEIS. In addition, copies have been sent (or in some cases made electronically available) to Federal agencies, federally recognized tribes, State and local governments, and organizations that have requested to be involved in the development of this analysis. These entities include the U.S. Environmental Protection Agency; U.S. Army Corps of Engineers; U.S. Department of the Interior; Federal Highway Administration; Advisory Council on Historic Preservation; USDA National Agricultural Library; State wildlife and fisheries management agencies; County commissions; and local community governments. Due to the number of people, agencies and organizations, a complete listing has been omitted from this EIS, but is available upon request or on the Forest website at http://www.fs.usda.gov/blackhills.
Appendices
Appendix A: Travel Management Rule

PART 212—TRAVEL MANAGEMENT

1. Amend part 212 by revising the part heading to read as set forth above.

1a. Remove the authority citation for part 212.

2. Designate §§ 212.1 through 212.21 as subpart A to read as set forth below:

Subpart A—Administration of the Forest Transportation System

2a. Add an authority citation for new subpart A to read as set forth below:


3. Amend § 212.1 as follows:

a. In alphabetical order, add the following definitions: administrative unit; area; designated road, trail, or area; forest road or trail; forest transportation system; motor vehicle; motor vehicle use map; National Forest System road; National Forest System trail; off-highway vehicle; over-snow vehicle; road construction or reconstruction; temporary road or trail; trail; travel management atlas; and unauthorized road or trail; and

b. Revise the definitions for forest transportation atlas, forest transportation facility, and road; and

c. Remove the definitions for classified road, new road construction, road reconstruction, temporary road, and unclassified road.

§ 212.1 Definitions.

Administrative unit. A National Forest, a National Grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land Between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System.

Area. A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District.

Designated road, trail, or area. A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to § 212.51 on a motor vehicle use map.

Forest road or trail. A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

Forest transportation atlas. A display of the system of roads, trails, and airfields of an administrative unit.

Forest transportation facility. A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system.
Forest transportation system. The system of National Forest System roads, National Forest System trails, and airfields on National Forest System lands.

Motor vehicle. Any vehicle that is self-propelled, other than:

(1) A vehicle operated on rails; and

(2) Any wheelchair or mobility device, including one that is battery powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area.

Motor vehicle use map. A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System.

National Forest System road. A forest road other than a road that has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

National Forest System trail. A forest trail other than a trail that has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

Off-highway vehicle. Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain.

Over-snow vehicle. A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow.

Road. A motor vehicle route over 50 inches wide, unless identified and managed as a trail.

Road construction or reconstruction. Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.

Temporary road or trail. A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas.

Trail. A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

Travel management atlas. An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.

Unauthorized road or trail. A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.

4. Amend § 212.2 by redesignating paragraphs (b) as (d), revising paragraph (a), and adding new paragraphs (b) and (c) to read as follows:

§ 212.2 Forest transportation program.

(a) Travel management atlas. For each administrative unit of the National Forest System, the responsible official must develop and maintain a travel management atlas, which is to be available to the public at the headquarters of that administrative unit.
(b) Forest transportation atlas. A forest transportation atlas may be updated to reflect new information on the existence and condition of roads, trails, and airfields of the administrative unit. A forest transportation atlas does not contain inventories of temporary roads, which are tracked by the project or activity authorizing the temporary road. The content and maintenance requirements for a forest transportation atlas are identified in the Forest Service directives system.

(c) Program of work for the forest transportation system. A program of work for the forest transportation system shall be developed each fiscal year in accordance with procedures prescribed by the Chief.

5. Amend § 212.5 as follows:

a. Revise paragraphs (a)(1) and (a)(2)(ii);

b. Revise the heading for paragraph (c) introductory text to read as set forth below:

c. Revise the heading for paragraph (d) introductory text to read as set forth below:

§ 212.5 Road system management.

(a) Traffic rules.

(1) General. Traffic on roads is subject to State traffic laws where applicable except when in conflict with designations established under subpart B of this part or with the rules at 36 CFR part 261.

(2) Specific.

(ii) Roads, or segments thereof, may be restricted to use by certain classes of vehicles or types of traffic as provided in 36 CFR part 261. Classes of vehicles may include but are not limited to distinguishable groupings such as passenger cars, buses, trucks, motorcycles, all-terrain vehicles, 4-wheel drive vehicles, off-highway vehicles, and trailers. Types of traffic may include but are not limited to groupings such as commercial hauling, recreation, and administrative.

(c) Cost recovery on National Forest System roads.

(d) Maintenance and reconstruction of National Forest System roads by users.

6. Amend § 212.7 by revising the paragraph heading and text of paragraph (a) to read as follows:

§ 212.7 Access procurement by the United States.

(a) Existing or proposed forest roads that are or will be part of a transportation system of a State, county, or other local public road authority. Forest roads that are or will be part of a transportation system of a State, county, or other local public road authority and are on rights-of-way held by a State, county, or other local public road authority may be constructed, reconstructed, improved, or maintained by the Forest Service when there is an appropriate agreement with the State, county, or other local public road authority under 23 U.S.C. 205 and the construction, reconstruction, improvement, or maintenance is essential to provide safe and economical access to National Forest System lands.

7. Amend § 212.10 by revising paragraph (d) to read as follows:
§ 212.10 Maximum economy National Forest System roads.

(d) By a combination of these methods, provided that where roads are to be constructed at a higher standard than the standard—consistent with applicable environmental laws and regulations—that is sufficient for harvesting and removal of National Forest timber and other products covered by a particular sale, the purchaser of the timber and other products shall not be required to bear the part of the cost necessary to meet the higher standard, and the Chief may make such arrangements to achieve this end as may be appropriate.

§ 212.20 [Removed and reserved]

• 8. Remove and reserve § 212.20.

• 9. Add a new subpart B to read as follows:

Subpart B—Designation of Roads, Trails, and Areas for Motor Vehicle Use

Sec.
212.50 Purpose, scope, and definitions. 212.51 Designation of roads, trails, and areas.
212.52 Public involvement.
212.53 Coordination with Federal, State, county, and other local governmental entities and tribal governments.
212.54 Revision of designations.
212.55 Criteria for designation of roads, trails, and areas.
212.56 Identification of designated roads, trails, and areas.
212.57 Monitoring of effects of motor vehicle use on designated roads and trails and in designated areas.


§ 212.50 Purpose, scope, and definitions.

(a) Purpose. This subpart provides for a system of National Forest System roads, National Forest System trails, and areas on National Forest System lands that are designated for motor vehicle use. After these roads, trails, and areas are designated, motor vehicle use, including the class of vehicle and time of year, not in accordance with these designations is prohibited by 36 CFR 261.13. Motor vehicle use off designated roads and trails and outside designated areas is prohibited by 36 CFR 261.13.

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

(c) For definitions of terms used in this subpart, refer to § 212.1 in subpart A of this part.

§ 212.51 Designation of roads, trails, and areas.

(a) General. Motor vehicle use on National Forest System roads, on National Forest System trails, and in areas on National Forest System lands shall be designated by vehicle class and, if appropriate, by time of year by the responsible official on administrative units or Ranger Districts of the National Forest System, provided that the following vehicles and uses are exempted from these designations:

(1) Aircraft;
(2) Watercraft;

(3) Over-snow vehicles (see § 212.81);

(4) Limited administrative use by the Forest Service;

(5) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;

(6) Authorized use of any combat or combat support vehicle for national defense purposes;

(7) Law enforcement response to violations of law, including pursuit; and

(8) Motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations.

(b) Motor vehicle use for dispersed camping or big game retrieval. In designating routes, the responsible official may include in the designation the limited use of motor vehicles within a specified distance of certain designated routes, and if appropriate within specified time periods, solely for the purposes of dispersed camping or retrieval of a harvested big game animal by an individual who has legally taken that animal.

§ 212.52 Public involvement.

(a) General. The public shall be allowed to participate in the designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands and revising those designations pursuant to this subpart. Advance notice shall be given to allow for public comment, consistent with agency procedures under the National Environmental Policy Act, on proposed designations and revisions. Public notice with no further public involvement is sufficient if a National Forest or Ranger District has made previous administrative decisions, under other authorities and including public involvement, which restrict motor vehicle use over the entire National Forest or Ranger District to designated routes and areas, and no change is proposed to these previous decisions and designations.

(b) Absence of public involvement in temporary, emergency closures. (1) General. Nothing in this section shall alter or limit the authority to implement temporary, emergency closures pursuant to 36 CFR part 261, subpart B, without advance public notice to provide short-term resource protection or to protect public health and safety.

(2) Temporary, emergency closures based on a determination of considerable adverse effects. If the responsible official determines that motor vehicle use on a National Forest System road or National Forest System trail or in an area on National Forest System lands is directly causing or will directly cause considerable adverse effects on public safety or soil, vegetation, wildlife, wildlife habitat, or cultural resources associated with that road, trail, or area, the responsible official shall immediately close that road, trail, or area to motor vehicle use until the official determines that such adverse effects have been mitigated or eliminated and that measures have been implemented to prevent future recurrence. The responsible official shall provide public notice of the closure pursuant to 36 CFR 261.51, including reasons for the closure and the estimated duration of the closure, as soon as practicable following the closure.

§ 212.53 Coordination with Federal, State, county, and other local governmental entities and tribal governments.
The responsible official shall coordinate with appropriate Federal, State, county, and other local governmental entities and tribal governments when designating National Forest System roads, National Forest System trails, and areas on National Forest System lands pursuant to this subpart.

§ 212.54 Revision of designations.

Designations of National Forest System roads, National Forest System trails, and areas on National Forest System lands pursuant to § 212.51 may be revised as needed to meet changing conditions. Revisions of designations shall be made in accordance with the requirements for public involvement in § 212.52, the requirements for coordination with governmental entities in § 212.53, and the criteria in § 212.55, and shall be reflected on a motor vehicle use map pursuant to § 212.56.

§ 212.55 Criteria for designation of roads, trails, and areas.

(a) General criteria for designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands. In designating National Forest System roads, National Forest System trails, and areas on National Forest System lands for motor vehicle use, the responsible official shall consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration.

(b) Specific criteria for designation of trails and areas. In addition to the criteria in paragraph (a) of this section, in designating National Forest System trails and areas on National Forest System lands, the responsible official shall consider effects on the following, with the objective of minimizing:

(1) Damage to soil, watershed, vegetation, and other forest resources;

(2) Harassment of wildlife and significant disruption of wildlife habitats;

(3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and

(4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands. In addition, the responsible official shall consider:

(5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.

(c) Specific criteria for designation of roads. In addition to the criteria in paragraph (a) of this section, in designating National Forest System roads, the responsible official shall consider:

(1) Speed, volume, composition, and distribution of traffic on roads; and

(2) Compatibility of vehicle class with road geometry and road surfacing.

(d) Rights of access. In making designations pursuant to this subpart, the responsible official shall recognize:

(1) Valid existing rights; and
(2) The rights of use of National Forest System roads and National Forest System trails under § 212.6(b).

(e) Wilderness areas and primitive areas. National Forest System roads, National Forest System trails, and areas on National Forest System lands in wilderness areas or primitive areas shall not be designated for motor vehicle use pursuant to this section, unless, in the case of wilderness areas, motor vehicle use is authorized by the applicable enabling legislation for those areas.

§ 212.56 Identification of designated roads, trails, and areas.

Designated roads, trails, and areas shall be identified on a motor vehicle use map. Motor vehicle use maps shall be made available to the public at the headquarters of corresponding administrative units and Ranger Districts of the National Forest System and, as soon as practicable, on the website of corresponding administrative units and Ranger Districts. The motor vehicle use maps shall specify the classes of vehicles and, if appropriate, the times of year for which use is designated.

§ 212.57 Monitoring of effects of motor vehicle use on designated roads and trails and in designated areas.

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

10. Add a new subpart C to read as follows:

Subpart C—Use by Over-Snow Vehicles

Sec.
212.80 Purpose, scope, and definitions.
212.81 Use by over-snow vehicles.


§ 212.80 Purpose, scope, and definitions.

The purpose of this subpart is to provide for regulation of use by oversnow vehicles on National Forest System roads and National Forest System trails and in areas on National Forest System lands. For definitions of terms used in this subpart, refer to § 212.1 in subpart A of this part.

§ 212.81 Use by over-snow vehicles.

(a) General. Use by over-snow vehicles on National Forest System roads and National Forest System trails and in areas on National Forest System lands may be allowed, restricted, or prohibited.

(b) Exemptions from restrictions and prohibitions. The following uses are exempted from restrictions and prohibitions on use by over-snow vehicles:

(1) Limited administrative use by the Forest Service;

(2) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;

(3) Authorized use of any combat or combat support vehicle for national defense purposes;
(4) Law enforcement response to violations of law, including pursuit; and

(5) Use by over-snow vehicles that is specifically authorized under a written authorization issued under Federal law or regulations.

(c) Establishment of restrictions and prohibitions. If the responsible official proposes restrictions or prohibitions on use by over-snow vehicles under this subpart, the requirements governing designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands in §§ 212.52, 212.53, 212.54, 212.55, 212.56, and 212.57 shall apply to establishment of those restrictions or prohibitions. In establishing restrictions or prohibitions on use by over-snow vehicles, the responsible official shall recognize the provisions concerning rights of access in sections 811(b) and 1110(a) of the Alaska National Interest Lands Conservation Act (16 U.S.C. 3121(b) and 3170(a), respectively).

PART 251—LAND USES

Subpart B—Special Uses

11. Revise the authority citation for part 251, subpart B, to read as follows:


12. Amend § 251.51 by revising the definitions for “forest road or trail” and “National Forest System road” to read as follows:

§ 251.51 Definitions.

Forest road or trail. A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

National Forest System road. A forest road other than a road that has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

PART 261—PROHIBITIONS

13. The authority citation for part 261 continues to read as follows:


14. Amend § 261.2 to revise the definitions for “motor vehicle,” “forest road or trail,” “National Forest System road,” and “National Forest System trail,” and add definitions in alphabetical order for “administrative unit” and “area,” to read as follows:

Subpart A—General Prohibitions

§ 261.2 Definitions.

Administrative unit. A National Forest, a National Grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land Between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System.
Area. A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District.

Forest road or trail. A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

Motor vehicle means any vehicle that is self-propelled, other than:

(1) A vehicle operated on rails; and

(2) Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area.

National Forest System road. A forest road other than a road that has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

National Forest System trail. A forest trail other than a trail that has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

§§ 261.13 through 261.21 [Redesignated as §§ 261.15 through 261.23]

• 15. Redesignate §§ 261.13 through 261.21 as §§ 261.15 through 261.23.

• 15a. Add new § 261.13 and § 261.14 to read as follows:

§ 261.13 Motor vehicle use.

After National Forest System roads, National Forest System trails, and areas on National Forest System lands have been designated pursuant to 36 CFR 212.51 on an administrative unit or a Ranger District of the National Forest System, and these designations have been identified on a motor vehicle use map, it is prohibited to possess or operate a motor vehicle on National Forest System lands in that administrative unit or Ranger District other than in accordance with those designations, provided that the following vehicles and uses are exempted from this prohibition:

(a) Aircraft;

(b) Watercraft;

(c) Over-snow vehicles;

(d) Limited administrative use by the Forest Service;

(e) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;

(f) Authorized use of any combat or combat support vehicle for national defense purposes;

(g) Law enforcement response to violations of law, including pursuit;

(h) Motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations; and
(i) Use of a road or trail that is authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

§ 261.14 Use by over-snow vehicles.

It is prohibited to possess or operate an over-snow vehicle on National Forest System lands in violation of a restriction or prohibition established pursuant to 36 CFR part 212, subpart C, provided that the following uses are exempted from this section:

(a) Limited administrative use by the Forest Service;

(b) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;

(c) Authorized use of any combat or combat support vehicle for national defense purposes;

(d) Law enforcement response to violations of law, including pursuit;

(e) Use by over-snow vehicles that is specifically authorized under a written authorization issued under Federal law or regulations; and

(f) Use of a road or trail that is authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

16. Amend § 261.55 by revising the introductory text to read as follows:

§ 261.55 National Forest System trails.

When provided by an order issued in accordance with § 261.50 of this subpart, the following are prohibited on a National Forest System trail:

PART 295—USE OF MOTOR VEHICLES OFF NATIONAL FOREST SYSTEM ROADS [REMOVED]

17. Remove the entire part 295.

[Note: Copied and reformatted from: 68288 Federal Register / Vol. 70, No. 216 / Wednesday, November 9, 2005 / Rules and Regulations]
Appendix B: Design Criteria Common to All Alternatives

Design criteria for each resource analyzed are listed below. Effects analysis was conducted presuming the implementation of these design criteria.

Botanical Resources

Design criteria would be developed for the following routes to avoid or mitigate damage to Region 2 sensitive plant species, Forest plant species of local concern, MA 3.1 botanical areas, and riparian/wetland/fen areas.

Table B-1. Routes requiring design criteria

<table>
<thead>
<tr>
<th>Species</th>
<th>Occurrence</th>
<th>Route number</th>
<th>Alt. B</th>
<th>Alt. C</th>
<th>Alt. D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routes to be designed, removed, or rerouted to avoid impacts to Region 2 sensitive species</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Bearlodge Ranger District</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Botrychium campestre</em></td>
<td>BOCA5-8</td>
<td>872.3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><em>Botrychium lineare</em></td>
<td>BOLI7-1</td>
<td>864.1 (outside Dugout Gulch Botanical Area)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><em>Carex alopecoidea</em></td>
<td>CAAL8-12</td>
<td>U71002</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>Carex alopecoidea</em></td>
<td>CAAL8-31</td>
<td>841.1L</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cypripedium parviflorum</em></td>
<td>CYPA19-10</td>
<td>863.2C</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td><em>Viburnum opulus var. americanum</em></td>
<td>VIOPA2-2, VIOPA2-16</td>
<td>864.1 (in Dugout Gulch Botanical Area)</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td><strong>Northern Hills Ranger District</strong></td>
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<td><em>Carex alopecoidea</em></td>
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<td>U710024</td>
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<td><em>Platanthera orbiculata</em></td>
<td>01G040</td>
<td>CZ0418, U010076</td>
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<td><em>Sanguinaria canadensis</em></td>
<td>SACA13-2</td>
<td>567.1F</td>
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<td><em>Sanguinaria canadensis</em></td>
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<td>172.1A</td>
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<td><em>Viburnum opulus var. americanum</em></td>
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<td><em>Sanguinaria canadensis</em></td>
<td>980010</td>
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<td><strong>Mystic Ranger District</strong></td>
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<tr>
<td><em>Cypripedium parviflorum</em></td>
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<td>CZ1790</td>
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<tr>
<td><strong>Routes requiring design criteria to avoid impacts to Black Hills NF plant SOLC</strong></td>
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<td></td>
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</tr>
<tr>
<td><strong>Mystic Ranger District</strong></td>
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</tr>
<tr>
<td><em>Gentiana affinis</em></td>
<td>07M008A</td>
<td>CZ4927</td>
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<td></td>
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</tr>
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<td><strong>Hell Canyon Ranger District</strong></td>
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<tr>
<td><em>Gentiana affinis</em></td>
<td>GEAF-4</td>
<td>HC9</td>
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<tr>
<td><em>Gentiana affinis</em></td>
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<td>CZ3526</td>
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<tr>
<td><em>Gentiana affinis</em></td>
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<td>HC1</td>
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<tr>
<td><strong>Routes requiring design criteria to avoid impacts to M.A. 3.1 Botanical Areas</strong></td>
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</tr>
<tr>
<td><strong>Bearlodge Ranger District</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Dugout Gulch Botanical Area</em></td>
<td>864.1C</td>
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<td>X</td>
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<tr>
<td><em>Dugout Gulch Botanical Area</em></td>
<td>864.1</td>
<td></td>
<td>X</td>
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<td>X</td>
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<tr>
<td><em>Dugout Gulch Botanical Area</em></td>
<td>864.1A</td>
<td></td>
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<tr>
<td><strong>Routes requiring design criteria to avoid impacts to fens</strong></td>
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<tr>
<td><strong>Mystic Ranger District</strong></td>
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<tr>
<td><em>South Fork Castle Creek fen</em></td>
<td>385.1A</td>
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<td>X</td>
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<tr>
<td><em>Newton Fork fen</em></td>
<td>304.1L</td>
<td></td>
<td>X</td>
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</tbody>
</table>
Cultural Resources
The USDA Forest Service, in consultation with the Advisory Council on Historic Preservation, developed a policy statement in February 2005 designed to address specific issues related to the designation of motorized vehicle systems on the nation's national forests (USDA Forest Service 2005e). The policy stated that only certain elements of the 2005 Travel Management Rule are to be considered undertakings with the potential to affect historic properties, triggering evaluation under Section 106 of NHPA and 36 CFR §800. The categories cited are:

- Construction of a new road or trail;
- Authorization of motor vehicle use on a route currently closed to vehicles; and
- Formal recognition of a user-developed (unauthorized) route as a designated route open to motor vehicles.

The following indicators are used to measure effects to cultural resources:

- Number of historic properties within unauthorized routes at risk from ongoing use
- Degree to which the integrity of historic property values are diminished

The magnitude of effect to a historic property's integrity determines the severity of any direct, indirect, or cumulative effects. A four-category system is utilized: no/negligible, minor, moderate, and major. These categories represent a progressive scale that provides a qualitative assessment of the severity of any direct, indirect, or cumulative effects to the integrity of a cultural resource site.

No distinction is made between “no” effect and “negligible” effect. The majority of cultural resources in the project area have been impacted by some type of motorized activity. The most innocuous effects can be described as “negligible” as opposed to “none.” In either case, the effect to historic properties is minimal and no protection measures are required.

If the severity of effect is determined to be minor, some type of protection measure may be required. In nearly all cases the preferred method will be to include the site in a well-defined monitoring plan designed to ensure that the minor degree of disturbance (or potential for disturbance) initially noted does not exhibit a tendency to increase in severity over time.

If the severity of effect is determined to be moderate, some type of protective measure is required. In most cases, the preferred method will be to cap the site with a geotextile material and cover the fabric with a protective barrier most frequently composed of crushed rock, thereby eliminating the potential for effects to cultural resources.

If the severity of effect is determined to be major, more complex and potentially costly mitigation measures are required to prevent adverse effects to the resource. In most cases, the only viable option may be to reroute the road/trail around the resource.

If, during the implementation stages of this project, any cultural artifacts and/or features, skeletal remains, or other indicators of past human activities are encountered, all ground-disturbing activities must stop and a Forest Service archaeologist be contacted. The archaeologist, in consultation with the appropriate SHPO and Native American tribes, will determine the appropriate course of action.

Engineering and Transportation Design Criteria
Roads and trails that make up the Forest transportation system will be constructed and maintained, to the extent practical, in accordance with Forest Service design standards and Region 2 Watershed Conservation Practices Handbook.
Hydrology and Fisheries

Road/Trail Drainage within the Water Influence Zone (WIZ)

Provide adequate road and trail cross drainage to reduce erosion (guideline 9202e) by installing waterbars/rolling dips within the WIZ using the following as a guide:

- One waterbar/rolling dip should be installed as close to the stream crossing as possible (on both sides) to redirect concentrated water off the trail and allow for filtration of concentrated water before entering the stream to disconnect the pollutant sources (sediment).
- The waterbars/rolling dips just before the stream crossing should be hardened with gravel to maintain function.
- If there is no opportunity to drain waterbars/rolling dips, small sediment basins should be used to maintain the above water bar/rolling dip spacing.

Stream Crossings

- Design and construct all stream crossings and other instream structures to provide for passage of flow and sediment, withstand expected flood flows, and allow free movement of resident aquatic life (standard 1203). (No native material crossings, gravel or large gravel rocks should be used because these do not protect the stream bottom and banks. They allow sediment to be generated during the crossing of each vehicle.)
  - Perennial stream crossings on the following routes (Table B-3) should be armored or remediated as soon as practicable in this order of priority, if designated on the MVUM. Prioritization is based primarily on whether a stream crossing was on a user-created route or a proposed new route requiring construction versus an existing system route that was engineered, the level and type of use, degree of anticipated impact, and aquatic resource value.

<table>
<thead>
<tr>
<th>Route</th>
<th>Stream crossing</th>
<th>Alt. B</th>
<th>Alt. C</th>
<th>Alt. D</th>
<th>Ranger District</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ-4895</td>
<td>Rapid Creek</td>
<td>x</td>
<td></td>
<td></td>
<td>Mystic</td>
</tr>
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<td>CZ-3050</td>
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<td>Horse Creek</td>
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<td></td>
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<td>Mystic</td>
</tr>
</tbody>
</table>

- Design options for mitigation. (The goal is to protect the stream bottom and banks to prevent sediment from entering the stream or being mobilized when vehicles cross and to prevent widening of the stream.)
  - Bridge
  - Cattle guard (bridge)
  - Arch/half round culvert (width is at least bankfull width)
Concrete rails/mats (buried so top of rails/mats is at the stream bed elevation)
Culvert (diameter or width is at least bankfull width and buried so stream substrate is in the bottom of the culvert)
Other material may be used as it becomes available as long as it meets the goal to prevent sediment and stream widening

- Generally, the road/trail grade to the crossing will be less than 5 percent.
- Minimize fill in floodplains to facilitate crossings to allow flood flows to pass with minimal interruption.
- Perennial stream crossings on the following routes should be monitored annually for the first 3 years if designated on the MVUM to determine if unacceptable resource damage is occurring to streambanks and riparian vegetation. If so, the streambanks should be mitigated at a designated crossing location per the options identified above.

### Table B-4. Perennial stream crossings to be monitored

<table>
<thead>
<tr>
<th>Route</th>
<th>Stream crossing</th>
<th>Alt. B</th>
<th>Alt. C</th>
<th>Alt. D</th>
<th>Ranger District</th>
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<tbody>
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<tr>
<td>CZ-4859</td>
<td>Jim Creek</td>
<td>x</td>
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</tr>
<tr>
<td>CZ-4878</td>
<td>Prairie Creek</td>
<td></td>
<td></td>
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<tr>
<td>CZ-4889</td>
<td>Tributary – Spring Creek</td>
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<td>CZ-4889</td>
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<td>x</td>
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</tr>
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</table>

### Closing Roads

- When possible and circumstances permit, road/stream crossings on perennial and intermittent streams on closed roads will have the crossing rehabilitated by restoring the natural shape (including stream width) to allow natural flows at all stages by pulling culverts and by removing any fill placed in the floodplain.

### Fish Spawning Protection

- The following design criteria should apply for instream construction activities to install, repair or remove road/trail crossings on perennial streams to meet the Region 2 Watershed Conservation Practices Management Measure 3; Design Criteria (c) to keep heavy equipment out of streams during fish spawning, incubation, and emergence periods.
  - In all South Dakota streams classified as cold water streams, when water flow is present, the discharge of dredged or fill material shall not take place between October 15 and April 1.
  - In Wyoming, the period and timing of in-water construction should be adjusted as necessary to avoid conflicts with brown or brook trout spawning from September 15 through November 30.

### Wet Areas/Wetland Areas

- Areas not connected to streams that are wet and have riparian/wetland vegetation will be avoided and runoff from the roads/trail will not be drained into these areas.
- Avoid creating elevated roads or trails through wetlands, to avoid disrupting the flow of water through the wetland.
Trailheads
- Do not locate new trailheads or expand existing trailheads in the WIZ (a minimum 100-foot buffer from waterbodies).

Game Retrieval and Road Egress
- Prohibit land vehicles from entering perennial streams where resource damage would occur except to cross at specified points (guideline 9107).
- Vehicular traffic, except for snowmobiles, will be restricted to roads and trails in riparian areas (guideline 9108).
- Walk-in fisheries are closed to motorized travel (guideline 9109).

Dispersed Camping
- Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain (guideline 5301).

Range and Weeds
- Any road closures that install impassable physical barriers, such as large rocks or earthen berms that could restrict administrative access, should be done on a site-specific basis with interdisciplinary input.
- Any new road or trail that crosses a fence would have gates or cattle guards installed (consider self-closing gates on trails).
- Roads and trails that experience increase volume of use due to changes from travel management or use patterns will need to be looked at for installation of appropriate sized cattle guards on roads or trails, or possibly self-closing gates on trails. This would be needed where changes or increased use allowed unscheduled or unplanned livestock movement through existing fences. (On roads and trails where changes in or increased volume of public motorized travel cause unscheduled or unplanned livestock movement through existing fences, consider installation of appropriate sized cattle guards on roads or trails, or possibly self-closing gates.)

Wildlife
- The Powerline Trailhead (Alternatives B, C, and D) would be closed seasonally or otherwise designed with barricades placed at the proposed trailhead or otherwise designed to continue to limit parking to one or two vehicles with trailers, before being added to the MVUM, to be consistent with Forest Plan standard 3111.
- The following routes or a portion of these routes would be closed seasonally from April 1 to August 15 to protect nesting goshawks, for the alternatives indicated (Table B-5, next page).
Table B-5. Routes closed seasonally (April 1–August 15) to protect nesting goshawks

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Appendix C: Literature Cited


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SD DENR. 2008. (See South Dakota DENR. 2008)


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Appendix D: Content Analysis for Travel Management Planning

Introduction

On November 9, 2005, the USDA Forest Service published in the Federal Register, Volume 70, No. 216, the final rules and regulations for designating routes and areas for motor vehicle use for travel management activities (hereafter referred to as final rule) on National Forest System lands to become effective December 9, 2005.

Forest Service regulations at 36 CFR part 212 governing administration of the forest transportation system, and regulations at 36 CFR part 295 governing use of motor vehicles off National Forest System (NFS) roads are combined and clarified in this final rule as part 212, Travel Management, covering the use of motor vehicles on National Forest System lands. These regulations implement Executive Order (EO) 11644 (February 8, 1972), “Use of Off-Road Vehicles on the Public Lands,” as amended by EO 11989 (May 24, 1977). These Executive orders direct Federal agencies to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.

Black Hills Travel Management Planning

As a result of the publishing of the final rule, the Black Hills National Forest initiated the process to plan and designate routes, trails, and areas available for motor vehicle use. The Forest published a notice of intent (NOI) to prepare an environmental impact statement (EIS) in the Federal Register, Volume 72, No. 175, on September 11, 2007. The NOI initiated the scoping process for the environmental analysis (EA) for the Black Hills National Forest Travel Management Plan (referred to as Travel Management Plan) by identifying the purpose and need and a proposed action for the project. The notice also identified the responsible official, public involvement, schedule for public meetings, preliminary issues, and expected timeline for the analysis.

In addition to the Federal Register publication and news releases to local papers, the Black Hills sent to individuals, agencies, special interest groups, and other interested parties a letter describing the proposed action for designating motor vehicle use on the Black Hills National Forest, including a map of the proposal identifying specific routes, trails, and areas available for motor vehicle use. Larger scale maps were made available to the public through the district office and supervisor’s office of the Black Hills National Forest. Four public meetings were held to discuss the proposal and answer specific questions from the public. A comment form developed by the Black Hills National Forest was available to the public to encourage participation in the scoping process.

Summary Comments

During the scoping period, 738 responses were received from the public. The letters were received in three forms: Audubon Society form letter, some with individual comments; individual letters or e-mails; and the Black Hills National Forest OHV form, some with individual comments. Of the 738 letters sent; 60 were the Audubon form, including 14 letters containing no original comments or presented in duplicate from the sender; 217 individual letters, including 23 duplicates from sender; and 460 Black Hills OHV form, including 7 duplicates.
After reviewing the 738 letters, some 1,991 specific comments were identified and grouped. The comments were defined into 16 categories with sub-categories to improve the analysis of the comments and define clear issue statements. A public concern statement was identified to describe each main category. These public concerns were then used to define issue statements. Issues represent conflicts posed by the proposed action, and are important because they can serve as the basis for alternatives.

The comment categories are summarized below, along with the disposition showing how they were incorporated into the EIS analysis.

**Category 1: Add Motorized Routes (404 Comments)**

**Public Concern:** The Forest Service should add trails, roads, and trailheads to the Travel Management Plan as presented by the public for motorized opportunities.

**Subcategories:**

- **Comments wanting ATV routes (25):** These comments focus on the need to have more trail opportunities for less than 50-inch vehicles. Two comments focus on Hell Canyon, including the Pleasant Valley area. There are two comments that believe the 50-inch tread width should be increase to 54-inch or 60-inch.

- **Comments wanting destinations or ties to communities or businesses (10):** These comments ask for connections to services such as gas, food, or other places of business. They request that the road/trail system be developed to connect communities and provide opportunities for points of interest. One commenter requested these communities, business, or points of interest be placed on the map.

- **Comments making general statements about wanting more of everything (60):** General statements include leaving the travel system as it is currently (3), keeping all roads open to motorized travel (9), including plans for future expansion (4), ensuring use of user submitted routes (2), the proposed plan is way too restrictive (concerned with lost motorized opportunities) from the current system (22), the motorized travel system needs to be dispersed throughout and not concentrated in any individual area (3), desired for winter time access (1), and encouragement to use paved, county, or gravel roads for connectors (4).

- **Comments wanting more loops (46):** The desire for these comments is to connect dead-end roads with loops (5) or just to create more looping opportunities in general (35), with specific mention of Hell Canyon needs for looping trails (2), Lead/Deadwood connectors (3) and utilizing county roads for connectors (4). Primary focus was for “trails” and not roads. One comment specifically mentioned less than 50-inch loop trails.

- **Comments wanting more single-track trails (64):** Of these comments, four included increasing the single-track miles to 300 or 500 or 1000, and nine comments desire single track in specific locations (i.e., Hell Canyon, Rochford, Camp 5, Piedmont, Nemo, Victoria Lake, Sugar Shack, Spearfish, Custer, and Newcastle). Several comments (10) disappointed in the 79 miles proposed, stating that “it would not provide enough enjoyable riding for a week’s stay in the Hills”.

- **Comments requesting specific routes by description or route numbers (122):**
  - All District—usually submitted by spreadsheet from user groups (9)
  - BL (18); 1 comment shared with HC
  - NH (38); with 2 comments shared with BL; 5 with MY; 2 with HC
  - MY (39); with 4 comments shared with NH
  - HC (18); with 3 comments shared with MY; 1 with NH
• **Comments requesting trailheads (8):** Two general comments about trailhead locations, one to place in strategic locations and another to ensure looping opportunities for trails return to a common parking area. Other comments were for specific locations for trailheads; i.e. Peaceful Pines, Spearfish, Dumont, Pilot knob, Rochford, junction of Custer Crossing and Minnesota Ridge Road, Mad Mountain Adventures and Experimental Forest area.

• **Comments requesting trails for both ATV and motorcycles (48):** There were 48 comments requesting more trails for a variety of motorized uses, including rock crawlers (5), ATV use (2), comments for both motorcycles and ATV (19), and desire for trails in general rather than roads (21). Trails in general also include specific locations Hell Canyon (2), Bearlodge (1) and Northern Hills (1).

• **Comments wanting consideration for UTV (6):** Six comments received to include utility terrain vehicles in with all-terrain vehicles for trail designation. Their desire is for the less than 50-inch designation to increase to either 54-inch or 60-inch.

• **Comments requesting year-round access (16):** Sixteen comments were received for year-round use of the proposed motorized travel system. Of these, five were specific for winter access; one because of a business.

**Disposition:** The comments in this category reflect the purpose and need for this project, which calls for the development and designation of a motorized travel system. Many comments also request the Forest to provide a variety of motorized recreation opportunities. These comments were generally incorporated into Issue 2, Effects on Recreation Opportunities.

Category 2: Remove Motorized Routes (292 Comments)

**Public Concern:** The Forest Service should remove specific motorized trails, roads, and trailheads from the Travel Management Plan as presented by the public.

**Subcategories:**

• **Comments wanting removal of dead end spurs (22):** Comments request elimination, obliteration, or decommissioning of dead-end spurs to prevent user-created loops (8). These dead-end routes are seen as “go nowhere” and encourage users to “break the rules”. To facilitate enforcement, comments recommend removing dead-end spurs from the map unless they lead to a destination.

**Disposition:** Comments in this category call for the development of a motorized travel system that could reasonably be maintained and enforced. These comments were incorporated into Issue 3, Effects on Management Capabilities.

• **Comments making general statements about wanting less of everything (98):** Comments focused on a need to reduce the overall miles available for roads and trails to the motorized vehicles. Comments included 54 statements to reduce the road miles; 17 to reduce the trail opportunities for ATVs and 4 to reduce motorcycles; and 18 that specifically mention 3,988 miles or 4,000 miles is “way too much”. Reasons for the reduction include 10 concerns for environmental resources; 6 to management concerns to maintain; and 7 for reduction in road density.

• **Comments wanting less loops (4):** These comments request not increasing the opportunities for loops to prevent abuse of the land and conflicts with the general public.
• **Comments requesting specific routes removed by description or route numbers (158):**
  - All District—usually submitted by spreadsheet from user groups (6)
  - BL (8); 3 comments shared with HC
  - NH (76); with 2 comments shared with BL; 2 with MY; 1 with HC
  - MY (51); with 1 comment shared with NH; 2 with HC
  - HC (13)

• **Comments requesting removal of trailheads (5 specific to Peaceful Pines) (11):** These comments recommend removing specific proposed trailhead locations.

  **Disposition:** These comments reflect concerns for effects of motorized travel use on natural resources. They were incorporated into Issue 1, Effects on Natural and Cultural Resources.

**Category 3: Off-Road Opportunities (327 Comments)**

**Public Concern:** The Forest Service should add motorized off-road opportunities for dispersed camping, game retrieval, cross-country travel, teaching beginners to ride and mud bogging to the Travel Management Plan.

**Subcategories:**

• **Comments wanting areas for off-road use (95):** These comments request areas be identified to allow off-road opportunities anywhere the rider desires to go. Of the comments; 2 had suggested specific areas (Piedmont and Sheridan Lake); 5 recommended a specific size to consider (1 square mile [2], 15 square miles [1], and 100 acres [2]); 9 wanted areas for motorcycles with 1 specifically requesting small jumps; and 2 requested access to designated system from private property. One comment wanted to ensure the Prairie Creek decision was incorporated into the new Plan. Another comment suggested areas be set up for winter cross-country opportunities.

• **Comments wanting areas set up to teach beginners (“tot lots”) (12):** These comments request areas, sometimes refer to as a “play area”, to provide beginners a place to learn to ride and develop skills. Two comments recommended gravel pits as a suitable place.

• **Comments specifically supporting dispersed camping (103):**
  - 60 comments specifically requesting 300 feet
  - other comments ranged between 150 to 1,000 feet
  - 2 comments for less than 100 feet

• **Comments specific for wanting game retrieval (93):**
  - Request for increasing the distance; distances were from 500 feet to unlimited

• **Comments wanting mud-bogging (24):** These comments believe that mud bogging areas should be identified to reduce enforcement concerns or user-created ones from occurring (3). Two comments specifically state that “man-made mud bogs” could be built and one recommended the Farmingdale area.

  **Disposition:** These comments express desires for various forms of motorized recreation. They were incorporated into Issue 2, Effects on Recreational Opportunities.

**Category 4: Accessibility (23 Comments)**

**Public Concern:** The Forest Service should consider the needs of the elderly and person with disabilities while designing a motorized travel management plan for the Black Hills National Forest.
Subcategories:

- **Comments specific to disability travel (categorized as recreation oriented)** (7): These comments focus on the recreational opportunities of motorized travel for persons with disabilities. Two comments suggest that the proposed designated motorized system would eliminate a large area of the Forest from their access due to inability to hike.

- **Comments related to hunting needs for disability or elderly** (16): These comments also include increasing the distance for game retrieval (5) and designating deer for retrieval (3).

**Disposition:** These comments express concerns for various forms of motorized recreation. They were incorporated into Issue 2, Effects on Recreational Opportunities.

**Category 5: Environmental Concerns (93 Comments)**

**Public Concern:** The Forest Service should evaluate impacts from motorized opportunities on environmental resources such as water, soil, wildlife, plants and other resources on the Black Hills National Forest.

Many of the comments received identified more than one resource area of concern for the proposed action for Black Hills motorized travel opportunities. The main resource areas of concern were for soil (7); water (21); wildlife and fish (36); plants (8); and archeological resources (5). Additional comments mentioned air, global warming, monitoring, mining access, private property, research natural areas, wilderness, and sensitive vegetation.

**Disposition:** These comments were incorporated into Issue 1, Effects on Natural and Cultural Resources.

**Category 6: Enforcement Concerns (83 Comments)**

**Public Concern:** The Forest Service should evaluate the law enforcement personnel available on the Black Hills to ensure compliance with the travel management plan.

Subcategories:

- **Comments concerning enforcement capabilities and wanting stronger enforcement** (64): General concern statements focus on the enforcement of the proposed designated system. Some comments (28) suggest that 4,000 miles of motorized routes will not be enforceable and a strategy or enforcement plan (4) should be developed before implementing the new plan. Some comments (5) recommend that the enforcement capabilities of the Forest should dictate the designation of the motorized system.

- **Comments wanting heavier fines** (5): Comments specifically recommend heavier fines to deter misuse of the system.

- **Comments wanting signs or gates to improve enforcement** (14): Comments recommend signing (10) the designated system of routes and trails and gating closure areas (1) to alleviate problems with lack of enforcement personnel.

**Disposition:** Comments in this category call for the development of a motorized travel system that could reasonably be maintained and enforced. These comments were incorporated into Issue 3, Effects on Management Capabilities.

**Category 7: No Off-Road Opportunities (111 Comments)**

**Public Concern:** The Travel Management Plan should limit the motorized opportunities to only trails and roads.
Subcategories:

- **Comments against dispersed camping activities (32):** These comments recommend not allowing dispersed camping on the Forest anywhere. Of the 25 comments made, 18 recommend that camping be allowed only in designated campgrounds and 7 comments specifically identify fires as a reason to prevent it.

**Disposition:** These comments reflect concerns for effects on natural resources. They were incorporated into Issue 1, Effects to Natural and Cultural Resources.

- **Comments against any off-road game retrieval (30):** Comments believe hunters should find other means of retrieving their harvested animal rather than relying on motorized opportunities. Suggestions were quartering the animal, using hand carts, sleds, horses, or dragging. One comment suggested that hunting should “be an effort”.

**Disposition:** These comments were incorporated into Issue 2, Effects to Recreational Opportunities.

- **Comments supporting no mud-bogging activities (22):** These comments generally support the Plan to not designate any mud-bogging areas on the Forest.

- **Comments generally okay with no off-road opportunities (27):** Comments are supportive of not providing any off-road opportunities in the travel plan for the Black Hills National Forest. Comments support restricting the motorized opportunities to designated routes and trails.

**Disposition:** Comments in these two sub-categories reflect concerns about impacts to natural resources. They were incorporated into Issue 1, Effects to Natural and Cultural Resources.

**Category 8: Special Permits (39 Comments)**

**Public Concern:** The Travel Management Plan should designate motorized off-road opportunities for Forest Service permitted activities such as grazing and firewood gathering.

Subcategories:

- **Comments for firewood collection (31):** Comments concerned about the new designated motorized system would not allow for firewood gathering. Six comments recommend designating a distance, 300 feet, for this activity.

- **Comments about grazing activities (7):** Comments are concerned that the new designated system of motorized travel will affect their ability to administer their grazing permits. One comment was concerned about allotment gates being left open on designated motorized system.

- **Comment about special privilege for trapping activities (1):** One comment requested special consideration for trapping activities.

**Disposition:** These comments indicate concerns over possible effects of motorized travel to other Forest programs and multiple-uses on the Forest. Firewood gathering on the Forest would be regulated under other authorities and would not be subject to this decision. Similarly, access by permittees to administer their grazing permits would be governed by the terms of their permit and not this decision. Effects of the alternatives on access for other recreational purposes will be disclosed in the EIS.

**Category 9: Big Game Retrieval (39 Comments)**

**Public Concern:** The Forest Service should incorporate all big game species, including deer, turkey, mountain lion, and mountain goat in the Travel Management Plan for off-road motorized big game retrieval opportunities.
Subcategories:

- **Comments wanting to include game retrieval for all species (16):** These comments believe game retrieval should be included for all big game species, with 1 comment specifically requesting turkey; 2 for mountain lions; and 1 for mountain goats.

- **Comments wanting deer to be included with elk retrieval (20):** These comments were specific to including deer within the big game retrieval distance.

- **Special Consideration—Game retrieval based on weight (1); game retrieval for all vehicle types (2); increasing the distance (7); consideration for elderly (2):** One comment suggested that big game retrieval should be based on the weight of the animal. Two comments requested consideration for all types of vehicles to retrieve big game and not restrict to ATV retrieval. The other comments were also included in the above counts because they also identified interested in particular species for retrieval. Recommendations for increasing the distance for game retrieval ranged from 600 feet to 1,000 feet.

**Disposition:** Access for retrieval of harvested game was considered, and the Forest Service decided to address this issue in various ways in different alternatives. These concerns were incorporated as part of Issue 2, Recreational Opportunities.

**Category 10: Roads versus Trails (29 Comments)**

**Public Concern:** The Travel Management Plan should consider more motorized trails rather than roads.

**Subcategories:**

- **Comments wanting to use existing roads (9):** These comments object to the building or construction of new trails due to the extensive amounts of roads on the Black Hills National Forest. Recommendations are to utilize only existing roads for the travel management plan.

- **Comments wanting more trails rather than “gravel” roads (20):** These comments prefer the experience of trail riding to road riding. Seven of the comments specifically mention “no gravel roads”, while three mention that riding on roads is not much of an experience. One commenter specifically requested that the ORV trail system should not include roads passable to automobiles, while another recommend consideration of logging roads in the travel management plan. Two comments also mentioned the desire for a challenging system and that roads were not capable of providing a “challenged ride”.

**Disposition:** These comments reflect different preferences for recreational motorized use. They were incorporated into Issue 2, Recreational Opportunities.

**Category 11: General Support (23 Comments)**

**Public Concern:** Some commenters generally supported the Travel Management Plan as proposed.

**Subcategories:**

- Comments generally support various portions of the proposal from working with partnerships, “closing unless open” philosophy, or plans for future expansion. Some comments state “OK” or “generally support”.

**Disposition:** These comments showed support for different aspects of the proposal, but did not identify reasons. The Forest Service appreciates the comments.

**Category 12: General Disagreement (19 Comments)**

**Public Concern:** Commenters prefer not to be restricted to designated routes.
Subcategories:

- **Comments fully disagree with proposal (3):** These comments disagree with all proposed points of the proposal travel management plan.

- **Comments general statements (5):** These comments offer general statements such as “losing freedom of enjoying the Forest”, “objection to off-road travel is a problem throughout the Hills”, and “eliminate all user supplied input from the proposal”.

- **Comments requesting the Forest Service to utilize the “current system” of roads/trails (11):** These comments specifically request to leave the current management strategy “open unless designated closed” for the motorized travel opportunities.

**Disposition:** These comments reflect a variety of preferences for recreational motorized use. They were incorporated into Issue 2, Recreational Opportunities.

**Category 13: Multi-Use Conflicts (186 Comments)**

**Public Concern:** The Black Hills National Forest should evaluate conflicts to other users such as noise, impacts to nonmotorized activities, ranchers, residential property, etc., when developing the motorized travel management plan.

- These comments respond to conflicts with other uses of the Forest such as nonmotorized opportunities, solitude, safety, private property, communities, economics, and motorized impacts with other motorized users. The majority of these comments focused on noise (82), private property concerns (27), and impacts with nonmotorized users (43).

**Disposition:** Concerns reflected in these comments were incorporated into Issue 3, which includes user safety; and Issue 4, Social and Economic Concerns.

**Category 14: Partnerships/Cooperations (117 Comments)**

**Public Concern:** The Forest Service should consider all opportunities for funding, including developing a user fee system to help support the maintenance of the proposed travel management plan.

Subcategories:

- **Comments not broken out (usually comments against Governor’s Task Force) (28):** Comments generally support working with local, state, and other government offices to develop a motorized travel system. Eleven of the comments object to the formation of the Governor’s Task Force with two stating that there was no representative supporting nonmotorized interests.

- **Comments related to funding sources (33):** These comments are split between supporting (13) various means of providing funding to support the motorized system and disagreeing (14) with any outside organization providing funding for a specific interest. Those not supporting a variety of funding sources state that external funding sources could influence the management direction and achieve objections of outside organizations. Two comments recommend utilizing existing funds to provide a balance between all the needs of the Forest. Four comments recommend that users pay for the opportunities.

- **Comments requesting no additional fees added for the system (3):** These comments believe enough taxes are paid for this purpose or not enough of a trail system is offered to make a payment viable.

- **Comments supporting user fees (53):** These comments support user fees or a sticker system for motorized use. Three comments would like to see nonmotorized users with a user fee as well. Thirteen comments request the funds to support the motorized trail system.
Disposition: These comments generally focus on how any motorized travel system might be implemented. Questions regarding fees, funding sources, and partnerships are outside the scope of the decision to be made on this project, and will be decided after a decision is issued.

Category 15: Duplicate Records (51 Comments)
Disposition: This is a records management concern. Disposition does not relate to the issues.

Category 16: Forms with No Specific Comments (155 Comments)
Subcategories:
- Audubon form letter with no additional comments (16)
- OHV form letter with no additional comments (139)
Disposition: This is a records management concern. Disposition does not relate to the issues.

How Public Concern Statements Relate to Issues
From the comments and concerns summarized above, the Forest Service identified the following key issues.

Issue 1: Effects on natural and cultural resources
The alternatives considered in the EIS may have effects on natural and cultural resources. Effects to these resources will vary between alternatives and are mostly dependent on the miles of roads and trails open to motorized use. Restricting motorized use to a managed system of designated roads and trails, identifying specific seasons of use, and identifying authorized types of vehicle use, would improve protection for these natural and cultural resources. Effects to natural and cultural resources between alternatives are identified in detail in the effects analysis in Chapter 3.

Issue 2: Effects on recreational opportunities
The alternatives considered in the EIS may have effects on the amount of available recreational opportunities provided on the Forest, including motorized use on roads and trails, mixed motorized use roads, dispersed camping, big game retrieval, motorized trailheads, and nonmotorized opportunities. Effects to the recreational opportunities by alternative are identified in detail in the effects analysis in Chapter 3.

Issue 3: Effects of transportation system design on management capabilities
The alternatives considered in the EIS may have effects on the Forest’s ability to proactively designate and manage system roads and trails, while also optimizing recreation experiences. The alternatives considered will have different effects on how the transportation system is able to address management concerns (such as law enforcement, user education, signing, and maintenance) while reducing management costs and focusing limited resources. Addressing many of the management concerns will be dependent on available funding sources, which will most likely be limited. The transportation system design can also affect public safety depending on the miles of mixed-use roads. Any roads identified for mixed use will be reviewed in a mixed-use roads analysis that includes mitigation to make reasonable accommodations for the public’s safety.

Issue 4: Social and Economic Concerns
The alternatives considered in the EIS may affect the economic sustainability of local businesses and communities. Effects may be related to dust, noise, traffic level, trespass on private property, distance from motorized routes to private land, and miles of routes open to motorized use.
Appendix E: Cumulative Effects

Following is a listing of actions considered in the cumulative effects analysis for this project. Each resource cumulative effects discussion only considers those actions relevant to the resource being analyzed. In some cases, there may be singular actions specific to a resource analysis that are not listed here.

Past, Present, and Reasonably Foreseeable Actions Referred to in Specialist Reports

- Activities such as vegetation management, fuels management, livestock grazing, recreational activities, and other management activities have continued and would continue on the Forest. These activities would likely occur on private lands as well.
- Firewood cutting has occurred in the past and would likely continue in the foreseeable future on the Forest and private lands.
- Private landowners may harvest timber on their lands for lumber or to reduce fire hazards.
- Urban development and interface growth will continue on private lands.
- Management of national and state parks adjacent to the Forest would continue.
- Prairie dog control efforts on private lands have occurred and can be expected to continue.
- Road construction and maintenance and right-of-way brushing can be expected to continue on lands outside the National Forest System. Road construction, reconstruction, and decommissioning are expected to continue to move towards Forest Plan objective 309.
- Future road or trail realignment, reconstruction, or decommissioning.
- Recreation activities will continue to increase on the Forest. Future recreation projects may be developed.
- Timber harvest and fuels management projects.
- Grazing allotment management plans are proposed to be revised to incorporate current standards, and will be implemented.
- Treatment to reduce or eliminate noxious weeds.
- Meadow restoration projects.
- Historic and ongoing mining activities.
- Water storage/diversion projects.
- Two trailheads on the Hell Canyon Ranger District, and 25 miles of routes on the Hell Canyon, Northern Hills and Bearlodge Ranger Districts are expected to be proposed for designation under future projects.
Appendix F: Proposed Forest Plan Changes for Travel Planning Alternatives

Alternative B Would Change the Existing Forest Plan Direction in the Following Ways

Note: Bolded areas within tables denote a change.

Goal 4, Objective 416:

**Existing Language:** Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Nonmotorized trails (1996)</th>
<th>293 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorized trails (1996)</td>
<td>14 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, or conversion from road to motorized trail</td>
<td>15 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>526 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>100 miles (per decade)</td>
</tr>
</tbody>
</table>

**Proposed New Language:** Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Nonmotorized trails (1996)</th>
<th>293 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorized trails (2009)</td>
<td>36 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, improvement, or conversion from road to motorized trail</td>
<td>627 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>1,124 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Construction/improvement</td>
<td>650 miles (per decade)</td>
</tr>
</tbody>
</table>

Goal 4, Objective 421:

**Existing Language:** Provide the following road system [Roads, by the end of the first decade]:

<table>
<thead>
<tr>
<th>Suitable for public use</th>
<th>4,700 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger car</td>
<td>1,200 miles</td>
</tr>
<tr>
<td>High-clearance vehicles</td>
<td>3,500 miles</td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>500 miles</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5,200 miles</td>
</tr>
</tbody>
</table>

**Proposed New Language:** Provide the following road system [Roads, by the end of the first decade]:

<table>
<thead>
<tr>
<th>Suitable for public use</th>
<th>3,500 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger car</td>
<td>639 miles</td>
</tr>
<tr>
<td>High-clearance vehicles</td>
<td>2,827 miles</td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>500 miles</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>4,000 miles</td>
</tr>
</tbody>
</table>
Goal 4, Objective 422:

Existing Language: Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>All motorized travel allowed yearlong</td>
<td>59.1</td>
</tr>
<tr>
<td>Seasonal restrictions apply</td>
<td>22.8</td>
</tr>
<tr>
<td>Seasonal restrictions-no off-road</td>
<td>3.2</td>
</tr>
<tr>
<td>Backcountry motorized recreation on designated trails</td>
<td>1.0</td>
</tr>
<tr>
<td>Only OHV travel prohibited</td>
<td>11.4</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Proposed New Language: Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-road motorized travel allowed yearlong or seasonally</td>
<td>14.2</td>
</tr>
<tr>
<td>(motorized game retrieval and dispersed camping)</td>
<td>(dispersed camping is a subset of total game retrieval area)</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>83</td>
</tr>
</tbody>
</table>

Forestwide Guideline 5301:

Existing Language: “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain.”

Proposed New Language: “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain. Motorized dispersed camping is allowed only as shown on the MVUM.”

Forestwide Standard 9101:

Existing Language: “Designated and newly constructed Forest Development Roads are open all year to appropriate motorized vehicle use, unless a documented decision shows one or more of the following: .....

Proposed New Language: “Any new road will be closed to public use unless a project decision specifically designates it as open to public use, and until it is so designated on the MVUM.”

Forestwide Standard 9102:

Existing Language: “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”
**Proposed New Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map MVUM or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

**Forestwide Guideline 9103:**

**Existing Language:** “Management of motorized vehicle travel is summarized in the following table.”
[See table in Plan, p. II-77]

**Proposed New Language:** “Management of motorized vehicle travel is summarized in the following table. Motorized off-road travel is allowed only for purposes of game retrieval and dispersed camping, as shown on the MVUM (except for specific exceptions specified in the Travel Rule).”

**Forestwide Standard 9302:**

**Existing Language:** “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the Forest Visitor Map or contained in the Forest Travel Orders.”

**Proposed New Language:** “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the MVUM or contained in the Forest Travel Orders.”

**Management Area Guidelines:**

3.31-9102 – **Existing Language:** “Off-road motorized travel is allowed on trails only.”

**Proposed New Language:** “Off-road motorized travel is allowed on designated trails only.”

5.1-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.1-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.1A-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.1A-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”
**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.3A-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.3A-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.4-9101 – **Existing Language:** “Off-road motorized travel is prohibited from December 15 through May 15.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision, but is prohibited from December 15 through May 15.”

5.4-9102 – **Existing Language:** “Motorized road travel may be restricted.”

**Proposed New Language:** “Motorized road travel is allowed where designated.”

5.6-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.6-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

**Alternative C Would Change the Existing Forest Plan Direction in the Following Ways**

**Goal 4, Objective 416:**

**Existing Language:** Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Trail Type</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonmotorized trails (1996)</td>
<td>293 miles</td>
</tr>
<tr>
<td>Motorized trails (1996)</td>
<td>14 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, or conversion from road to motorized trail</td>
<td>15 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>526 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>100 miles (per decade)</td>
</tr>
</tbody>
</table>
Proposed New Language: Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Trail Type</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonmotorized trails (1996)</td>
<td>293 miles</td>
</tr>
<tr>
<td>Motorized trails (2009)</td>
<td>36 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, improvement, or conversion from road to motorized trail</td>
<td>735 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>1,232 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Construction/improvement</td>
<td>750 miles (per decade)</td>
</tr>
</tbody>
</table>

Goal 4, Objective 421:

Existing Language: Provide the following road system [Roads, by the end of the first decade]:

<table>
<thead>
<tr>
<th>Category</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable for public use</td>
<td>4,700 miles</td>
</tr>
<tr>
<td>Passenger car</td>
<td>1,200 miles</td>
</tr>
<tr>
<td>High clearance vehicles</td>
<td>3,500 miles</td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>500 miles</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,200 miles</td>
</tr>
</tbody>
</table>

Proposed New Language: Provide the following road system [Roads, by the end of the first decade]:

<table>
<thead>
<tr>
<th>Category</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable for public use</td>
<td>3,600 miles</td>
</tr>
<tr>
<td>Passenger car</td>
<td>643 miles</td>
</tr>
<tr>
<td>High clearance vehicles</td>
<td>2,939 miles</td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>1,300 miles</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,900 miles</td>
</tr>
</tbody>
</table>

Goal 4, Objective 422:

Existing Language: Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>All motorized travel allowed yearlong</td>
<td>59.1</td>
</tr>
<tr>
<td>Seasonal restrictions apply</td>
<td>22.8</td>
</tr>
<tr>
<td>Seasonal restrictions-no off-road</td>
<td>3.2</td>
</tr>
<tr>
<td>Backcountry motorized recreation on designated trails</td>
<td>1.0</td>
</tr>
<tr>
<td>Only OHV travel prohibited</td>
<td>11.4</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Proposed New Language:

Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-road motorized travel allowed yearlong or seasonally (motorized game retrieval and dispersed camping)</td>
<td>38</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>60</td>
</tr>
</tbody>
</table>
Forestwide Guideline 5301:

**Existing Language:** “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain.”

**Proposed New Language:** “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain. Motorized dispersed camping is allowed only as shown on the MVUM.”

Forestwide Standard 9101:

**Existing Language:** “Designated and newly constructed Forest Development Roads are open all year to appropriate motorized vehicle use, unless a documented decision shows one or more of the following: .....”

**Proposed New Language:** “Any new road will be closed to public use unless the project decision approving its construction specifically designates it as open to public use, and until it is so designated on the MVUM.”

Forestwide Standard 9102:

**Existing Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

**Proposed New Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road, and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

Forestwide Guideline 9103:

**Existing Language:** “Management of motorized vehicle travel is summarized in the following table.” [See table in Plan, p. II-77]

**Proposed New Language:** “Management of motorized vehicle travel is summarized in the following table. Motorized off-road travel is allowed only for purposes of game retrieval and dispersed camping, as shown on the MVUM (except for specific exceptions specified in the Travel Rule).”
Forestwide Standard 9302:

**Existing Language:** “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the Forest Visitor Map or contained in the Forest Travel Orders.”

**Proposed New Language:** “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the MVUM or contained in the Forest Travel Orders.”

Management Area Guidelines:

3.31-9102 – **Existing Language:** “Off-road motorized travel is allowed on trails only.”

**Proposed New Language:** “Off-road motorized travel is allowed on designated trails only.”

3.7-9103 – **Existing Language:** “Off-road motorized travel is prohibited.”

**Proposed New Language:** “Off-road motorized travel is allowed only where designated.”

5.1-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.1-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.1A-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.1A-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.3A-9101 – **Existing Language:** “Off-road motorized travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Off-road motorized travel is allowed where designated by a project decision.”

5.3A-9102 – **Existing Language:** “Motorized road travel is allowed unless restricted by a project decision.”

**Proposed New Language:** “Motorized road travel is allowed where designated by a project decision.”

5.4-9101 – **Existing Language:** “Off-road motorized travel is prohibited from December 15 through May 15.”
Proposed New Language: “Off-road motorized travel is allowed where designated by a project decision, but is prohibited from December 15 through May 15.”

5.4-9102 – Existing Language: “Motorized road travel may be restricted.”

Proposed New Language: “Motorized road travel is allowed where designated.”

5.6-9101 – Existing Language: “Off-road motorized travel is allowed unless restricted by a project decision.”

Proposed New Language: “Off-road motorized travel is allowed where designated by a project decision.”

5.6-9102 – Existing Language: “Motorized road travel is allowed unless restricted by a project decision.”

Proposed New Language: “Motorized road travel is allowed where designated by a project decision.”

Alternative D Would Change the Existing Forest Plan Direction in the Following Ways

Goal 4, Objective 416:

Existing Language:

Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Nonmotorized trails (1996)</th>
<th>293 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorized trails (1996)</td>
<td>14 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, or conversion from road to motorized trail</td>
<td>15 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>526 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>100 miles (per decade)</td>
</tr>
</tbody>
</table>

Proposed New Language: Maintain and construct trails as displayed in the following table:

<table>
<thead>
<tr>
<th>Nonmotorized trails (1996)</th>
<th>293 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorized trails (2009)</td>
<td>36 miles</td>
</tr>
<tr>
<td>Nonmotorized trail construction</td>
<td>204 miles</td>
</tr>
<tr>
<td>Motorized trail construction, improvement, or conversion from road to motorized trail</td>
<td>284 miles (per decade)</td>
</tr>
<tr>
<td>Total Forest trail system</td>
<td>781 miles (total miles at end of decade)</td>
</tr>
<tr>
<td>Construction/improvement</td>
<td>320 miles (per decade)</td>
</tr>
</tbody>
</table>

Goal 4, Objective 421:

Existing Language: Provide the following road system [Roads, by the end of the first decade]:

Suitable for public use | 4,700 miles |
Passenger car | 1,200 miles |
High clearance vehicles | 3,500 miles |
Roads closed to vehicles | 500 miles |
TOTAL | 5,200 miles |
**Proposed New Language:** Provide the following road system [Roads, by the end of the first decade]:

<table>
<thead>
<tr>
<th>Suitable for public use</th>
<th>2,900 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger car</td>
<td>636 miles</td>
</tr>
<tr>
<td>High clearance vehicles</td>
<td>2,241 miles</td>
</tr>
<tr>
<td>Roads closed to vehicles</td>
<td>2,100 miles</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5,000 miles</td>
</tr>
</tbody>
</table>

Goal 4, Objective 422:

**Existing Language:** Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>All motorized travel allowed yearlong</td>
<td>59.1</td>
</tr>
<tr>
<td>Seasonal restrictions apply</td>
<td>22.8</td>
</tr>
<tr>
<td>Seasonal restrictions—no off-road</td>
<td>3.2</td>
</tr>
<tr>
<td>Backcountry motorized recreation on designated trails</td>
<td>1.0</td>
</tr>
<tr>
<td>Only OHV travel prohibited</td>
<td>11.4</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**Proposed New Language:** Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-road motorized travel allowed yearlong or seasonally</td>
<td>0.0</td>
</tr>
<tr>
<td>(motorized game retrieval and dispersed camping)</td>
<td>(no motorized dispersed camping or game retrieval allowed)</td>
</tr>
<tr>
<td>Motorized travel prohibited except snowmobiles</td>
<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>98</td>
</tr>
</tbody>
</table>

Forestwide Guideline 5301:

**Existing Language:** “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain.”

**Proposed New Language:** “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain. Motorized dispersed camping is allowed only as shown on the MVUM.”

Forestwide Standard 9101:

**Existing Language:** “Designated and newly constructed Forest Development Roads are open all year to appropriate motorized vehicle use, unless a documented decision shows one or more of the following: ….”

**Proposed New Language:** “Any new road will be closed to public use unless the project decision approving its construction specifically designates it as open to public use, and until it is so designated on the MVUM.”

Forestwide Standard 9102:

**Existing Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the
Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

Proposed New Language: “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

Forestwide Guideline 9103:
Existing Language: “Management of motorized vehicle travel is summarized in the following table.” [See table in Plan, p. II-77]

Proposed New Language: “Management of motorized vehicle travel is summarized in the following table. No motorized off-road game retrieval or dispersed camping is allowed.”

Forestwide Standard 9302:
Existing Language: “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the Forest Visitor Map or contained in the Forest Travel Orders.”

Proposed New Language: “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the MVUM or contained in the Forest Travel Orders.”

Management Area Guidelines:
3.31-9102 – Existing Language: “Off-road motorized travel is allowed on trails only.”

Proposed New Language: “Off-road motorized travel is allowed on designated trails only.”

5.1-9101 – Existing Language: “Off-road motorized travel is allowed unless restricted by a project decision.”

Proposed New Language: “Off-road motorized travel is allowed where designated by a project decision.”

5.1-9102 – Existing Language: “Motorized road travel is allowed unless restricted by a project decision.”

Proposed New Language: “Motorized road travel is allowed where designated by a project decision.”

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5.4-9102 — Existing Language: “Motorized road travel may be restricted.”

Proposed New Language: “Motorized road travel is allowed where designated.”

5.6-9101 — Existing Language: “Off-road motorized travel is allowed unless restricted by a project decision.”

Proposed New Language: “Off-road motorized travel is allowed where designated by a project decision.”

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Proposed New Language: “Motorized road travel is allowed where designated by a project decision.”

Alternative E Would Change the Existing Forest Plan Direction in the Following Ways

Goal 4, Objective 422:

Existing Language: Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
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<tr>
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</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Proposed New Language: Provide the following off-road travel opportunities:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Forest</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1.2</td>
</tr>
<tr>
<td>All motorized travel prohibited</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Black Hills National Forest Travel Management Plan

Off-road motorized travel allowed yearlong or seasonally (motorized game retrieval and dispersed camping) 0.0 (no motorized dispersed camping or game retrieval allowed)

Motorized travel prohibited except snowmobiles 1.2
All motorized travel prohibited 98

Forestwide Guideline 5301:

**Existing Language:** “Discourage dispersed camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain.”

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**Proposed New Language:** “Any new road will be closed to public use unless the project decision approving its construction specifically designates it as open to public use, and until it is so designated on the MVUM.”

Forestwide Standard 9102:

**Existing Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

**Proposed New Language:** “With regard to management of motorized travel, management areas are designated as allowed, restricted, or prohibited for road, off-road, and snow travel. The need for modifying motorized travel opportunities within management areas may be identified during project planning and will be accomplished through project decisions. Existing travel orders will continue in effect as part of the Revised Forest Plan unless changed by management area direction. Motorized off-highway vehicle travel opportunities and restrictions, both those listed in the table below and any modified through project decisions, will be displayed on the Forest Visitor Map or contained in a Forest Travel Order. Implementation of Forest Travel Orders on the ground shall be in compliance with the Forest Access Management Guide.”

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**Existing Language:** “Management of motorized vehicle travel is summarized in the following table.” [See table in Plan, p. II-77]

**Proposed New Language:** “Management of motorized vehicle travel is summarized in the following table. No motorized off-road dispersed camping or game retrieval is permitted.”
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**Existing Language:** “The need to modify existing allowable trail uses or to identify use types of new Forest Development Trails will be accomplished through project planning and project decisions. Trail use opportunities, both those listed in the table below, and any added or modified through project decisions will be displayed on the Forest Visitor Map or contained in the Forest Travel Orders.”

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5.6-9102 – *Existing Language:* “Motorized road travel is allowed unless restricted by a project decision.”

*Proposed New Language:* “Motorized road travel is allowed where designated by a project decision.”
Appendix G: Glossary

**All-terrain vehicle (ATV)** ~ A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator (FSM 7700).

**Area** ~ A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district (36 CFR 212.1).

**Arterial road** ~ A National Forest System road that provides service to large land areas and usually connects with other arterial roads or public highways.

**Background** ~ The distant part of a landscape. The landscape area located from 4 miles to infinity from the viewer.

**Big game** ~ Large wild animals that are hunted for sport and food. This hunting is controlled by state wildlife agencies. Big game animals found on this Forest include deer and elk.

**Collector road** ~ A National Forest System road that services smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities.

**Corridor (landscape)** ~ Landscape element that connect similar patches of habitat through an area with different characteristics. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows or through a conifer forest.

**Cumulative effects** ~ Impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

**Designated road, route, trail, or area** ~ A National Forest System road, National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map (36 CFR 212.1).

**Distance zones** ~ Landscape areas denoted by specific distances from the observer. Used as a frame of reference in which to discuss landscape attributes or the scenic effect of human activities in a landscape.

**Ephemeral stream** ~ A stream that flows only in direct response to precipitation in the immediate locality (watershed or catchment basin), and whose channel is at all times above the zone of saturation.

**Foreground** ~ Detailed landscape generally found from the observer to 0.5-mile away. See also “Immediate foreground.”

**Forest road or trail** ~ A road or trail wholly or partially within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR 212.1).

**Forest transportation atlas** ~ A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).
**Forest transportation facility** ~ A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

**Forest transportation system** ~ The National Forest System roads, trails, and airfields on National Forest System lands (36 CFR 212.1).

**Gateway communities**: Communities that are economically and socially interdependent on the associated public lands. Proximity to these lands contributes to the quality of life and sense of place for residents and visitors.

**Highway-legal vehicle** ~ Any motor vehicle that is licensed or certified under State law for general operation on all public roads within the State. Operators of highway-legal vehicles are subject to state traffic law, including requirements for operator licensing (FSM 7700).

**Immediate foreground** ~ The detailed feature landscape found within the first few hundred feet of the observer, generally, from the observer to 300-feet away.

**Indicator** ~ In effects analysis, a device for measuring effects from management alternatives on a particular resource or issue.

**Intermittent stream** - A stream or reach of stream channel that flows, in its natural condition, only during certain times of the year or in several years. Characterized by interspersed, permanent surface water areas containing aquatic flora and fauna adapted to the relatively harsh environmental conditions found in these types of environments.

**Lacustrine** - Relating to lakes and a system of inland wetlands and deep-water habitats associated with freshwater lakes and reservoirs, characterized by the absence of trees, shrubs, or emergent vegetation.

**Local road** ~ A National Forest System road that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use.

**Maintenance level (ML)** ~ Defined in FSH 7709.58, 10, 12.3 as the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives, and maintenance criteria. Roads may be 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 standard 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.

**Maintenance level 1 road** ~ Defined in FSH 7709.58, 10, 12.3 as intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 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 nonmotorized uses. These roads have the following attributes: (1) vehicular traffic is eliminated, including administrative traffic; (2) physically blocked or entrance is
disguised; (3) not subject to the requirements of the Highway Safety Act; (4) maintenance is done only to minimize resource impacts; and (5) no maintenance other than a condition survey may be required so as long as no potential exists for resource damage.

**Maintenance level 2 road** ~ Defined in FSH 7709.58, 10, 12.3 as roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles. These roads have the following attributes: (1) low traffic volume and low speed; (2) typically local roads; (3) typically connect collectors and other local roads; (4) dips are the preferred drainage treatment; (5) not subject to the requirements of the Highway Safety Act; (6) surface smoothness is not a consideration; and (7) not suitable for passenger cars.

**Maintenance level 3 road** ~ Defined in FSH 7709.58, 10, 12.3 as roads open and maintained for travel by prudent drivers in a standard passenger car. 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: (1) subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD); (2) roads have low to moderate traffic volume; (3) typically connect arterial and collector roads; (4) a combination of dips and culverts provide drainage; (5) may include some dispersed recreation roads; and (6) potholing or washboarding may occur.

**Maintenance level 4 road** ~ Defined in FSH 7709.58, 10, 12.3 as 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: (1) subject to requirements of the Highway Safety Act and MUTCD; (2) roads have moderate traffic volume and speeds; (3) may connect to county roads; (4) culverts provide drainage; (5) usually a collector; and (6) may include some developed recreation roads.

**Maintenance level 5 road** ~ Defined in FSH 7709.58, 10, 12.3 as 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: (1) subject to the requirements of the Highway Safety Act and MUTCD; (2) highest traffic volume and speeds; (3) typically connect State and county roads; (4) culverts provide drainage; (5) usually arterial and collector; (6) may include some developed recreation roads; and (7) usually paved or chip-sealed.

**Middleground** ~ The zone between the foreground and the background in a landscape. The area located from 0.5 to 4 miles from the observer.

**Mixed-use road** ~ Segments of National Forest System roads that are identified and signed as open to state licensed and unlicensed vehicles; generally more than 50 inches in width and usually, but not always, low maintenance roads with no high-speed traffic.

**Motor vehicle** ~ Any vehicle which is self-propelled, other than: (a) a vehicle operated on rails; and (b) any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use
by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

**Motor vehicle use map (MVUM)** ~ A map reflecting designated roads, trails, and areas on an administrative unit or a ranger district of the National Forest System (36 CFR 212.1).

**Motorcycle** ~ A two-wheeled motor vehicle on which the two wheels are not side-by-side but in line (FSM 7700).

**Motorized mixed use** ~ Designation of a National Forest System road for use by both highway-legal and non-highway legal motor vehicles (FSM 7700).

**Motorized trail** ~ A travelway usually, but not always, less than 50 inches in width usually, but not always, available for use by all-terrain vehicles (ATVs) and/or motorcycles. These travelways may also be made available to high-clearance four-wheel drive vehicles, and may also be used by bicycles, horses, and hikers.

**MVUM** ~ See “Motor vehicle use map.”

**Natural scenery** ~ The landforms including rock outcrops, vegetation, and animals that are naturally found in this ecosystem.

**National Forest System road** ~ A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

**National Forest System trail** ~ A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

**No Action (Alternative)** ~ The most likely condition expected to exist if current management practices continue unchanged. The analysis of this alternative is required for Federal actions under NEPA.

**Non-highway-legal vehicle** ~ Any motor vehicle that is not licensed or certified under state law for general operation on all public roads within the state. Operators of non-highway-legal vehicles are subject to state requirements, if any, for licensing and operation of the vehicle in question (FSM 7700).

**Off-highway vehicle (OHV)** ~ Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

**Off-road vehicle (ORV)** ~ See “Off-highway vehicle.”

**Over-snow vehicle (OSV)** ~ A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 CFR 212.1).

**Palustrine** - Relating to a system of inland, nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface). Palustrine wetlands range from permanently saturated or flooded land (as in marshes, swamps, and lake shores) to land that is wet only seasonally (as in vernal pools).

**Perennial stream** - A stream or reach of a channel that flows continuously or nearly so throughout the year and whose upper surface is generally lower than the top of the zone of saturation in the areas adjacent to the stream.
Private road ~ A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Public road ~ The road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101 (a)).

Primitive ~ A Recreation Opportunity Spectrum classification for areas characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

Proposed Action ~ A proposal made by the Forest Service or other Federal agency to authorize, recommend, or implement an action to meet a specific purpose and need.

Qualified engineer ~ An engineer who by experience, certification, education, or license is technically trained and experienced to perform the engineering tasks specified and is designated by the Director of Engineering, Regional Office.

Recreation Opportunity Spectrum (ROS) ~ A framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into seven classes—primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, roaded natural nonmotorized, rural, and urban. These are defined in this Glossary under their individual entries.

Riverine ~ Relating to, formed by, or resembling a river and to a system of inland wetlands and deep-water habitats associated with nontidal flowing water, characterized by the absence of trees, shrubs, or emergent vegetation.

Road ~ A motor vehicle route over 50-inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road construction or reconstruction ~ Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

Road decommissioning ~ Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Road maintenance ~ Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

Road Subject to the Highway Safety Act ~ A National Forest System road that is open to public use in a standard passenger car, including a road with access restricted on a seasonal basis and a road closed during extreme weather conditions or for emergencies, but which is otherwise open to public travel.

Roaded Natural ~ ROS classification for areas characterized by predominantly natural-appearing environments with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.
**Roaded Natural Nonmotorized** ~ ROS classification for areas characterized as closed to motorized use yet which have been heavily modified or are not large enough to be set aside as semi-primitive nonmotorized.

**ROS** ~ See “Recreation Opportunity Spectrum.”

**Route** ~ A road or trail.

**Rural** ~ ROS classification for areas characterized by a natural environment that has been substantially modified by development of structures, vegetative manipulation, or pastoral agricultural development. Resource modification and utilization practices may be used to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate user densities are present away from developed sites. Facilities for intensified motorized use and parking are available.

**Scenic Integrity Objective (SIO)** ~ Management objectives that were adopted from the scenic class values. Scenic Integrity is a measure of the degree to which a landscape is visually perceived to be “complete”. The highest scenic integrity ratings are given to those landscapes that have little or no deviation from the character valued by constituents for its aesthetic appeal.

- **Very high** ~ A scenic integrity level that generally provides for ecological change only.
- **High** ~ A scenic integrity level meaning human activities are not visually evident. In high scenic integrity areas, activities may only repeat attributes of form, line, color and texture found in the existing landscape character.
- **Moderate** ~ A scenic integrity level that refers to landscapes where the valued landscape character “appears slightly altered”. Noticeable deviations must remain visual subordinate to the landscape character being viewed.
- **Low** ~ A scenic integrity level that refers to landscapes where the valued landscape character “appears moderately altered.” Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes such as size, shape, effect, and pattern of natural opening, vegetative type changes or architectural styles within or outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed, but compatible or complimentary to the character within.
- **Very low** ~ A scenic integrity level that refers to landscapes where the valued landscape character “appears heavily altered.” Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes or architectural styles within or outside the landscape being viewed. However, deviations must be shaped and blended with the natural terrain so that elements such as unnatural edges, roads, landings, and structures do not dominate the composition.
- **Unacceptably low** ~ A scenic integrity level that refers to landscapes where the valued landscape character being viewed appears extremely altered. Deviations are extremely dominant and borrow little if any line, form, color, texture, pattern or scale from the landscape character. Landscapes at this level of integrity need rehabilitation. This level should only be used to inventory existing integrity. It must not be used as a management objective.
**Scoping** ~ The process the Forest Service uses to determine, through public involvement, the range of issues that the planning process should address.

**Semi-primitive motorized** ~ ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized use of primitive roads with predominantly natural surfaces and trails suitable for motorcycles is permitted.

**Semi-primitive nonmotorized** ~ ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restricts may be present, but would be subtle. Motorized recreation us is not permitted, but local roads used for other resource management activities may be present on a limited bases. Use of such roads is restricted to minimize impacts on recreational experience opportunities.

**Temporary road or trail** ~ A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas (36 CFR 212.1).

**Terminal facility** ~ A transfer point between the forest transportation system and forest resources served by the system or between different transportation modes, including parking areas, boat ramps and docks, trailheads, marine access facilities, airfields, and heliports (FSM 7705).

**Trail** ~ A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

**Trailhead** ~ The transfer point between a trail and a road, water body, or airfield, which may have developments that facilitate transfer from one mode of transportation to another. For purposes of the interpretation of FSM 2353.27, a trailhead is a site designed and developed to provide staging for trail use and does not include: a) Junctions between trails where there is no other access; or, b) Intersections where a trail crosses a road or users have developed an access point, but no improvements have been provided beyond minimal signage for public safety (FSM 2353.05).

**Travel management atlas** ~ An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps (36 CFR 212.1).

**Unauthorized road or trail** ~ A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1).

**Unauthorized route** ~ Could refer to either an unauthorized road or unauthorized trail, or (plural) both.

**Urban** ~ ROS classification for areas characterized by a substantially urbanized environment although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreational activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans are predominant on the site. Large numbers of users can be expected both on the site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

**Utility-Terrain Vehicle (UTV) or Side-by-Side** ~ A type of off-highway vehicle that travels on 4 or more low-pressure tires, has a steering wheel or tiller, provides side-by-side seating, and is of various widths. (FSM2353.05).
**Wheelchair or mobility device** ~ A device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area. A person whose disability requires use of a wheelchair or mobility device may use a wheelchair or mobility device that meets this definition anywhere foot travel is permitted (Title V, sec. 507c, of the ADA).
Appendix H: U.S. Forest Service Region 2 Sensitive Plant Species Known from the Black Hills with Rationale for Further Analysis

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name/ Plant Code</th>
<th>Global rank; SD State rank; WY State rank</th>
<th>Black Hills Distribution and Habitat</th>
<th>Known to Occur in Project Area</th>
<th>Suitable Habitat in Project Area</th>
<th>Analyzed Further</th>
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</thead>
<tbody>
<tr>
<td>Botrychium campestre/ prairie moonwort, Iowa moonwort/ BOCA5</td>
<td>G3/G4; SD-S1; WY-S1</td>
<td>Botrychium campestre ranges from the Great Lakes, across Iowa and Nebraska to eastern Colorado and northward to Alberta and Saskatchewan. Rangewide the species occurs primarily on well-drained soils in non-forested habitats, occasionally under shrubs in or at the margins of these habitats. Seven occurrences have been confirmed on BKF lands. Additional sites exist on private land and at Wind Cave National Park. Botrychium campestre is extremely inconspicuous. Rangewide, it is considered a grassland species associated with sandy grassland habitats in prairies, dunes, railroad sidings, and fields over limestone. Black Hills sites occur on substrates with at least some component of limestone and are primarily in open grassland habitats usually with high forb diversity and sometimes with a high percentage of bare and rocky soils. Little bluestem (<em>Schizachyrium scoparium</em>) and western snowberry (<em>Symphoricarpos occidentalis</em>) occur at the majority of sites. Black Hills occurrences range in elevation from 3,870 to 5,640 feet.</td>
<td>Yes</td>
<td>Unknown because suitable habitat is not yet defined; analyzed in effects analysis</td>
<td>Yes</td>
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<tr>
<td>Botrychium lineare/ narrowleaf grapefern, slender moonwort/ BOLI7</td>
<td>G2?; SD-S1; WY-S1</td>
<td><em>Botrychium lineare</em> is historically known from California and Utah and currently from Colorado northward to Washington and Montana and Alaska and the Yukon Territory. Western populations of the species occur primarily on limestone substrates in a variety of habitats including heavily forested sites and grassy meadows, fen-like seeps and gravelly roadsides. Five occurrences have been confirmed on BKF lands. All sites occur in open conditions on limestone substrate. Two sites are located on old (estimated 15-25 years) native surface roadbeds. A third site is located adjacent to a gravel roadbed in open grassland. A fourth site, located on a large, open, north-facing, little bluestem dominated hillside, is not associated with any road development. A fifth site, also not associated with any road development, is located in an open forb dominated area on the bank of a small perennial stream. Elsewhere in its range, this species has often been documented in areas of road disturbances and other human and natural disturbances. Black Hills occurrences range in elevation from 4,200 (in Wind Cave National Park) to 6,160 feet.</td>
<td>Yes</td>
<td>Unknown because suitable habitat is not yet defined; analyzed in effects analysis</td>
<td>Yes</td>
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<tr>
<td>Carex alopecoidea/ foxtail sedge/ CAAL8</td>
<td>G5; SD-S2; WY-S2</td>
<td><em>Carex alopecoidea</em> is widely distributed from eastern to central Canada, the northeastern United States, the Great Lakes region south to Tennessee, and west to North Dakota and the Black Hills of South Dakota and Wyoming. Rangewide, habitat includes seasonally saturated meadows and openings in alluvial woods and stream banks, usually over calcareous substrates. In the Black Hills, <em>Carex alopecoidea</em> is currently known from two general areas: The Cement Ridge area along the South Dakota-Wyoming border, and in the Bear Lodge Mountains in Wyoming. <em>Carex alopecoidea</em> is primarily found along open, perennial streams, often with old beaver dams or ponds. Occurrences have also been found in spruce dominated riparian areas and in drainages with dense shrub cover. Plants are primarily documented in the transitional areas between saturated soils and the more mesic upland areas. Black Hills occurrences range in elevation from 3,840 to 5,900 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Cypripedium parviflorum/ lesser yellow lady's slipper/ CYPA19</td>
<td>G5; SD-S3; WY-S2</td>
<td>Cypripedium parviflorum is primarily circumboreal in distribution and rangewide is generally found in shady deciduous and mixed woodlands near streams, shrublands, swamps, bogs, and wet forests. Habitat in the Black Hills includes stream banks under both spruce and deciduous overstories, moist cliffs (usually north-facing), and moist areas/seeps under white spruce (Picea glauca) or mixed conifer forest. Occasionally, found on upper mesic forest slopes. Black Hills occurrences range in elevation from 3,500 to 6,500 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Epipactis gigantea/ giant helleborine/ EPGI</td>
<td>G4; SD-S1; WY-S1</td>
<td>Epipactis gigantea occurs in western North America from British Colombia south to California, and east to Texas. Rangewide, Epipactis gigantea is known from wet meadows, seepage slopes, and the base of cliffs along streams and rivers. In the colder northern portions of its range, the species may be confined to warm springs habitats. In the Black Hills it is known only from Cascade Springs in Fall River County, South Dakota, at 3,400 feet. It is likely dependent upon the constant moisture and warmth provided by the springs. No other warm springs are known on Forest Service-administered land in the Black Hills.</td>
<td>Yes</td>
<td>No</td>
<td>No – there are no proposed routes in the Cascade area. Habitat elsewhere is highly unlikely due to the lack of warm springs.</td>
</tr>
<tr>
<td>Lycopodium complanatum/ trailing clubmoss/ LYCO3</td>
<td>G5; SD-S1; WY-S1</td>
<td>Lycopodium complanatum is circumboreal and common across northern latitudes, but disjunct or sparse at the southern limits of the species’ distribution, such as in the Black Hills. Rangewide, it is restricted to moist (not saturated) microhabitats within boreal plant communities in ravines, steep drainages, and on moist streamside benches. Nine known occurrences on BKF lands. These occurrences are located in the northern Black Hills on shaded, north-facing, white spruce dominated slopes often with paper birch (Betula papyrifera) or quaking aspen (Populus tremuloides). Black Hills occurrences range in elevation from 4,960 to 6,340 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Platanthera orbiculata/ lesser roundleaved orchid/ PLOR4</td>
<td>G5; SD-S2; WY-S1</td>
<td>Platanthera orbiculata is endemic to the boreal regions of northern North America, with a more southern distribution in the eastern United States. Black Hills occurrences are found primarily on shady, north-facing slopes in paper birch/hardwood or white spruce forests on moist, rich, humus soil. Black Hills occurrences range in elevation from 4,350 to 6,150 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><em>Salix candida</em> / sage willow / SACA4</td>
<td>G5; SD-S1; WY-S2</td>
<td><em>Salix candida</em> is an obligate wetland species known to occur from eastern Canada to Alaska and across the northern United States. In the Black Hills it is limited to one verified extant occurrence west of Deerfield (McIntosh Fen, 6,000 feet). There is also a historical collection for the general area “from Loring Siding to Minnekahta” (unknown if the historical collection is from private or Forest Service land). Habitat includes cold seep or spring-fed saturated substrates produced by unusual hydrologic conditions where sedimentary layers of the Limestone Plateau intersect impermeable schist or shale of the crystalline Central Core. Community type associated with the occurrence is wet meadow/fen.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><em>Salix serissima</em> / autumn willow / SASE2</td>
<td>G4; SD-S1; WY-S1</td>
<td><em>Salix serissima</em> occurs primarily in northern boreal bogs throughout its range and is a disjunct relic in the Black Hills. Four known occurrences on BKF lands in fens and wet meadows often dominated by <em>Carex</em> spp. and other <em>Salix</em> spp. Known from McIntosh Fen, Middle Fork of Boxelder Creek, Nahant and Silver Creek. Appears to occur in the same unique hydrologic conditions as <em>Salix candida</em>. Black Hills occurrences range in elevation from 5,620 to 6,000 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><em>Sanguinaria canadensis</em> / bloodroot / SACA13</td>
<td>G5; SD-S4; WY-N/A</td>
<td><em>Sanguinaria canadensis</em> occurs in moist forests from Nova Scotia south to Florida and west to Manitoba and Kansas. In the Black Hills it occupies floodplains, forested terraces, drainage bottoms, and north-facing footslopes in open, rich hardwood plant communities. The currently known range in the Black Hills is limited to the northeast portion of the Black Hills, from the east side of Spearfish Canyon to west of Tilford. Black Hills occurrences range in elevation from 3,940 to 5,000 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><em>Viburnum opulus</em> var. <em>americanum</em>/ highbush cranberry/ VIOPA2</td>
<td>G5T5; SD-SNR/SU; WY-S2</td>
<td><em>Viburnum opulus var. americanum</em> is widely distributed across north central North America. In the Black Hills it occurs at mid-elevations in wet, shaded habitats along streams, springs and canyon bottoms. The large majority of documented Black Hills occurrences are in drainage bottoms or low slopes with moist soil conditions with partial shading. Currently known sites are primarily associated with paper birch/ironwood (<em>Ostrya virginiana</em>) and paper birch/hazelnut (<em>Corylus cornuta</em>) communities, with or without white spruce or quaking aspen. A few sites are in ponderosa pine/oak (<em>Pinus ponderosa/Quercus macrocarpa</em>). Paper birch is present at almost all currently known sites. Black Hills occurrences range in elevation from 3,800 to 5,700 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><em>Viola selkirkii</em> / great-spurred violet/ VISE2</td>
<td>G5?; SD-S1; WY-N/A</td>
<td><em>Viola selkirkii</em> is a circumboreal herbaceous species, and rangewide it is locally abundant in specialized microsites in coniferous and deciduous forests. Thirteen known occurrences on BKF lands with additional occurrences documented from Custer State Park and Mt. Rushmore National Monument. Black Hills occurrences are restricted to a concentrated area (about 36 square miles) of the central core on igneous or metamorphic bedrock. Microhabitats are often moist, cold air drainages, in shaded to open areas, and often in the vicinity of granitic rock outcrops. White spruce is usually the dominant overstory with a variable understory. All currently known occurrences on Forest Service lands are located within the Black Elk Wilderness and/or the Norbeck Wildlife Preserve. Black Hills occurrences range in elevation from 5,240 to 7,000 feet.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>

**Note:**
Codes are from the PLANTS Database at http://plants.usda.gov/
Rank is from NatureServe at http://www.natureserve.org
Distribution and Habitat is from the following sources:
Appendix I: Comments from Agencies and Elected Officials on the Draft EIS

Public comments on the draft EIS came in the form of distinct letters, form letters and e-mails. Over 1,250 responses were received. Each response contained comments ranging in number from one to several hundred. These individual comments were identified, numbered, and based on their content, grouped into larger public concern statements, which captured similar concerns in different comments. These public concerns were organized into broad categories, as follows:

1) Decisionmaking process, public involvement, and coordination
2) Draft environmental impact statement, alternatives, and analysis
3) Natural resources management
4) Transportation system management and planning
5) Recreation management
6) Socio-economic concerns

A summary of some of the main points under each of these categories, and the general agency response to these follows.

1 – Decisionmaking Process, Public Involvement, and Coordination
Comments in this category included the following elements:

-- The Forest should be managed for multiple use, and motorized recreation is one of the appropriate multiple uses of the Forest.

-- Different balances of uses were requested. Some requested motorized recreation be given priority over nonmotorized uses; others requested the opposite.

-- Some noted what they saw as a wide-spread pattern of public land closures to motorized uses, and were concerned that nonmotorized groups may be exerting more influence in the decision-making process. Others felt too much consideration was given to motorized recreation.

-- Some felt the National Forest Advisory Board was allowed too much influence in the decision-making process.

-- Some felt the original 45-day comment period should be extended for various reasons.

-- Some were confused about how early public participation efforts had contributed to the planning and NEPA processes.

-- There were requests for more coordination with States, counties and communities, including State wildlife agencies, and Tribes.

-- Requests for more involvement of businesses and motorized recreation groups were received, often suggesting partnerships for implementation of the decision.

-- Some asked that site-specific planning be adequate to identify routes, and that the process for future changes to the decision be made clear.

-- Comments were received citing what they believed were environmental justice issues with respect to Tribes and motorized recreation groups.

-- Some comments requested that private property not be negatively affected by the decision.
-- Several respondents felt that, with the proposed change to Alternative C issued after the DEIS, private business was being allowed to sway the position of the agency.

2 – Draft Environmental Impact Statement, Alternatives, and Analysis
Comments in this category included the following elements:

-- Some respondents felt that analyzing the entire Forest may make it impossible to do a high-quality job of analysis and design.

-- Comments were received stating that Alternative A (No Action) as written does not accurately describe the existing condition.

-- Requests were received both to allow more access, and to further restrict access.

-- Some respondents cited what they felt was a pattern of closures to motorized access on public lands, and requested the cumulative effects of such wide-spread closures be addressed.

-- Alternatives were proposed, including one with areas of high-, medium-, and low-density motorized routes.

-- Many comments were received expressing preference for one of the five alternatives described in detail in the DEIS.

-- Some respondents asked that the decision combine elements of two or more alternatives.

-- Others felt that none of the alternatives would meet increasing demand for motorized recreation opportunities.

-- Various modifications to each of the alternatives were proposed.

-- The U.S. Environmental Protection Agency requested that the quality of the impact analysis be improved in the FEIS.

-- Several respondents felt the term, concentrated motorized use areas (CMUAs) was confusing and should be eliminated.

-- Requests were received for corrections and improvements to the maps.

3 – Natural Resources Management
Comments in this category included the following elements:

- Concerns about the spread of invasive plants, erosion in riparian areas, and water quality.

-- Protection of botanical values, especially in eight distinct areas of the Forest.

-- Protection of water quality, especially in Rapid Creek and Pactola watersheds.

-- Concerns that management of motorized recreation not hinder management of timber and livestock grazing.

-- Requests for protection of a number of specific locations and areas.

-- EPA requested the Forest Service demonstrate that the selected action will comply with Executive Orders 11644 and 11989 and protect resources and be ecologically sustainable.

-- Requests to include local research on elk to improve the habitat effects analysis.

-- Requests to analyze the effects of climate change.
4 – Transportation Management and Planning
Comments in this category included the following elements:

Clarify that administrative access would still be allowed for permittees and contractors.

-- Requests were received to include all existing routes, including unauthorized routes, on the inventory and in the decision.

-- Whether to include nonsystem roads in the decision.

-- Some respondents requested that more winter routes be opened to ATVs because ATV use in the winter is not as damaging.

-- Regarding mixed-use routes, many OHVs cannot be licensed as highway-legal and thus could not use National Forest System roads; and relying on mixed-use routes eliminates family-based motorized recreation.

-- Connecting and looping trails may provide a safer and more family-friendly experience than dead-end routes. Some respondents requested non-road alternatives for unlicensed riders, and that the Forest Service reduce the need for trailering.

-- A number of respondents requested that the trail system connect to campgrounds and local communities.

-- Requests were received for more trailheads close to communities. Some said campgrounds would make good trailheads.

-- Some were concerned about the effects to local residents of motorized use on looped trail systems, especially by children.

-- Respondents requested that trails be designated for motorized or nonmotorized use based on the use patterns, but views differed as to whether use was predominantly one or the other.

-- Some were concerned about damage to roads and trails from motorized use, especially increases in such use.

-- A number of area-specific route requests were received. Those receiving the greatest number of comments included the Centennial Trail, the Top 50 Trailhead, Route 150-1E, Tinton Trail, and the Camp 5/Route 171 connection.

-- Some respondents requested more trails on the Northern Hills Ranger District, and that trail connectivity be improved.

-- Many respondents asked for more motorized trails in the Southern and Central Black Hills, and were concerned that limited access would restrict access to riders under age 16.

-- There were requests for designated walk-in-only areas in several areas.

-- Limited funding could make the system unenforceable and unsustainable.

-- A minimum age for vehicle operators was supported by some citing safety, and opposed by others citing family-friendly recreation opportunities.

-- Some respondents requested lower noise levels, including EPA. Some asked how the Forest Service planned to enforce noise limits.
5 – Recreation Management

Comments on this topic included the following elements:

-- Respondents requesting that existing motorized use be limited, reduced or totally eliminated, cited a variety of reasons including environmental damage, conflicts with nonmotorized use, damage to roads and trails, desires for more quiet recreation, and their perception that many motorized users fail to comply with regulations.

-- Respondents requesting that motorized use levels be preserved or expanded cited reasons such as family-friendly form of recreation, economic benefits to communities, and meeting the needs of the public.

-- Some believe that limiting access would concentrate use and increase safety issues, resource damage, route damage and illegal use.

-- Some motorcycle riders requested that motorcycle trails be separated from nonmotorized and other motorized uses.

-- Some respondents requested that SUVs be restricted but that OHVs not be because they do less damage.

-- Some requested more UTV access, citing what they see as increased popularity of these vehicles. Some requested trail width be increased to as much as 64 inches to accommodate UTVs.

-- More access for rock crawlers was requested, in recognition of terrain limits.

-- Many respondents requested that cross-country motorized travel not be completely eliminated, but that some areas be set aside for this use.

-- Motorized game retrieval and dispersed camping drew many comments, both in favor and opposed.

-- Access for senior citizens, disabled citizens and children was requested by some.

-- Some respondents asked that motorized access be prohibited in areas with certain ROS classes, to be consistent with the Forest Plan.

-- Conflicts between motorized and nonmotorized recreationists was a concern to many. Some requested that motorized and nonmotorized uses be separated. Several asked that each group have separate trailheads.

-- Some requested separate campgrounds for motorized and nonmotorized users, or limits on the use of OHVs in and around campgrounds.

Chapter 6 – Socio-Economic Concerns

Comments on this topic included the following elements:

-- Many respondents anticipate a large cost to implement this program and are concerned the costs have not been fully analyzed and considered.

-- Respondents requested an analysis of the contribution of recreation to the local economy, and asked the Forest Service to use accurate data in the analysis.

-- A request was received to analyze effects on Tribal reservation communities in light of environmental justice.

-- Respondents requested a definition of gateway communities. Many supported the concept of economic benefit to communities and asked that they be connected to any motorized system.
Comments from Federal, State, and Local Agencies and Elected Officials
The table below lists the Federal, State and local agencies and elected officials that commented on the draft EIS (FSH1909.15, Ch. 20, Sec. 24.1). Their comments, and Forest Service responses, are shown in the remainder of this appendix.

Table I-1. List of Federal, State, and local agencies, tribes and elected officials that commented on the Draft EIS

<table>
<thead>
<tr>
<th>Letter</th>
<th>Author's last name</th>
<th>First name</th>
<th>Representing</th>
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<tbody>
<tr>
<td>45, 54</td>
<td>Boone</td>
<td>Dave</td>
<td>City of Sturgis</td>
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<tr>
<td>128</td>
<td>Bravo</td>
<td>Domenic</td>
<td>WY State Trails Program</td>
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<tr>
<td>147</td>
<td>Stewart</td>
<td>Robert</td>
<td>U.S. Department of the Interior</td>
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<td>165</td>
<td>Guffey</td>
<td>Scott</td>
<td>Pennington County Weed and Pest Board</td>
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<td>191</td>
<td>Falkenburg</td>
<td>Joe</td>
<td>Fall River County Commissioners</td>
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<tr>
<td>241</td>
<td>Mallow</td>
<td>Robert</td>
<td>Meade County Commissioners</td>
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<td>263</td>
<td>Wesley</td>
<td>Rick</td>
<td>Box Elder</td>
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<td>266</td>
<td>Niemcyk</td>
<td>Dennis</td>
<td>State of Wyoming – Wyoming Honor Conservation Camp</td>
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<tr>
<td>269</td>
<td>Haagenson</td>
<td>Bill</td>
<td>WY State Forestry Division</td>
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<td>289</td>
<td>Falkenburg</td>
<td>Joe</td>
<td>Fall River County Commissioners</td>
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<tr>
<td>290</td>
<td>Ganje</td>
<td>Sue</td>
<td>Fall River and Shannon Counties Auditor’s Office (Letter of April 23, 2009 -- Request to extend comment period)</td>
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<tr>
<td>326</td>
<td>Vonk</td>
<td>Jeffrey</td>
<td>SD Dept. of Game, Fish and Parks</td>
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<td>327</td>
<td>Junge</td>
<td>Hiene</td>
<td>Pennington County Highway Dept.</td>
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<td>346</td>
<td>Emmerich</td>
<td>John</td>
<td>WY Game and Fish Dept.</td>
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<tr>
<td>454</td>
<td>Niemcyk</td>
<td>Dennis</td>
<td>State of Wyoming – Wyoming Honor Conservation Camp, Trades Specialist</td>
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<td>471</td>
<td>Hughes</td>
<td>Jim</td>
<td>Custer Conservation District</td>
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<td>472</td>
<td>Ewing</td>
<td>Robert</td>
<td>Lawrence County Commissioners</td>
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<td>473</td>
<td>Svoboda</td>
<td>Larry</td>
<td>EPA – Region 8</td>
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<td>477</td>
<td>Moline</td>
<td>John</td>
<td>Crook County Board of Commissioners</td>
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<tr>
<td>480</td>
<td>Garman</td>
<td>Wayne</td>
<td>Crook County Natural Resource District</td>
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<td>549</td>
<td>His Horse Is Thunder</td>
<td>Ron</td>
<td>Standing Rock Sioux Tribe</td>
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<td>Falkenburg</td>
<td>Joe</td>
<td>Fall River County Board of Commissioners (letter of June 2, 2009)</td>
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<td>Moline</td>
<td>John</td>
<td>Crook County Board of Commissioners (letter of June 29, 2009 – letter not numbered in the comment response process due to late receipt)</td>
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<td>614</td>
<td>Whalen</td>
<td>Jeanne</td>
<td>Crook County Land Use Planning and Zoning Commission</td>
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Table I-2. Federal, State and county agencies’ comments on the draft environmental impact statement and Forest Service responses

**Letter BH45 - City of Sturgis, David G. Boone, City Manager**

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<th>Letter No./Comment No. and Comment</th>
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<td>45/1. The proposed plan will compress a 10,000-mile trail system into a 750-mile system with proposed changes; by my math that is 92.5% reduction and a rather radical solution to a few problems that could be corrected with adequate law enforcement by the Forest Service.</td>
<td>5-33. Alternative A represents the legally open motorized opportunities. Total motorized trails open to use increase under Alternatives B and C. Total trail miles open to motorized use increase from 36 in Alternative A, to 663 and 771 miles under Alternatives B and C, respectively.</td>
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<tr>
<td>45/2. With the increase in the popularity and growth of the ATV/UTV market the Forest Service will be concentrating a higher number of users on a smaller trail system. We contend that the new system will increase damage on the trails. These old mining, logging and fire trails have been used for two centuries. Why close them now?</td>
<td>5-34. The DEIS and FEIS alternatives considered a range of motorized road and trail opportunities and disclosed effects in Chapter 3. Alternative C provided the highest concentration of motorized routes. Effects of use under each alternative are disclosed in the engineering and recreation sections in Chapter 3 of the EIS.</td>
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<tr>
<td>45/3. The Black Hills is one of the last great places to ride ATVs and responsible ATV enthusiasts from all over the United States come here to ride so this is a major economic issue not only for Sturgis but for all communities in the Black Hills Region. Tourism is a major part of the Black Hills economy and closing 92.5% of the National Forest to responsible ATV enthusiasts to punish the few during this economic crisis is just plain irresponsible, unjust and unacceptable.</td>
<td>6-15. The purpose and need for this project is to bring the Forest into compliance with the 2005 Travel Management Rule and designate motorized routes. A variety of alternatives was analyzed for this purpose. None of the alternatives identifies &quot;closing 92.5% of the National Forest&quot; as the comment suggests. The alternatives do bring the Black Hills National Forest into compliance with the Travel Management Rule. The DEIS and FEIS alternatives considered a range of motorized road, trail, and trailhead opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access within the Black Hills National Forest are in Alternatives A, B, and C, which all propose motorized routes in the vicinity of Sturgis. It is difficult to project changes in recreational visits as a result of implementation of the various alternatives, and as a consequence, it is difficult to estimate the net benefits of gains and losses in recreational opportunities in economic terms. As indicated in the recreation analysis, some motorized recreationists may seek other riding locations that do not restrict them to designated routes. Economic effects were estimated in the Social/Economic section in Chapter 3. The total change in jobs and income under Alternatives B through E is projected to be too small to accurately project or detect (see Socio-economics section, Chapter 3).</td>
</tr>
<tr>
<td>45/4. Closing 90% of the trail system to responsible ATV enthusiasts is the wrong solution. Can you share what other alternatives are being considered?</td>
<td>2-14. It is the intent of the Black Hills National Forest to provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. As stated in the Travel Management Rule, National Forests are managed by law for multiple use. However, the magnitude and intensity of motor vehicle use have increased to the point that soil erosion, water quality, and wildlife habitat are being adversely affected. A designated and actively managed system of</td>
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Final Environmental Impact Statement

Letter BH45 - City of Sturgis, David G. Boone, City Manager

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<td>roads, trails, and areas for motor vehicle use is needed. Alternative C would provide the largest motorized system of roads and trails. It would provide 2,878 miles of roads and 771 miles of trails, most of which would be open to ATVs as well as other types of OHVs.</td>
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Letter BH54 - City of Sturgis, David G. Boone, City Manager

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<tr>
<td>54/1. The proposed plan in its various forms will compress a 10,000-mile trail system into a 750-mile system with extreme changes; by my math that is 92.5% reduction and a rather radical solution to a few problems that could be corrected with adequate law enforcement by the Forest Service or possibly South Dakota Game, Fish, and Parks.</td>
<td>5-33. See response to comment 45/1 above.</td>
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<tr>
<td>54/2. With the increase in the popularity and growth of the ATV/UTV market the Forest Service will be concentrating an increasing number of users on a smaller trail system. We contend that the new system will increase damage on the trails. These old mining, logging and fire trails have been enjoyed by Americans for two centuries. Why close them now?</td>
<td>5-34. See response to comment 45/2 above.</td>
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<tr>
<td>54/3. The Black Hills is one of the last great places to ride ATVs and responsible ATV enthusiasts from all over the United States come here to ride so this is a major economic issue not only Sturgis but for all communities in the Black Hills Region. It appears that the proposed plan will sever Sturgis from the Forest Service trail system thereby diverting tourists elsewhere directly damaging our economy and local businesses. At a minimum Sturgis should not be denied access points to all trails in proximity to the City. These trails connect Sturgis to other trails leading to entertainment, campground and recreation areas such as Deadwood, Nemo, Boondocks, Covered Wagon Resort, Custer Crossing and Wild Bill’s that host tourists that want to visit Sturgis as a destination. Tourism is a major part of the Black Hills economy and closing 92.5% of the National Forest to responsible ATV enthusiasts to punish the few during this economic crisis is just plain irresponsible, unjust and unacceptable.</td>
<td>6-15. The Forest Service recognizes the economic importance of access for recreational opportunities, and has assessed the impact of motorized, nonmotorized, and other recreational activity (visits), on local jobs and labor income in Chapter 3 of the EIS, in the Socio-economics section. That analysis focused on the magnitude and impact of motorized and nonmotorized recreation specifically affiliated with the Black Hills National Forest, thereby identifying the impacts relevant to the travel management decisions being considered and the area most likely to be affected. The purpose and need for this project is to bring the Forest into compliance with the 2005 Travel Management Rule and designate motorized routes. A variety of alternatives were analyzed in the DEIS for this purpose. None of the alternatives identifies &quot;closing 92.5% of the National Forest&quot; as the comment suggests. The alternatives do bring the Forest into compliance with the Travel Management Rule. The greatest motorized opportunities and access within the Black Hills National Forest are in Alternatives A, B, and C, which all propose motorized routes in the vicinity of Sturgis. Development of</td>
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### Letter BH54 - City of Sturgis, David G. Boone, City Manager

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<td>motorized access opportunities to the Forest from any community located outside the National Forest boundary is outside the jurisdiction of the Forest Service and outside the scope of this project. In a formal letter dated May 7, 2009, Forest Supervisor Craig Bobzien contacted communities and counties to request information on their plans to allow access from the Forest into their jurisdictions. The Forest Supervisor allowed an additional 30 days for these comments. Although no such information was received from the City of Sturgis during that time period, the Forest Service remains open to coordination with the City to address mutual concerns and opportunities.</td>
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54/4. Criticism without offering constructive solutions is irresponsible so I offer the following suggestion. As enforcement appear to be the issue why wouldn’t the Forest Service adopt a user fee to cover the additional costs of administration of the trail system similar to what the Forest Service has done with the South Dakota Department of Game, Fish, and Parks partnership on the snowmobile trails? | 4-294. As authorized by the Recreation Enhancement Act of 2005, the Black Hills National Forest and the Black Hills National Forest Advisory Board (NFAB) jointly developed a business plan to establish Special Recreation Permit Fees. These fees are necessary to develop, manage, and sustain any motorized trail system in a way that is equitable to the public, as well as socially, environmentally and economically sustainable. The Special Recreation Permit Fees would be initiated in 2010, after completion of the Travel Management Plan EIS and upon publication of the motor vehicle use map. This user-supported revenue stream would likely be supplemented from other sources such as grants and volunteer resources. |

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### Letter BH128 - Wyoming State Trails Program, Domenic Bravo, Wyoming State Parks, Historic Sites and Trails Administrator

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<tr>
<td>128/1. Our [The Wyoming State Trails Program] concerns/comments lie within the boundaries of the State of Wyoming, which comprises 17% of the Forest. In comparing all of the alternatives, it is obvious that Alternative C would benefit our constituents and users the most by providing the greatest amount of trails and motorized riding areas. The massive growth of the ATV industry in Wyoming each year reveals to us that this recreational activity is not going to subside anytime soon. Most importantly, motorized users would find a planned travel system designed to meet their needs and the needs of their families.</td>
<td>2-36. Thank you for your comment.</td>
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</table>
**Letter BH128 - Wyoming State Trails Program, Domenic Bravo, Wyoming State Parks, Historic Sites and Trails Administrator**

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<tr>
<td>128/2. Our [The Wyoming State Trails Program] concerns/comments lie within the boundaries of the State of Wyoming, which comprises 17% of the Forest. Through surveys and various other means of communication, our users have requested more trails, access and riding areas. We believe that conflict can be lessened by providing more opportunities. Additionally, our program has seen that by being proactive in managing motorized recreation, better results are obtained regarding compliance by the users. The Motor Vehicle Use Map will undoubtedly make compliance and law enforcement easier for everybody involved.</td>
<td>5-31. The DEIS and FEIS alternatives considered a range of motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized trail opportunities are in Alternatives B and C.</td>
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<td>128/3. By enrolling appropriate roads in the motorized trail system, higher user numbers would bring more business to adjacent communities through that means of access.</td>
<td>5-36. The DEIS and FEIS Alternatives considered a range of motorized road and trail opportunities and disclosed effects in Chapter 3.</td>
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<tr>
<td>128/4. Our [The Wyoming State Trails Program] concerns/comments lie within the boundaries of the State of Wyoming, which comprises 17% of the Forest. Our Program would like to extend the offer to assist with motorized trail creation, maintenance, equipment needs and/or funding.</td>
<td>1-57. We acknowledge the offer of assistance from the Wyoming State Trails Program, and look forward to cooperating with the State of Wyoming in implementing the travel management decision.</td>
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<tr>
<td>128/5. Our [The Wyoming State Trails Program] concerns/comments lie within the boundaries of the State of Wyoming, which comprises 17% of the Forest. No historic or recreation facilities managed by this Agency are near the proposed project so will not be impacted.</td>
<td>3-46. Thank you for your comment. The Forest Service has a legal mandate to protect cultural resources. The specific legal mandates are summarized in the Cultural Resources section of the EIS. An assessment of effect has been completed for each of the nearly 400 cultural sites that have been identified in the area of potential effect. Protection measures have been prescribed at those locations where the data demonstrate that historic properties are at risk due to activities associated with motor vehicle use. The protection measures prescribed are designed to ensure that no significant historic properties are adversely affected.</td>
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**Letter BH147 - U.S. Department of the Interior, Robert F. Stewart, Regional Environmental Officer**

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<tr>
<th>Letter No./Comment No. and Comment</th>
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<tr>
<td>147/0. The Department of the Interior has reviewed the draft Environmental Impact Statement for the Black Hills National Forest Travel Management Plan, Black Hills National Forest, and has no comments on the document.</td>
<td>Thank you for your comment.</td>
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### Letter BH165 - Pennington County Weed and Pest Board, Scott Guffey, Director

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<th>Letter No./Comment No. and Comment</th>
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<tr>
<td>165/1. The Pennington County Weed and Pest Board has voted to support Alternative D. Alternative D would have the least potential spreading noxious weeds and pests.</td>
<td>2-38. Alternative D proposes the smallest motorized travel system of all alternatives, and would allow no motorized cross-country travel. As disclosed in Chapter 3 of the EIS, Invasives section, this alternative would provide the most benefit in reducing the spread of noxious weeds.</td>
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### Letter BH191 - Fall River County Commission, Joe Falkenburg, Chairman

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<th>Letter No./Comment No. and Comment</th>
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<tr>
<td>191/1. The Fall River County Commission in South Dakota hereby expresses its serious concern with the alternatives being considered by the United States Forest Service for the Black Hills National Forest Travel Management Plan. None of the proposals provide for reasonable off-road game retrieval in Fall River County.</td>
<td>5-97. Only Alternative A provides an area within Fall River County for motorized game retrieval on the Black Hills National Forest. Alternative B provides game retrieval within 300 feet of designated motorized routes.</td>
</tr>
<tr>
<td>191/2. The Fall River County Commission in South Dakota hereby expresses its serious concern with the alternatives being considered by the United States Forest Service for the Black Hills National Forest Travel Management Plan. We also believe the 50 inch width limitation should be expanded to 64 inches for ATVs or certain narrower UTVs.</td>
<td>5-69. The DEIS defined a trail as a route 50 inches or less in width and proposed a route over 50 inches wide could be managed as a trail or a road. In the FEIS, motorized trails in South Dakota have been reevaluated for use by vehicles 65 inches or less in width, while Wyoming trails remain 50 inches wide or less due to State law.</td>
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<tr>
<td>191/3. The Fall River County Commission in South Dakota hereby expresses its serious concern with the alternatives being considered by the United States Forest Service for the Black Hills National Forest Travel Management Plan. We do agree that there have been some significant off-road abuses of some trails and hills in the Black Hills area.</td>
<td>Thank you for your comment.</td>
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### Letter BH241 - Meade County Commission, Robert Mallow, Chairman

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<td>241/1. Meade County finds all of the Action Alternatives (B, C, D, and E) unacceptable. Thus, we request that at this time the Forest Service continue with Alternative A, the “no action” alternative, pending further revision.</td>
<td>2-24. It is the intent of the Black Hills National Forest to provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. National Forests are managed by law for multiple use. However, the magnitude and intensity of motor vehicle use have increased to the point that soil erosion, water quality, and wildlife habitat are being adversely affected. The action alternatives B through E propose a designated and actively managed system of roads, trails, and areas for motor vehicle use.</td>
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### Letter BH241 - Meade County Commission, Robert Mallow, Chairman

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<td>241/2. The process of plan development was unacceptable. Meade County was not a coordinating equal partner in the planning process as required by the National Environmental Protection Act (NEPA). Meade County’s Natural Resource Plan was provided to the Forest Service June 2006; the County’s intent for coordination is stated in the first paragraph. In addition, Meade County provided to the Forest Service a Proposal for Motorized Recreation August 2004 and a Road Right-of-Way letter December 2005. Upon perusal of the Draft Environmental Impact Statement (EIS) Black Hills National Forest Management Plan we can find little if any evidence that Meade County’s documents were considered or any portion adopted. We insist on additional meetings organized under Title 36CFR212.53 where the managing agency, states, tribal governments, counties, municipalities, and other local governments coordinate on an equal basis to create a travel management plan. We further request that these meetings be conducted under Roberts Rules of Order with documented agendas and minutes, rather than through the dialogue to consensus or facilitated meeting process.</td>
<td>1-60. The Forest believes that coordination with local governments is critical to the success of the Forest’s travel management planning process. To that extent, on July 14, 2004, the Black Hills National Forest Advisory Board held the first formal public meeting on Travel Management. Since that beginning, the Forest and the Advisory Board have conducted numerous meetings with local governments, community organizations and the public. Both Forest Supervisor Craig Bobzien and Northern Hills District Ranger Rhonda O'Byrne have met with Meade County. The County also was given an opportunity to comment at scoping for the proposed action. The County was sent a copy of the DEIS and asked to comment. In a formal letter dated May 7, 2009, Craig Bobzien also gave the County an additional 30 days to comment after the DEIS comment period closed.</td>
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<td>241/3. The extent of non-system road closure is unacceptable and is incompatible with Issue 4, Social and Economic Concerns, one of the issues addressed in the EIS. The proposed closure of non-system roads in the four Action Alternatives in the EIS constitutes closure of one-half- to two-thirds of existing roads. The EIS does not address the loss of access to the resources of large sections of the National Forest for fire and emergency protection and for contracted multiple uses such as timber sales. Without regular use by the public (in addition to the exempted Forest Service and Emergency use as already discussed in the plan), the non-system roads will quickly become impassable and whole areas will be at risk of loss by fire.</td>
<td>4-50. This analysis evaluates user-created routes and system routes for possible designation into the Forest Travel System. The evaluation considered factors such as compatibility with existing land prescriptions and/or designations, impacts to the resource, wildlife objectives, safety, existing and/or potential conflicts, as well as information provided from the public. These routes would also need to meet existing objectives, standards, and specifications as identified within Forest Service manuals and handbooks. Routes that are determined to provide a benefit to the public and are consistent with the above factors could be included in the transportation system.</td>
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<td>241/4. Large blocks like Swede Gulch with no recognized roads look like de facto wilderness designations.</td>
<td>4-370. It is the intent of the Black Hills National Forest to provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. National Forests are managed by law for multiple use. National Forests are neither reserved for the exclusive use of any one group, nor must every use be accommodated on every acre. It is entirely appropriate for different areas of the National Forests to provide different opportunities for recreation. An interdisciplinary process was used to identify routes suitable for public motorized use designation, including all identified non-system routes, in the range of alternatives. The analysis process included identifying natural and</td>
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Letter BH241 - Meade County Commission, Robert Mallow, Chairman

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<td>241/5. The Meade County Natural Resource Plan’s Mission Statement can be summarized as protection of the custom, culture, and economic viability of the County residents (as mandated by NEPA). The Black Hills are rich with evidence of human activity. Examples are towns, ghost towns, cemeteries, abandoned mines, dams, trestles, railroad grades, roads, trails, and in-holdings. We believe that motorized access to these historic and cultural sites must remain available to people who wore out their limbs and joints adding value to Black Hills resources.</td>
<td>cultural resource concerns, recreation, access needs, and other related considerations consistent with the 2005 Travel Management Rule to develop the range of alternatives. The effects of each of these alternatives are disclosed in Chapter 3 of the FEIS.</td>
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<tr>
<td>241/6. Those who by their labor are currently adding value to the resources of the National Forest need sufficient motorized access to achieve the multiple use goals as mandated in the Multiple Use-Sustained yield Act of 1960.</td>
<td>5-142. The DEIS and FEIS alternatives considered a range of motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access are in Alternatives B and C. Persons with disabilities will have the same access rights as the general public.</td>
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Letter BH263 - Box Elder Planning and Zoning, Wesley M. Rick, Member

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<td>263/1. After reading the DEIS, I believe Alternative C would be a good way to go. It would allow enough off roads and should suffice those needs.</td>
<td>2-36. Thank you for your comment.</td>
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<td>263/2. Alternative C will allow plenty of roads in the Hills for the visitors to get a good look at a primitive area.</td>
<td>2-36. Thank you for your comment.</td>
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<td>263/3. This plan [Alternative C] should make enforcement easier than some other plans.</td>
<td>2-36. Thank you for your comment.</td>
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<td>263/4. Cross-country needs should be restricted and Alternative C addresses that.</td>
<td>2-36. Thank you for your comment.</td>
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<td>263/5. This plan [Alternative C] has more roads around small towns and this should help them.</td>
<td>2-36. Thank you for your comment.</td>
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### Letter BH266 - Wyoming Honor Conservation Camp, Dennis Niemeyk, Trades Specialist

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<td>266/0. Can the comment be just an email? Or does it need to be a word document attached?</td>
<td>The Forest Service advised the public when the DEIS was issued that public comments “must be in writing (paper or electronic).”</td>
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### Letter BH269 - Wyoming State Forestry Division, Bill Haagenson, Assistant State Forester, Forest Management

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<td>269/1. The Office of State Lands and Investments – Wyoming State Forestry Division appreciates the difficulty of travel management planning on the Black Hills National Forest given the diverse demands placed on the road and trail systems. As managers of state lands within and adjacent to the Forest, we have a clear interest in the outcome of the process. The Division generally supports the selection of Alternative B, which implements most of the National Forest Advisory Board recommendations, improves travel management, reduces conflicts, and provides a road system sufficient to facilitate resource management. This alternative seems to be an attempt to balance better travel management with the needs of forest users.</td>
<td>2-28. Thank you for your comment. It is the intent of the Black Hills National Forest to provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. National Forests are managed by law for multiple use including water quality, wildlife habitat, and timber, grazing, mining, and outdoor recreation.</td>
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<td>269/2. The Division [The Office of State Lands and Investments – Wyoming State Forestry Division], has reviewed the map and G.I.S. data for Alternative B. There were no obvious situations where access to state lands would be negatively affected by the alternative. We are confident that the Black Hills National Forest will ensure that the new travel management plan does not impact access for non-federal landowners within and adjacent to the Forest.</td>
<td>4-42. The Forest Service recognizes the need for access to public and private lands. All current legal access rights will be maintained and the Forest will work with all requiring legal access.</td>
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<td>269/3. The Division [The Office of State Lands and Investments – Wyoming State Forestry Division], recognizes that the Forest [Service] is well aware of the need for a sufficient road system for resource and fire management. We encourage the Forest [Service] to maintain existing roads on the system to the greatest extent possible for management use while closing the roads seasonally or year-round – where necessary – to prevent resource damage.</td>
<td>4-351. This analysis includes the evaluation of user-created routes and system routes for possible designation into the Forest Travel System. Access for emergency response purposes and management needs including fire suppression would be allowed under all alternatives. The evaluation of routes considered these reasonably foreseeable actions as well as compatibility with existing land prescriptions and/or designations, impacts to the resource, wildlife objectives, safety, existing and/or potential conflicts, as well as information provided from the public. These routes will also need to meet existing objectives, standards, and specifications as identified within Forest Service manuals and handbooks. Routes that are determined to provide a benefit to the public and are consistent with the above factors could be included in the selected transportation system.</td>
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Letter BH289 - Fall River County Commissioners, Joe Falkenburg, Chairman; Mike Ortner, Vice Chair; Glen Reaser, Commissioner; Joe Allen, Commissioner; Anne Cassens, Commissioner

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<td>289/1. Fall River County hereby notifies you of our intent to require coordination with us prior to any current plans or future change to Black Hills National Forest land usage, restrictions or regulations. This coordination is required by federal regulation. So much of our county is publicly owned that we want to be certain that any changes on the public segments of Fall River County be coordinated with our planning for land usage and economic development. We wish to schedule a meeting with appropriate personnel about the Travel Management Plan. We also are requesting that a scoping meeting regarding this plan be held within Fall River County.</td>
<td>1-61. The Forest believes that coordination with local governments is critical to the success of the Forest’s travel management planning process. On May 5, 2009, Hell Canyon District Ranger Lynn Kolund and Forest Travel Management Planner Tom Willems met with the Fall River County Commissioners to provide information on the Travel Management Plan DEIS and discuss the County’s related concerns. A public meeting focusing on the Travel Management Plan DEIS was also scheduled for May 15, 2009. The meeting was conducted from 6 – 8 p.m. at the Senior Center in the Fall River County community of Edgemont.</td>
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<td>289/2. We were recently surprised to find that we have not been notified of the proposed removal of nearly 4,000 acres in the Craven Canyon area from mineral exploration for an extended period. Now we have received a copy of a travel management EIS which was completed with no input from the County Commission.</td>
<td>3-70. In response to County Commission concerns, District Ranger Lynn Kolund, Forest Minerals Staff Rusty Wilder, and District Archeologist Tony King met with the Fall River County Commissioners on May 19, 2009. At that meeting, the Forest representatives answered questions the County Commissioners had regarding the Craven Canyon Mineral Withdrawal.</td>
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Letter BH290 - Fall River and Shannon Counties Auditor’s Office, Sue Ganje, County Auditor

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<td>290/0. In regards to the Forest’s Travel Management Plan, please use this as a request to extend the current comment period.</td>
<td>The request is acknowledged. The public comment period was extended for 14 days, to May 18. In addition, by formal letter dated May 7, 2009, Forest Supervisor Craig Bobzien contacted communities and counties to request information on their plans to allow access from the Forest into their jurisdictions. The Forest Supervisor allowed an additional 30 days for these comments.</td>
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Letter BH326 - South Dakota Department of Game, Fish, and Parks, Jeffrey R. Vonk, Department Secretary

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<td>326/1. South Dakota Department of Game, Fish, and Parks found that many of our issues and concerns were spread across Alternatives B, C, and D; therefore, we do not support any one particular alternative but elements thereof. We do not support Alternative A or E.</td>
<td>2-23. All the action alternatives will be considered in developing a selected alternative. The selected alternative will be based on public comments and the results of the effects analysis in the EIS.</td>
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Letter BH326 - South Dakota Department of Game, Fish, and Parks, Jeffrey R. Vonk, Department Secretary

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<td>326/2. The Division of Parks and Recreation has worked closely with BHNF to utilize various roads for snowmobile trails. For all action alternatives (B, C, D, and E) and to best manage snowmobile trails, we would like to make certain that Forest Service road closures are in effect from December 15 through March 31. South Dakota Codified Law 32-20-12 makes it a misdemeanor to operate an off-road vehicle on a snowmobile trail maintained by the Department of Game, Fish, and Parks.</td>
<td>4-98. The Travel Planning Rule and this document do not address travel by over-the-snow machines. Seasonal closures are utilized in varying degrees in each of the action alternatives to address potential user conflicts.</td>
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<td>326/3. For Alternatives B, C, D, and E: There have been numerous studies by various state and international snowmobile organizations on the impact of ATV’s on snowmobile trails with the most recent in 2006 by the International Association of Snowmobile Administrators. It is no surprise when the results of such studies show how detrimental ATV’s are on snowmobile trails. While South Dakota Department of Game, Fish, and Parks supports better management of OHV travel in National Forests, we have concerns of the potential conflicts it may have with the Black Hills Snowmobile Trail System. The BHNF hosts a top notch snowmobile trail system with 350 miles of groomed trails and over 1 million acres of off trail riding.</td>
<td>See response to 326/2.</td>
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<td>326/4. Snowmobile trails utilize existing BHNF roads and trails. We would like to see each Forest Service District identify a seasonal road designation when overlapping with the snowmobile trails. The Northern Hills District has done this and it would add to the consistency of the map if each District would use the same designations. The Mystic and Hell Canyon Districts show many roads and trails used for snowmobile trails in Alternative B, C, D, and E open yearlong. As mentioned above, according to the South Dakota Codified Law 32-20-12 no person may operate an off-road vehicle on a state designated snowmobile trail. It is our concern there could be ATV and motor vehicle traffic on the snowmobile trails during the December 15 through March 31 closure. Each District should have the file for the snowmobile trails and if not, we recommend BHNF contact Bonnie Jones, Northern Hills Forest Service District, for the information.</td>
<td>See response to 326/2.</td>
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<td>326/5. Alternative B. Eliminate road 238.1B by Rochford. It dead ends on private property parallel to the Mickelson Trails.</td>
<td>Route Specific. NFS road 238.1B is open to highway legal vehicles only in Alternatives D and E.</td>
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Letter BH326 - South Dakota Department of Game, Fish, and Parks, Jeffrey R. Vonk, Department Secretary

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<td>326/6. Alternative B, creating ATV parking at Nahant, Rochford, and Mystic trailheads will restrict the number of bicyclists that will be able to park their vehicles in these areas. In addition, Nahant has no designated parking area. Making these areas ATV parking may also increase the likelihood that ATV riders may use the Mickelson Trail, which is nonmotorized.</td>
<td>Route Specific. None of the alternatives included a trailhead at Rochford. The Mystic trailhead was not included in Alternative E. No OHV trailheads were proposed at Englewood, Nahant, Dumont or Rochford in any alternative on the Northern Hills District.</td>
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<td>326/7. Alternative C. Road 237.1L, North of Mystic, accesses private properties of Johnson and Maybee, and dead ends into the Mickelson Trail. Opening this road to ATV use may promote more wheeled vehicle travel on the Mickelson and these private properties. There is also a bridge missing which makes the old road impassable and would cause environmental damage if off-road use was allowed.</td>
<td>Route Specific. This route is proposed as road open to all vehicles in Alternatives B, C, and D and as road open to highway-legal vehicles in Alternative E. There is no route proposed where the bridge is out in any alternative.</td>
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<td>326/8. Alternative C. Road 143 is accessible to Mystic land owners who live along the Mickelson. Trail. This road connects into the Mickelson for a brief period to allow homeowners access to their property. The Mickelson Trail from the Mystic Trailhead serves as a secondary access in case of fire. We [South Dakota Department of Game, Fish, and Parks] recommend this trailhead be taken off all alternatives as an OHV trailhead on the ATV trail system because we would not be able to gate off the Mickelson Trail at this point. This area needs to be open in case of fire or other emergency. The Mystic trailhead is also too small to park trucks and ATV trailers. It is one of the busiest Trailheads on the Mickelson during the summer months. There is not enough parking for the current Mickelson Trail users.</td>
<td>Route Specific. The trailhead at Mystic is not included in Alternative E. Comment has been evaluated and will be considered in the record of decision.</td>
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<td>326/9. Alternative C. Road 245 in the Deerfield area allows access to the Mickelson Trail through the Forest Service Trail #40. We [South Dakota Department of Game, Fish, and Parks] recommend the road 245 be closed from the Mickelson Trail intersection points during the summer but open for hunting use.</td>
<td>Route Specific. NFS road 245 is closed yearlong in Alternative D, and seasonally open to highway-legal vehicles only in Alternative E.</td>
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<td>326/10. Alternative C. User created trail U250067, South of Hill City, could possibly be one of the routes to connect the Mickelson Trail with Mt. Rushmore. Although no decision has been made about where this connector trial will be located, we [South Dakota Department of Game, Fish, and Parks] would recommend no OHV trails overlap with Mt. Rushmore and Mickelson trails. Keeping OHV trails away from the final connector trail at a manageable distance would mitigate conflicts between the user groups.</td>
<td>Route Specific. U250067 is not included as a motorized route in Alternatives D or E.</td>
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<td>326/11. Alternative C. Trailheads on the Mickelson Trail are provided for hikers and cyclists in the following areas: Englewood, Dumont, Rochford, Mystic, Redfern, The Mountain, White Elephant, Pringle, and Minnekata. If ATV trucks and trailers start parking in these areas, there will not be room for the Mickelson Trail users. This would impact the user rate of the Mickelson Trail and also has the potential to increase motorized traffic on the trail, which we [South Dakota Department of Game, Fish, and Parks] do not want to promote.</td>
<td>Route Specific. No OHV’ trailheads were proposed at Englewood, Nahant, Dumont or Rochford in any alternative on the Northern Hills District. On the Mystic District, the Mystic trailhead proposed in the DEIS has been dropped in the FEIS alternatives. The proposed Redfern trailhead is about one-quarter mile from the existing Mickelson trailhead. Motorized trail traffic using the Forest Service trailhead would be directed east, away from the Mickelson Trail, to access the Forest system. The Forest Service believes this would provide adequate separation of users and discourage motorized use on the Mickelson Trail.</td>
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<td>326/12. Alternative D. There are very few trails accessing trailheads at Englewood, Dumont, Nahant, and Rochford Mystic. It would seem more prudent to place trailheads where there are more trails. Those few trails that are close are connected to larger circuits The use of the above trailheads will limit the amount of parking for bicyclists and hikers that use the Mickelson Trail. This would adversely affect the trail and its users. If these areas were to be used as trailheads for the ATV system it would create confusion in use of the Mickelson Trail. Even though the trail is signed, there is the distinct possibility that motorized vehicles will use these sections of trail. We [South Dakota Department of Game, Fish, and Parks] do not want to promote or even hint at motorized vehicles on the nonmotorized Mickelson Trail.</td>
<td>Route Specific. The Forest Service acknowledges the State’s concern that motorized trail users might try to use the nonmotorized Mickelson Trail and State trailheads. It is not our intent to promote such use, and the Forest Service believes motorized users will largely comply with the motor vehicle use map. If this becomes a problem, the Forest Service is willing to consider means to address it including signage or other means.</td>
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<td>326/13. Alternative D. For further clarification, the Mickelson Trail Right-of-Way (ROW) varies in distance from the trail center line and is not consistent along the Mickelson Trail. We [South Dakota Department of Game, Fish, and Parks] would like to reiterate the fact that any dispersed camping in the ROW of the Mickelson trail is prohibited.</td>
<td>Route Specific. The Forest Service respects the State’s jurisdiction on the Mickelson Trail. No dispersed camping is proposed in that ROW under any alternative, and would not be allowed on the motor vehicle use map.</td>
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<td>326/14. Dispersed camping and Parking. (SDGFP 2007 Issue #12). We [South Dakota Department of Game, Fish, and Parks] support 100 foot fixed limit for dispersed camping and parking in Alternative B with modifications to avoid the Mickelson Trails, streams, and other sensitive habitats. Inconsistency between fixed distances could be confusing to the forest user to distinguish between which use allows 100’ versus 300’ (game retrieval) in Alternative B, and lead to enforcement issues. (SDGFP 2007 Issue #13). We support motorized game retrieval areas similar to Alternative C, but for elk only. We do not support 300’ retrieval in Alternative B for numerous reasons. To avoid duplicate comments, we reference and incorporate herein our November 12, 2007, letter and supporting reasons.</td>
<td>Route Specific. Dispersed camping is discouraged within a minimum of 100 feet of lakes and streams per guideline 5301. Other limitations to avoid dispersed camping within 100 feet of the Mickelson Trail and other sensitive habitats will be difficult to depict on the motor vehicle use map, but may appear as limitations described in narrative text on the map. This is not proposed in any alternative. We share your concern regarding the potential confusion and enforcement challenge posed by having different distances allowed off-road for dispersed camping versus big game retrieval in Alternative B. Motorized retrieval of harvested big game presents a variety of management considerations. We appreciate your comments and look forward to continuing our productive partnership in addressing this issue.</td>
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<td><strong>326/15. Motorized Elk Retrieval in Designated Areas.</strong> We [South Dakota Department of Game, Fish, and Parks] offer additional information that was vague in the DEIS (p. 110). Deer hunting licenses include over 9,000 resident and non-resident successful applicants and the season could extend over four months from end of September through January. Comparatively, elk licenses could include a high of 1,500 successful resident only applicants and could extend for 75 days from September through December. As proposed in the DEIS, Alternative C would allow for 5 months of cross-country motorized use for over 10,000 potential retrievals, which could invite management concerns beyond soil disturbance that the DEIS did not anticipate.</td>
<td>5-106. The analysis of the DEIS in the recreation section, page 48, does lead the reader to believe that the entire hunt areas for either State only incorporates National Forest lands and that the harvested animals are only occurring on National Forest lands. However, there are private and other public lands within these hunt areas. The FEIS will be corrected to clarify this information.</td>
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<td><strong>326/16. Motorized Elk Retrieval in Designated Areas.</strong> In 2008, more deer hunters commented there were too many roads, too many ATV’s, too many motorized disturbances compared to complaints about lack of motorized access on BHNF (Gigliotti, L. 2008 BH Deer Hunter Survey Report Appendix B. HD-2-09. AMS, SDGFP, Pierre, SD). Several hunters were not aware of seasonal road closures after December 15.</td>
<td>5-103. The DEIS and FEIS alternatives considered a range of motorized opportunities for game retrieval and disclosed effects in Chapter 3. Some alternatives provide motorized game retrieval, while others do not provide any.</td>
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<td><strong>326/17. Wildlife Disturbances and Habitat Impacts.</strong> (SDGFP 2007 Issue ID #4). Alternative D causes the least wildlife disturbance and weed proliferation due to roads, trails, and respective uses.</td>
<td>2-38. Development of all the action alternatives specifically included considering effects of trails with the objective of minimizing damage to soil, watersheds, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Alternative D does propose the smallest motorized travel system.</td>
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<td><strong>326/18. Wildlife Disturbances and Habitat Impacts.</strong> Recreation use of public lands could be described as unintentional harassment of wildlife, but with increasing year-round use of public lands, wildlife will find it increasingly difficult to secure high quality habitat, which includes solitude. Effects of road types and motorized uses to wildlife and fisheries habitats are not a new subject. Numerous studies in western states, many funded by the USFS, published findings 40 years ago on the effect to elk, including road maintenance levels and economics (Gardner 1971), reduction in elk habitat effectiveness (Lyon 1979A), excessive creation of edge habitat (Ebert 1972) which attracts many wildlife species to roads and increases vulnerability to disturbance, poaching and disproportionate spatial harvesting (Sundstrom and Norberg 1972) and the need for screening cover or line-of-sight barriers adjacent to secondary and primitive roads (Lyon 1979B, USDA Forest Service 1975). Elk could be classified as the poster candidate for monitoring effects of altered movements and behavior due to roads and motorized use.</td>
<td>3-113. The Wildlife Section in Chapter 3 of the FEIS discloses the effects of year-round and seasonal motorized use on many wildlife species, including elk.</td>
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Wildlife Disturbances and Habitat Impacts. The DEIS uses wildlife disturbance as the primary measure for wildlife impacts yet could have been strengthened by using western and local studies, which have confirmed the disturbance to elk is a logical barometer for other wildlife species, especially those harder to study or track. Elk, a Forest Plan Demand Species, is an ideal species to better understand road effects. Studies indicate the following:

Elk movements and habitat use in the Black Hills is largely dictated by human activities (vs. weather or habitat modifications) including motorized use of roads and trails (Millspaugh et al. 2000) and pulses of human intrusion are evident in the daily movements of elk (Rumble et al. 2005). Not all roads are created equal. Elk response to roads differs by season, time of day, and road type (Millspaugh 1999). One behavior was evident; elk compensate their normal movements by waiting to become more active during periods when human use is lowest (Millspaugh et al. 2000). Roads create edge and elk will forage roadsides more at night, making elk more vulnerable to poaching.

When human disturbances cause elk to use meadows less in the fall and winter, physiological stress effects (Millspaugh 1999) are compounded by a nutritional deficit, resulting in elk spending more time in habitats with less forage availability (Rumble et al. 2005). One trade off is that in areas on public land with dwindling quality elk habitat, we have witnessed increased conflicts with private lands, a direct contradiction to Forest Plan direction in MA 5.4, Big Game Winter Range.

After elk forage becomes less than 50% digestible, elk are in nutritional deficit and additional energy expenditures are additive meaning that some elk may winter in poor condition due to constant movement to avoid roads and/or to find quality habitat (Rumble et al. In Press). On summer range, cows may enter spring with a nutritional deficit from the previous 7-9 months and there can be added stress from humans during lactation, despite better forage quality during summer.

Bull and cow elk respond differently to roads and trails. In general, bull elk are more sensitive to roads and trails than cows. Secondary and tertiary roads displaced elk in fall, which might be related to hunter activity along these roads (Millspaugh et al. 2000). Rumble et al. (2005) found that elk were always further from primitive roads than on average during the fall, and usually further from secondary and primary roads and in areas of high road densities. The effect of roads on elk decreases as distance from roads increase. However, in the Southern Black Hills, elk cannot move more than 150m from a primitive road without encountering an obstacle.

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<td>326/19, 20. Wildlife Disturbances and Habitat Impacts. The DEIS uses wildlife disturbance as the primary measure for wildlife impacts yet could have been strengthened by using western and local studies, which have confirmed the disturbance to elk is a logical barometer for other wildlife species, especially those harder to study or track. Elk, a Forest Plan Demand Species, is an ideal species to better understand road effects. Studies indicate the following: Elk movements and habitat use in the Black Hills is largely dictated by human activities (vs. weather or habitat modifications) including motorized use of roads and trails (Millspaugh et al. 2000) and pulses of human intrusion are evident in the daily movements of elk (Rumble et al. 2005). Not all roads are created equal. Elk response to roads differs by season, time of day, and road type (Millspaugh 1999). One behavior was evident; elk compensate their normal movements by waiting to become more active during periods when human use is lowest (Millspaugh et al. 2000). Roads create edge and elk will forage roadsides more at night, making elk more vulnerable to poaching. When human disturbances cause elk to use meadows less in the fall and winter, physiological stress effects (Millspaugh 1999) are compounded by a nutritional deficit, resulting in elk spending more time in habitats with less forage availability (Rumble et al. 2005). One trade off is that in areas on public land with dwindling quality elk habitat, we have witnessed increased conflicts with private lands, a direct contradiction to Forest Plan direction in MA 5.4, Big Game Winter Range. After elk forage becomes less than 50% digestible, elk are in nutritional deficit and additional energy expenditures are additive meaning that some elk may winter in poor condition due to constant movement to avoid roads and/or to find quality habitat (Rumble et al. In Press). On summer range, cows may enter spring with a nutritional deficit from the previous 7-9 months and there can be added stress from humans during lactation, despite better forage quality during summer. Bull and cow elk respond differently to roads and trails. In general, bull elk are more sensitive to roads and trails than cows. Secondary and tertiary roads displaced elk in fall, which might be related to hunter activity along these roads (Millspaugh et al. 2000). Rumble et al. (2005) found that elk were always further from primitive roads than on average during the fall, and usually further from secondary and primary roads and in areas of high road densities. The effect of roads on elk decreases as distance from roads increase. However, in the Southern Black Hills, elk cannot move more than 150m from a primitive road without encountering an obstacle.</td>
<td>3-103. Thank you for your comments. The elk discussion was edited in the final EIS to include relevant and local studies on elk and effects of roads.</td>
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<td>road without crossing another road. Road impacts result in larger home ranges, meaning elk need more area to fulfill habitat requirements.</td>
<td>3-127. The FEIS was edited to include more discussion on the change in habitat quantity. As mentioned under methodology and general effects to wildlife, habitat loss from roads is estimated at 5 acres per mile. Rather than doing this calculation, the miles of routes were used as an indicator of habitat alteration. The total miles of routes are included in the figures for wildlife habitat as an indicator of cumulative effects from past activities.</td>
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<td>326/21. Wildlife Disturbances and Habitat Impacts. We [South Dakota Department of Game, Fish, and Parks] suggest that the DEIS effects analysis could have been strengthened by including indicators of direct habitat and vegetation loss due to roads and trials. The DEIS (p. 144) states “analysis effects on wildlife species was conducted using existing data and the habitat requirements for each species…and impacts of disturbance to wildlife…but that habitat lost to different types of roads is subjective and not standardized.” Statements pertaining to subjectivity and standardization as reasons not to conduct habitat impacts, alarm us because there is an abundance of objective, scientific, peer-reviewed literature that supports direct and indirect effects to habitats due to roads, trails, and uses. Many land management issues pertaining to wildlife habitat are not standardized, and never will be, but that does not lessen public land management responsibility or NEPA requirements to estimate adverse impacts. BHN Forest Plan has few wildlife habitat standardizations and the recent Forest Plan revision emphasized that more management options, not standards, were needed for flexibility. This travel DEIS seems contradictory to the Forest Plan by stating analysis cannot be conducted due to lack of standardization. The DEIS lists indicators of road impacts (p. 13-16) such as botanical, soils, noxious weeds, and hydrology, i.e.: wildlife habitats and some assumptions and estimates to habitat could have been derived from this information. We support inventory of stream crossings, which could be used to indicate water quality and effects to wildlife, fisheries, and habitats.</td>
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<td>326/22, 23. Wildlife Disturbances and Habitat Impacts. The DEIS states that “the amount of habitat gained or lost by closing or opening roads, trails or areas would be minimal and immeasurable at a Forest Scale…the primary impact of the project on wildlife is expected to be disturbance, not habitat alteration.” The DEIS suggests that habitat alteration due to a road is not a necessary metric because roads were either constructed years ago or new roads would be minimal. Loss of habitat is loss, no matter when it occurred and there should have been some relevant scale or degree of loss or habitat fragmentation indicated in the DEIS. For example there is an objective, pure linear relationship that more roads equate to more lost habitat. One hundred miles of roads are more acres of lost habitat than 10 miles of road, or ten times a greater</td>
<td>3-129. The FEIS was edited to include more discussion on the change in habitat quantity. As mentioned under the headings “Methodology” and “General Effects to Wildlife”, habitat loss from roads is estimated at 5 acres per mile. Rather than doing this calculation, the miles of routes were used as an indicator of habitat alteration. The total miles of routes are included in the figures for wildlife habitat as an indicator of cumulative effects from past activities.</td>
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Loss in habitat. This could be quantified by actually estimating habitat loss by road maintenance levels (ML). The DEIS estimated road widths of 12-16 feet (p. 81, 257) and new trail construction of 50" or less. Of 5 MLs for roads, only ML 2 and 3 vary by alternative (Table 7) which suggests the direct loss of habitat acres certainly can be estimated. Therefore, existing and new construction could calculate acres of habitat converted from native vegetation (Table 30-32) to dirt or gravel.

Road Densities are one quantifiable metric BHNF can use as an index to disturbance levels as well as direct habitat loss across landscapes. An index of acres lost would create a Forest Plan baseline, or objective for miles of roads and trails. Project level analysis would then be assessed against that baseline, similar to other forest-wide targets. Without a baseline estimate, BHNF has no point of reference for cumulative and foreseeable future (5-15 years DEIS p. 88) habitat loss and fragmentation. This should be discussed in the final EIS. The DEIS states (p. 145) that analysis to wildlife and wildlife habitat relies instead on assumptions of direct effects to wildlife (collisions) and disturbances, yet BHNF manages very few roads where high speed vehicles traverse. Secondly, assumption by definition includes broad, non-specific or subjective elements, not standards. Therefore, it seems illogical that assumptions were made on disturbances (which were not quantified) and not on measurable habitat loss. The DEIS would have been much stronger and informative if it had attempted to include wildlife disturbance as well as habitat loss and fragmentation.

Wildlife Disturbances and Habitat Impacts. Local elk research by Rumble, et al. indicated that in addition to direct loss of habitat, roads also impose a known, objective, zone of influence on either side of a road, i.e.: disturbance. This local research appeared to be missing in the DEIS for elk, a BHNF Forest Plan demand species. A Region 1 Forest used disturbances to elk by motorized vehicles and road densities an indicator of possible effects to other species such as deer.

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<td>3-104. Thank you for your comments. The elk discussion was edited in the final EIS to include relevant and local study on elk and effects of roads.</td>
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<td>Road Densities are one quantifiable metric BHNF can use as an index to disturbance levels as well as direct habitat loss across landscapes. An index of acres lost would create a Forest Plan baseline, or objective for miles of roads and trails. Project level analysis would then be assessed against that baseline, similar to other forest-wide targets. Without a baseline estimate, BHNF has no point of reference for cumulative and foreseeable future (5-15 years DEIS p. 88) habitat loss and fragmentation. This should be discussed in the final EIS.</td>
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<td>326/25. Wildlife Disturbances and Habitat Impacts. The DEIS set a precedent by not conducting habitat effect analysis. If disturbances to wildlife was the primary analysis for detrimental impact analysis, the DEIS could have discussed the deer and elk retrieval information and how “concentrated motorized use areas” will also disturb wildlife.</td>
<td>3-127. The FEIS was edited to include more discussion on the change in habitat quantity. As mentioned under “Methodology” and “General Effects to Wildlife”, habitat loss from roads is estimated at 5 acres per mile. Rather than doing this calculation, the miles of routes were used as an indicator of habitat alteration. The total miles of routes are included in the figures for wildlife habitat as an indicator of cumulative effects from past activities. The FEIS states that more disturbance can be expected in areas with higher motorized route densities.</td>
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<td>326/26. Wildlife Disturbances and Habitat Impacts. The DEIS states (p. 145) that design criteria (Appendix B) were developed to protect and conserve wildlife species and their habitats. However, only goshawk is mentioned. We suggest listing specific dates and areas for seasonal closures.</td>
<td>3-18. Most wildlife issues were designed into the alternatives to be consistent with the Forest Plan. Only those items that require specific considerations during implementation are listed for wildlife in Appendix B. The trailhead has yet to be designed on the ground and goshawks would be considered (nest nearby) during design and implementation. The routes listed for goshawk seasonal closures are different from the standard closure dates for other routes and therefore potentially forgotten during implementation. The list serves as a reminder during implementation.</td>
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<td>326/27. Wildlife Disturbances and Habitat Impacts. The DEIS appeared to be thorough for aquatic resources, including fisheries, stream crossings, wetlands, and mitigation measures.</td>
<td>3-144. Thank you for your comment.</td>
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<td>326/28. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads: Pleasant Valley Walk-In Area: A 3 mile x 2 mile year-round nonmotorized east of South Dakota Department of Game, Fish, and Parks properties. The South Project created this area but we noted on some of the alternative, the South Decision and Order could be rescinded and would defeat the purposes of the South Analysis and designation. Elk use our state land and find refuge to the east in the Forest Service forested landscapes. Elk use is annual and we have identified that elk come here from the Wind Cave area to calve. The herd of about 100 head generally stays in the surrounding area and then head back east in the late fall. Our conservation officer has also identified this area for Route Specific. The Pleasant Valley walk-in area you suggest adding has been reviewed and will be considered by the decisionmaker.</td>
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<td>Prime archery deer. The recent prescribed fires will enhance native vegetation and a nonmotorized area would assure recovery and a place for humans to simply enjoy the views. We ask that all roads be closed except to administrative uses. Road numbers with the Hell Canyon South Project Maps and the proposed BHNF Route Map do not jive so we list all possible combinations: all user-created trails in addition to 715.3D, South 077, 316.1M, 316.1N, U420010, U420017, U420009, CZ-3236, 316.1H, 315.1U, 315.1R, 315.JQ, South 076.</td>
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<td>326/29. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:  Roger's Shack Fire Walk-in Area: Open views, deer and elk habitat, grasshopper sparrows, woodpeckers, native vegetation has responded well to the fire, falling trees will naturally aid in road closures. Close 307, 307.1A, 307.1D, 307.1F, 307.1C, 307.1E, 307.1G, 402, 402.1C, 402.1B, 402.1F, 402.1D, 409, 445, 715.3J, 275, 275.1C, 275.1D, 715.3I, 715.3E, 715.3M, 715.3L, 310.1H, 310.1G, 310.1D, 507, 715.3E, 715.3K, 275.1A, 275.1B, 715.3P, 715.3O, 715.3N, 409.1A, U350143, 310.1E.</td>
<td>Route Specific. The Roger's Shack Fire walk-in area you suggest adding has been reviewed and will be considered by the decisionmaker.</td>
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<td>326/30. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:  Jasper Fire – Hell Canyon Walk-in Area: Views, deer and elk habitat, seasonal seeps and springs in canyons, mt. lion habitat, and canyon wren. Close 284.2K, 282.1A, 282.1F, 284.2G, 284.2F, 284.2D, 284.2A, 284.2B, 284.2A,</td>
<td>Route Specific. The Jasper Fire-Hell Canyon walk-in area you suggest adding has been reviewed and will be considered by the decisionmaker.</td>
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<td>284.2J, 284.2F, 284.2J, 284.2T, 681, 680.1A, 680.1B, 680, 681, 680.1D, 284.2C.</td>
<td>Route Specific. The Park Complex and French Creek walk-in areas you suggest adding have been reviewed and will be considered by the decisionmaker.</td>
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<td>326/31. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads: Park Complex and French Creek Walk-in Areas: Along the boundaries of Custer State Park, Norbeck Wildlife Preserve, and Wind Cave National Park: Protection of buffer to state and federal parks, Norbeck Wildlife Preserve, Meeker Creek. Wildlife is more likely to move freely across boundaries if not disturbed by roads and vehicles. Meeker Creek purchased by Rocky Mountain Elk Foundation and conveyed to BHNF in part to retain the solitude and habitats adjacent to Norbeck. Close 373.1B, 435, 340, 337.1D, 342.1Q, (and adjacent southern spur too short to see number on BHNF map), 339.1B, 343.1J, 343.1F, 345.1A, 349.1A, 349.1D, 349.1E.</td>
<td>Route Specific. The Roger's Shack Spring walk-in area you suggest adding has been reviewed and will be considered by the decisionmaker.</td>
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<td>326/32. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads: Roger's Shack Spring Walk-in Area: Close 272.2I, 272.2H, 272.2D, 272.2C, 272.2E, 272.2F, 276.1T, 276.1D, U410011, CZ3942, 276.1F, 272.2B.</td>
<td>Route Specific. NFS road 606 is open seasonally in Alternatives C, D, and E as it provides access to the Deerfield Trail at Flannigan's Cabin. This comment has been evaluated and will be considered in the record of decision.</td>
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<td>326/33. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin</td>
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| in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:  
   McVey Burn – Silver City Walk-in Area: One of the most traditional sought-after areas for big game hunting. Close U190001, 142.1B, 142, 436, 251.1G, 249.3A, 249.2H, 249.2G, 606 (or 909?). | Route Specific. This comment has been evaluated and will be considered in the record of decision. |
| 326/34. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:  
   Silver Mountain Walk-in Area: Hiking through mixed conifers and hardwoods, big game area. Close U260047, 358.1B, DE, 674. | Route Specific. This comment has been evaluated and will be considered in the record of decision. |
| 326/35. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:  
   Horse Creek Walk-in Area: Close 257.1A, 257, 257.1B, 257.1C, 710, 710.1A, U190099. | Route Specific. This comment has been evaluated and will be considered in the record of decision. |
<p>| 326/36. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for | Route Specific. NFS road 231.4B accesses recreation cabins that are under special use permit. This road was analyzed to remain open in all alternatives to provide access. NFS road 234.1 and 231.5J (referred to as unnumbered spur) are open system roads that are not within the Swede Gulch nonmotorized area. It was analyzed to remain open in Alternatives B, C, and E and was removed from Alternative D. NFS roads 206.1G, 206.1D and 206.1E are open system roads that were analyzed in all alternatives to remain open. Any decision about selected |</p>
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<td>BH326-326</td>
<td>the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:</td>
<td>routes will be documented in the record of decision.</td>
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<td>Swede Gulch Walk-in Area: Close 231.4B, 234.1, un-numbered spur in Section 33 off 206.1, 206.1G, 206.1D, 206.1E.</td>
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<td>326/37. Designation of Motorized Routes to Create Non-Motorized Areas (Walk-in Areas). (SDGFP 2007, Issue #11). Designation of motorized routes by default create areas with less or no motorized disturbances for a myriad of forest users, as best illustrated in Alternative D. Seasonal closures that begin December 15 are too late to create walk-in areas for hunting seasons that begin in September and go through winter. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest the following area avoid motorized routes for the reasons and map we submitted in 2007. Walk-in Areas approximate closures of the following roads:</td>
<td>Route Specific. This comment has been evaluated and will be considered in the record of decision.</td>
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<td>Black Fox Botanical Walk-in Area: Close 233.3A, 190.1R, 125, 125.1D, 191.1B, 190.1J.</td>
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<td>326/38. Besant Park Walk-in Area:</td>
<td>Closure of U100073, 209.3B. Rocky Mountain Elk Foundation Purchase (in part) and conveyed to the BHNF for elk and riparian habitats. We [South Dakota Department of Game, Fish, and Parks] highly object to designating an ATV trail immediately adjacent to and surrounding this area for big game since that defeats the purpose of the conveyance and BHNF should already be on board with managing the surrounding area to meet the objectives of Besant Park. Proposed trail in forested site will disturb big game moving from meadows into security cover of forest.</td>
<td>Route Specific. NFS road 209.3B and U100073 were analyzed in Alternative B to be open and were removed from Alternatives C, D, and E. Any decision about selected routes will be documented in the record of decision.</td>
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<td>Custer Crossing (Gonzales) Walk-in Area: Currently no roads proposed in area or new trails around it and we [South Dakota Department of Game, Fish, and Parks] ask it stay that way for the same reasons as other Rocky Mountain Elk Foundation purchased lands.</td>
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<td>326/39. Beaver Park Inventoried Roadless Area:</td>
<td>We [South Dakota Department of Game, Fish, and Parks] object to a user created or citizen route (U080156) proposed through Management Area (MA) 4.1 Limited Motorized Use and adjacent to and possibly encompassing MA 3.32 Backcountry Non-Motorized Recreation (and Inventoried Roadless Area Beaver Park). Illegal user-created routes through drainages should not become a system trail or road by rewarding the public that created these inappropriate routes. These two MA’s are a very small percent of the Forest and should be managed to retain the characteristics</td>
<td>Route Specific. U080156 was analyzed in Alternatives B and C and removed from Alternatives D and E. This route is in management area 4.1 and not within management area 3.32. This route was not illegally created as it used to be a Forest Service system route as indicated on old Forest Service maps from the 1960s, ’70s and ’80s. Any decision about selected routes will be documented in the record of decision.</td>
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<td>and desired conditions in which they were classified.</td>
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<td>326/40. Mixed-use Roads. According to the DEIS, a decision on whether to designate roads for motorized mixed traffic will be informed by a motorized-mixed-use analysis performed by a qualified engineer. We strongly encourage and support this analysis before designating any road motorized-mixed-use. Mixed use roads are proposed in all action alternatives, and we feel there must be balance between the number of miles of mixed use road and trails to encourage users to purchase a Recreation Enhancement Act permit.</td>
<td>4-374. In 2009, motorized mixed-use analyses (professional engineering studies) were conducted on selected ML 2 – ML 5 roads by professional engineers. These roads are the Forest’s arterials and collectors and the main access routes that the public uses to get to the Forest. Professional engineering analysis and judgment was used to evaluate the potential for a crash as well as the severity of an accident should a crash occur. The crash potential rating is based on roadway factors such as traffic volume and type, surface type and condition, sight distances, driving speeds, and roadway alignment (horizontal and vertical curves). Crash severity ratings were based on roadside conditions (natural ground slopes, slope/height of embankments, and large unyielding features next to the road), speed, and traffic types (the larger the difference in size of vehicles, the greater the severity). The final decision on designation of motorized mixed-use roads will be informed by these studies.</td>
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<td>326/41. Map Information. We asked in our 2007 comments and request again that maps include actual seasonal dates, nonmotorized trails and other use areas. The final Motor Vehicle Use Map (MVUM) and Atlas need to be more informational because the Black Hills are a recreational destination. BHNF in particular, will offer more motorized recreation than any other National Forest. Many time the DEIS stated the MVUM will be the main tool used to determine compliance and enforcement of motorized use. Therefore, we are greatly concerned that BHNF could choose to not provide forest users a multi-color MVUM. We understand a multi-color map would add printing expense but a multi-color map would improve public compliance and better ensure resource protection, especially when the different road and trail categories could be signed according to color on designated routes. A multi-color MVUM would be more user-friendly than a monochromatic map, which would be difficult to read given the multiple types of recreational opportunities.</td>
<td>4-341. The motor vehicle use map will follow national direction and symbology to be consistent with the overall program nationwide. It will not likely contain any nonmotorized trails. Nonmotorized trail brochures are currently available for all designated trail systems on the Black Hills. Other multi-media information may be developed in response to evolving needs.</td>
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<td>326/42. Signing. BHNF has always provided great recreational opportunities for both motorized and nonmotorized enthusiasts. South Dakota and Wyoming residents are privileged to have such an opportunity and to ensure residents and non-residents are able to comply with South Dakota and Wyoming law; steps should be taken to provide this information to users on the forest floor where trails and roads traverse into both Wyoming and South Dakota. Interpretive signs, kiosks, and other informative methods could be utilized to mitigate problems that could arise from confusion of trail and road locations.</td>
<td>4-334. Forest roads will be signed with the appropriate road number to match the motorized vehicle use map produced for the designated motorized system. Marking of the trail system is not a requirement of the decision for designation of a motorized travel system for the DEIS or FEIS.</td>
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**326/43. Signing.** We feel a great approach to elude any confusion on the forest floor is to avoid using the color orange during the signing process. The International Association of Snowmobile Administrators has developed signing guidelines, which are nationally recognized on snowmobile trails. The color orange to a snowmobiler means this is a designated trail, which makes the trail safe to ride. We feel if an OHV trail is signed with the color orange, OHV enthusiasts will see the orange blazers on a snowmobile trail and think this must also be an OHV designated trail.

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4-336. See response 4-334 above.

### 326/44. “Concentrated Motorized Use Areas” (CMUA) Terminology. Prior to the DEIS, we do not recall this terminology in public communications. The good intention of alerting motorized users to trail loops and so forth, may very well have the unintended consequence of implying that cross-country travel is allowed. Introduction of CMUA’s was not identified as an issue. Some yellow areas have few motorized routes and other non-yellow areas, such as in Jasper Fire and west of Pleasant Valley (R3E, T5S), have much higher road densities. We fail to see the purpose of this terminology and highlighted areas other than a DEIS reviewing aid. We suggest they be omitted on the final Motor Vehicle Use Map. Further, CMUA’s did not vary by Alternative and a concentration of motorized uses on trails and in areas means more sound and disturbances to wildlife, soils, water, plants, and cultural resources, which was not a separate discussion issue in the DEIS (Final Travel Rule at 212.55(b)).

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4-144. The term "concentrated motorized use areas" has been removed from the FEIS language and replaced with the term, “motorized trail system” (MTS). The concept behind the new term is the same as for the CMUAs in the DEIS. As before, it is a defined area featuring smaller-scale loop routes and other motorized travel opportunities. No off-route cross-country opportunity is meant to be implied by this term, and it was not intended in the DEIS under the term CMUA.

### 326/45. Southern Hills Management Area 5.4 not meeting Forest Plan. Alternative D offers a reduction in roads, which would better meet Forest Plan directives for Big Game Winter Range, Management Area (MA) 5.4. Other action alternatives move the MA away from Forest Plan directives but no documentation was given to support selection of an alternative that is not Plan compliant. The Forest Plan (Chapter 111-2), states that where there is conflict, the most site-specific direction applies, either forest wide or MA Direction. While MA 5.4 9102 Guideline to restrict motorized travel is used on a seasonal basis starting December 15, it misses most of the hunting seasons where traffic and disturbances are greater. Guideline 5.4-5101 gives authority to prohibit any activities when needed to mitigate adverse impacts on wildlife and we believe better road analysis should have been conducted. The Jasper and Roger’s Shack Fire Areas have ineffective habitat requirements due to high road densities

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3-130. The analysis of how each alternative contributes to achieving the winter road density objective (objective 5.4-207) in management area 5.4 was shown on page 192 of the DEIS. The analysis was not done for specific areas such as Jasper and Roger's Shack Fires. The effects analysis was done for MA 5.4 Forestwide and included areas like Jasper and Roger's Shack Fires. In the action alternatives, guidelines 5.4-9102 and 5.4-5101 were used in different amounts to contribute to objective 5.4-207, depending on the emphasis of each alternative. Alternatives B and C would move away from the objective in an effort to provide more motorized recreation opportunities for the public. Alternative D would move winter route density in MA 5.4 towards objective 5.4-207 in an effort to limit the level and likelihood of effects on natural and cultural resources, including wildlife, through a smaller motorized travel system. Alternative E would have winter route densities similar to Alternative A (existing condition). (See also DEIS and FEIS Chapter 2
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<td>(DEIS 176, 191) which cause habitat fragmentation and loss of cover due to stand-replacement fire. The Jasper Travel DEIS (2004) demonstrated a proliferation of roads nearly every quarter mile. In the past, project level road and travel analysis were conducted but recently, that process has been deferred until after the forest-wide travel plan is in place. Therefore, we propose that this DEIS and roads within the Jasper/Roger’s Shack Fire complex (such as the proposed Hell Canyon Maintenance Burn project) be analyzed for effects of roads to wildlife and wildlife habitat.</td>
<td>for descriptions, intent and design of alternatives). This rationale and explanation was added to the route density analysis in the FEIS. The amount of routes, winter and yearlong, included in MA 5.4 and in Jasper and Roger’s Shack Fires will be considered in the final decision.</td>
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<td>326/46. Southern Hills Management Area 5.45 not meeting Forest Plan. Roadsides create SS1[Structural Stage 1 (Grass/Forb)] and edge effects. Those few species that use roads or set up home ranges associated with road edge effects, are far outweighed by species that are displaced isolated, and survive on less quality habitat due to roads. Those species that use SS1 or tolerate roadsides, do not lack for those conditions within the Jasper/Roger’s Shack fire complex. There simply are no compelling needs to provide additional roadside habitat or to maintain high road densities. Therefore, we [South Dakota Department of Game, Fish, and Parks] suggest that effective habitat and Forest Plan MA directives could be better met with road closures, which was lacking in the DEIS. Lyon (1979A), a Forest Service Research Biologist, stated that road management is a powerful means of manipulating elk habitat and that effect of roads on habitat should be considered with other factors such as the array of cover and forage and that this information should be used in forest management decisions. Habitat effectiveness is a tool to express the expected actual habitat utilization and is influenced by motorized disturbances and changes in habitat associated with roads. Lyon (1979A) developed an elk habitat effectiveness model, which has since been specifically calibrated for Black Hills National Forest (Benkobi et al. 2004, Juntti and Rumble 2006). The DEIS expressed a concern for subjective information. In land management, if the assumptions are reasonable and metrics are known, predictions will have much less variability and higher confidence levels. Conducting the BHNF modified Habitat Capability (HABCAP) simulation forest-wide or within fire complexes at a minimum, would provide useful information towards that end.</td>
<td>3-12. The effects of roads on wildlife, including elk, are discussed in Chapter 3 of the FEIS. Alternative D proposed closing some roads for various reasons, including wildlife. This information along with your comment will be considered in the final decision. The ArcHSI model was not used in the elk and deer analysis. Route mileage was used as the indicator of habitat effects and disturbance effects.</td>
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<td>326/47. Attachment 1. Literature Cited or Offered as Resources.</td>
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<td>327/1. In review of the plan it appears difficult to follow and more difficult to understand how enforcement of Alternatives B, C, D, and E will be accomplished.</td>
<td>4-250. The Forest is committed to using whatever funds it has available to accomplish the purposes of the final decision in a targeted, efficient manner. Funding could include appropriations, cooperative relationships with other government entities, volunteer agreements, and user fees. Agency law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting national forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users will support enforcement efforts by promoting voluntary compliance.</td>
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<td>327/2. The draft analysis does a poor job of measuring problems with dust and soil erosion. Accepted Environmental Protection Agency standards for fugitive dust emissions were not used. Miles of roads, native and aggregate surfaced, were rutting, and soil erosion problems caused from recreation use is sketchy at best.</td>
<td>3-138. Dust is generally an effect of various levels of use on designated Forest transportation systems. Dust is generally not an issue in the Black Hills when Forest Plan standards and guidelines are implemented. Dust was addressed within the Engineering and Transportation section of the DEIS. Dust emissions are discussed in the air quality portion of the Engineering section in the FEIS. All action alternatives would restrict off-road motorized use and reduce soil erosion currently caused by such use.</td>
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<td>327/3. Alternative A allows 864,000 acres open to public use. All other alternatives will restrict use of three-quarters (3/4) of the National Forest. The Pennington County Highway Department would support Alternative A.</td>
<td>2-24. It is the intent of the Black Hills National Forest to provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. National Forests are managed by law for multiple use. However, the magnitude and intensity of motor vehicle use have increased to the point that soil erosion, water quality, and wildlife habitat are being adversely affected. The alternatives would allow motorized cross-country use in varying levels.</td>
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<td>327/4. The plan intends to designate Off Road Vehicle (ORV) trails where only these vehicles may be used. ORVs are classified as vehicles 50&quot; in width or less. It appears these trails will not be considered as public roads, therefore they would be open to non-licensed drivers and non-license vehicles. No Pennington County maintained roads should be designated as ORV trails. If trailheads are constructed adjacent to a Pennington County road, guidelines need to be approved for access onto the roads from these sites. Construction of the trailheads should also allow for continued maintenance of the existing road, without limiting drainage or clear zones.</td>
<td>4-159. The Forest designated system of motorized travel routes will not include any roads that are County or other government entity jurisdiction. Decisions will only be made on routes under Forest Service jurisdiction.</td>
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### Letter BH327 - Pennington County Highway Department, Hiene H. Junge, Superintendent

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<td>327/5. The problems appear to be created by a low percentage of people. In general, people care about the environment and the damage that is caused to it. The minority of users who abuse the road/trail sides and Forest should be dealt with. Restricting use of 75% of the Black Hills National Forest to control this minority is unacceptable.</td>
<td>4-262. The 2005 Travel Management Rule requires the designation of any roads, trails and areas that are to be open to motor vehicle use on the National Forest, and is the motivation for this travel planning effort. The Travel Rule supports the idea that National Forests should provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. The proposal to restrict cross-country use was developed to respond to conditions on the Forest. Varying levels of cross-country use would be allowed under the alternatives.</td>
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### Letter BH346 - Wyoming Game and Fish Department, John Emmerich, Deputy Director

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<td>346/1. Rather than selecting a single alternative as currently presented in the DEIS, we [Wyoming Game and Fish Department] encourage the BHNF to consider adopting proposals from the variety of alternatives presented. This will allow development of a final travel management plan that best protects forest and wildlife resources, while allowing a reasonable level of motorized access. In contrast to all alternatives presented, we believe the BHNF can better balance resource concerns with vehicle use on the Forest by delineating a patchwork of areas that generally support either low, moderate, or high open road densities. That is, an effort should be made to create a few blocks of forest with simplified regulations leading to low, moderate, or high open road densities for all vehicle types, while limiting provisions for off-road travel. This would allow forest users who are seeking a certain type of motorized or nonmotorized experience to access a part of the forest that best supports the specific quantity and quality of motorized use in which they wish to engage. By blocking off such areas in contiguous parcels, the BHNF can also simplify regulation and map development. We support a similar approach to BHNF lands in both Wyoming and South Dakota, rather than using the State line to segregate high and low open road densities, as is currently proposed under all alternatives.</td>
<td>2-20. All the alternatives will be considered in developing a selected alternative. The project is very complex, and the decisionmaker may adopt points from different alternatives. The decision will be based on public comments and the results of the effects analysis in the EIS.</td>
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<td>346/2. We [Wyoming Game and Fish Department] find it odd the Bearlodge Ranger District proposes much lower open road densities than the remainder of the Forest without some type of justification. Please provide a justification for such if it is carried forward in the Final EIS.</td>
<td>4-242. The DEIS and FEIS considered a range of alternatives for motorized opportunities. While Alternative C offered the greatest opportunity for motorized access on the Bearlodge District, Alternative D offers the least amount of motorized access. Each alternative was analyzed in detail and effects on natural resources and other elements are documented in Chapter 3.</td>
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<td>346/3. The DEIS may have set a precedent by not including a habitat effect analysis. It omits considering lost habitat and vegetation production resulting from roads and trails. In the DEIS it is stated, “analysis effects on wildlife species was conducted using existing data and the habitat requirements for each species...and impacts of disturbance to wildlife...but that habitat lost to difference types of roads is subjective and not standardized.” Relying on subjective reasoning and measures rather than quantifying habitat impacts is a concern. This is because objective, scientific, and peer-reviewed literature reveals direct and indirect effects on habitat from roads and trails, as well as their use. We [Wyoming Game and Fish Department] believe NEPA requires the USFS to at least attempt to estimate such adverse impacts. The Phase II amendment to the BHNF Forest Plan emphasized management options, not standards, were needed for flexibility. Therefore, the DEIS seems to contradict the revised Forest Plan by asserting analysis could not be conducted due to lack of standardization. Some indicators of impacts from roads are given (p. 13-16). As such, a more in depth and objective analysis of impacts to wildlife habitat could and should be performed.</td>
<td>3-127. The FEIS was revised to include more discussion on the change in habitat quantity. As mentioned under methodology and general effects to wildlife, habitat loss from roads is estimated at 5 acres per mile. Rather than doing this calculation, the miles of routes were used as an indicator of habitat alteration. The total miles of routes are included in the figures for wildlife habitat as an indicator of cumulative effects from past activities.</td>
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<td>346/4. The DEIS states, “the amount of habitat gained or lost by closing or opening roads, trails or areas would be minimal and immeasurable at a Forest Scale...the primary impact of the project on wildlife is expected to be disturbance, not habitat alteration.” This suggests it is possible to ignore habitat alteration and fragmentation resulting from changes to roads from construction, use, or decommissioning. Changes in habitat quantity and quality are changes, no matter how or when they occur. Consequently, some relevant scale or degree of loss and habitat fragmentation should be indicated in the DEIS for all alternatives. Given the information presented in the DEIS, we [Wyoming Game and Fish Department] suggest direct loss of changes in type of habitat can be estimated and compared between alternatives. In addition, some measure of fragmentation could be applied. At minimum a baseline estimate of current habitat loss and changes due to roads should be calculated.</td>
<td>3-129. See response 3-127 above.</td>
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<td>The BHNF does not seem to have a reference point that can be used to estimate cumulative and foreseeable future habitat loss, changes, and fragmentation. This should be addressed in the FEIS, and would also be a valuable reference tool when it is time for creating a new Forest Plan. The FEIS will be much stronger and informative if it better considers wildlife disturbance, habitat loss, and fragmentation.</td>
<td>4-116. Thank you for your comment. The final decision will take into account specific purpose and use for spur and dead-end routes.</td>
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<td>346/5. It is not clear looking at the travel maps for all alternatives why it is proposed to have some roads open to all vehicles that connect to dead-end spur roads open to street legal vehicles only. This does not seem to make sense, as a person on a non-street legal OHV would have to stop at the junction of one of these spur roads, but someone in a pickup or plated OHV could continue. Please consider keeping such spur roads open to all vehicle types, or better yet closing them to prevent pioneering of new trails from dead-ends.</td>
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<td>346/6. The National Forest Advisory Board (NFAB) of the BHNF did not directly consult the Wyoming Game and Fish Department (WGFD) as they moved through their process of formulating recommendations on the travel management plan. We [Wyoming Game and Fish Department] consider this a serious oversight because hunters represent the largest single group of forest users on the Wyoming side of the BHNF. Neither the Wyoming Game and Fish Department, nor Wyoming hunters were consulted by the NFAB. Instead, it appears their recommendations were driven more by advocates of off-highway motor vehicle recreation. We sincerely hope the weight and consideration given to NFAB recommendations and advocates for motorized recreation are similar to that given to our comments.</td>
<td>1-58. The Wyoming Game and Fish Department (WGF) had a representative serving as an alternate member on the NFAB when that Board's recommendations were drafted. The primary member representing Wyoming State government was from the Wyoming Department of Agriculture. The South Dakota State government position on the Board was then held by a representative from the South Dakota Department of Game, Fish and Parks. The NFAB recommendations were broad statements intended to guide the development of a travel management plan on the Forest. Forest personnel subsequently met with WGF and solicited and considered comments from WGF at scoping and at the Draft EIS stages, to understand the Department's views. We believe these have been incorporated into the range of alternatives.</td>
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<td>346/7. We [Wyoming Game and Fish Department] are concerned with the current, overall disturbance to wildlife due to unlimited off-road travel presently legal on much of the Forest. We fully support the proposed change under all alternatives which move the entire forest from “an open unless closed” designation to “closed unless opened” for motorized travel. Such action will better protect wildlife and their habitats, as well as enhance the motoring public’s understanding of where various motor vehicles can be legally operated.</td>
<td>4-68. The “closed-unless-marked-open” policy is now national direction as outlined in the 2005 Travel Management Rule. This policy was developed to prevent resource damage from occurring across National Forest System lands from &quot;unmanaged&quot; recreation use. The policy allows for the Forest Service to establish and maintain a system of travel routes across the Forest for management, recreation and legal access needs.</td>
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<td>346/8. Due to damage caused to stream banks and increased sediment loading of waterways by vehicles traversing streams, we [Wyoming Game and Fish Department] strongly support minimizing the number of roads crossing through streambeds. This approach is best represented in Alternative D.</td>
<td>3-33. The number of road and trail crossings on perennial streams was used as an indicator of potential effects to water quality and fish habitat. Alternative D proposes the lowest number of crossings on perennial streams. Bridges are identified as a possible measure to mitigate adverse effects from routes crossing perennial streams.</td>
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<td>346/9. Tied to streams, riparian habitats are the most species rich and important wildlife habitat type on the BHNF. Unfortunately, the majority of alternatives presented offer no real chance to improve this habitat type by removing or reducing the miles of roads impacting it. The miles of proposed open road in riparian habitat vary from 562 to 684 miles under all alternatives (mean 643 mi.). Removing Alternative D, which best minimizes this type of impact from the above analyses, reveals the paucity of choices to address this problem in the remaining alternatives. The mean number of miles of open road in riparian areas in the remaining alternatives is 663 miles. Essentially, there is no real difference between them. With regard to riparian habitats or areas, we encourage the BHNF to adopt a philosophy similar to that found in Alternative D.</td>
<td>2-38. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Alternative D proposes the smallest motorized travel system.</td>
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<td>346/10. The DEIS does not use relevant scientific research and findings to quantify potential impacts to wildlife. For example, elk (a demand species on the BHNF) have been widely studied in relation to the impacts roads and motor vehicles have on their biology. At a minimum, studies on the effects of various road densities and motor vehicle disturbance on elk should have been referenced. The effects of roads on elk have been documented for some time, including road maintenance levels and economics (Gardner 1971), reduction in elk habitat effectiveness (Lyon1979A), excessive creation of edge habitat (Ebert 1972), which attracts many wildlife species to roads and increases vulnerability to disturbance, poaching and disproportionate spatial harvesting (Sundstrom and Norberg 1972), and the need for screening cover or line-of-sight barriers adjacent to secondary and primitive roads (Lyon 1979B, USDA Forest Service 1975).</td>
<td>3-103. Thank you for your comments. The elk discussion was edited in the final EIS to include relevant and local studies on elk and effects of roads.</td>
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<td>346/11, 12, 13. The DEIS primarily uses disturbance as the measure to quantify impacts to wildlife. However, this effort would be strengthened by using recent, western and local studies that have quantified disturbance to elk and their habitat from roads and motor vehicles; and might be used as an index for other wildlife species. Research on elk has shown:</td>
<td>3-103. Thank you for your comments. The elk discussion was revised in the final EIS to include relevant and local studies on elk and effects of roads.</td>
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<td>• Elk movement and habitat use in the Black Hills is largely dictated by human activities, versus weather or habitat modifications, including motorized use of roads and trails (Millspaugh et al. 2000) and pulses of human intrusion are evident in the daily movements of elk (Rumble et al. 2005).</td>
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<td>• Not all roads disturb elk equally. Elk response to roads differs by season, time of day and road type (Millspaugh 1999). One behavior is consistently evident; elk change their normal movement patterns by waiting to become more active during periods when human use is lowest (Millspaugh et al. 2000). Further, roads create cover/forage edges, and elk will forage roadsides more at night making them more vulnerable to poaching and collisions with motor vehicles.</td>
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<td>• When human disturbances cause elk to use meadows less in the fall and winter, physiological stress effects (Millspaugh 1999) are compounded by a nutritional deficit, resulting in elk spending more time in habitats with less forage availability (Rumble et al. 2005). As such, elk must forage over 17 hours per day to met energetic demands. This often does not happen when elk are regularly displaced. Consequently, they are forced into a negative energy balance beginning in early fall (Rumble, Personal Communication).</td>
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<td>• Wyoming Game and Fish Department (WGFD) data indicates there has been a significant reduction in elk productivity over the past decade. The percentage of yearling cows in the harvest can be used to gauge productivity the preceding year. Since 1987 this figure has averaged 19% (std. dev. 7%), suggesting about 20 yearling bulls and 20 yearling cows are added per 100 adult cows to this population annually. Therefore, given an average of 20% yearling cows in the female segment of the harvest, and 15% mortality of elk calves after the hunting season and through the following summer, the data suggest an average preseason calf:cow ratio of 47:100, which is similar to observed values in SD and those few data collected in Wyoming. Of course, productivity can be significantly influenced by drought, demographics, and physiological energy balance, and it fluctuates annually. However, productivity appears to have declined since 2000. Productivity was significantly higher between 1987 and 1999 (absent 1990 data) when tooth age data yielded an average of 19.8% yearlings in the female harvest, versus an average of 13.4% since 2000,</td>
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<td>p=0.001 (see figure below). Because the bulk of tooth age data in Wyoming is returned from hunt areas 1 and 117, any ascribed decrease in productivity is more likely substantive south of I-90 only; and while the cause is unknown, increased disturbance from expanded OHV use over the past decade could be a contributing factor.</td>
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<td>• After elk forage becomes less than 50% digestible, elk are in nutritional deficit and additional energy expenditures are additive, meaning some elk may winter in poor condition due to constant movement to avoid roads and/or to find quality habitat (Rumble et al. In Press). On summer range, cows may enter spring with a nutritional deficit from the previous 7-9 months and there can be added stress from humans during lactation, despite better forage quality during summer. <em>See above for possible implications to productivity.</em></td>
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<td>• Bull and cow elk respond differently to roads and trails. In general, bull elk are more sensitive to roads and trails than cows. Secondary and tertiary roads displace elk in fall, which might be related to hunter activity along these roads (Millspaugh et al. 2000). Rumble et al. (2005) found that elk were always further from primitive roads than on average during the fall, and usually further from secondary and primary roads and in areas of high road densities. The effect of roads on elk decreases as distance from roads increase. However, in the Southern Black Hills, elk cannot move more than 150m from a primitive road without crossing another road. Road impacts result in larger home ranges, meaning elk need more area to fulfill habitat requirements, or elk may be displaced on to private property where they can cause damage to crops and improvements.</td>
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<td>• Local elk research by Rumble, et al. (2007) indicated that in addition to direct loss of habitat, roads also impose a known, objective zone of influence, i.e. disturbance on either side of a given road. This research appeared to be missing in the DEIS for elk. Other National Forests have used disturbances to elk by motorized vehicles and road densities as an indicator of possible effects to other species such as deer. We suggest the same be applied on the BHNF.</td>
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₁Omitting 1990 data reduces this average to 17% with a std.dev. 5%.
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<td>346/15. It is asserted several times in the DEIS (e.g. pages 60 and 64), “There is no data available to determine how many Black Hills hunters are motorized users, and it is possible that (focusing off road retrieval of game more heavily in some areas would create) the potential for an increase in hunting accidents.” This statement concerns us. Almost every hunter accessing the BHNF does so via some type of motor vehicle. Very few hunters walk, or ride bikes or horses on to the BHNF to hunt. Whether or not the BHNF allows off road travel to pick up harvested game will neither change the number of hunters driving to access the forest as hunting grounds, nor will it likely increase hunting accident rates – which are exceedingly low, as statistically hunting is one of the safest pursuits in which one may participate.</td>
<td>5-105. Pages 3 and 50 of the DEIS acknowledge that all visitors to the Black Hills National Forest utilize some form of motorized vehicle to access the woods, including hunters. The effects analysis for game retrieval in the recreation section was an analysis on motorized game retrieval. How many licensed hunters actually utilize a form of motorized vehicle to retrieve their down animal is uncertain due to lack of information. It is known that many hunters of the Black Hills have ATVs in their camps and utilize them to access the woods from their camps. It is reasonable, therefore, to assume that they may be using these vehicles to retrieve their down game. Reducing the area for motorized game retrieval under Alternatives B and C or eliminating motorized game retrieval under Alternatives D and E will impact those hunters that utilize motorized vehicles to retrieve down game. The FEIS will correct the statement to clarify this information.</td>
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<td>346/16. Under several of the proposed alternatives, some degree of off road travel is permitted for various types of harvested game retrieval (for elk, or deer and elk) and dispersed camping, in various areas. Under other alternatives these activities are prohibited. With respect to motorized retrieval of game, we [Wyoming Game and Fish Department] do not encourage or support this activity because it has the potential for pioneering new roads and resource damage. While we realize some hunters may not be physically able to remove whole, field dressed deer or elk from the kill site to a nearby road, most can quarter or debone meat from harvested game and pack it in several trips, or recruit help to move such to awaiting transportation on open roads.</td>
<td>5-112. Alternatives D and E do not allow cross-country motorized travel to retrieve harvested game. The alternatives, associated effects, and related comments will be considered in the final decision.</td>
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<td>346/17. The DEIS cites Wyoming Game and Fish Department (WGFD) personnel as being concerned with our ability to attain desired harvest rate if off road travel by motor vehicles is prohibited for game retrieval. During pre-scoping meetings between local WGFD personnel and the Bearlodge Ranger District, and in scoping comments”, our concerns relative to attaining adequate harvest rates stemmed from the proposed preponderance of closed roads on the Wyoming side of the BHNF rather than allowing a few hundred feet of off road travel to pick up harvested game. We do not see motorized retrieval of big game as a significant hindering block to garnering adequate harvest rates, if some areas of the BHNF in Wyoming have moderate or high open road</td>
<td>5-104. The FEIS sections on elk and deer were revised to read that game retrieval and/or road densities may affect harvest rates and patterns.</td>
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<td>We are concerned that the proposed changes would significantly reduce hunter access for much of the National Forest, in part by more tightly regulating the type of vehicle permitted on various roads. Regulated hunting is the primary management tool used by the State of Wyoming to affect animal population size. Without adequate vehicle access, hunter’s ability to legally take game will be reduced. By “adequate access” we mean providing hunters the ability to reasonably find, kill, and retrieve game from most of the forest. It is not reasonable to expect the majority of hunters to walk extended distances over rough terrain. The average hunter is over 45 years of age, and unfortunately many of them cannot physically handle hunting afoot over long distances in rugged county, or have physical handicaps that prevent them from hunting far from vehicles. There are hunters who can and do prefer to hunt far and wide afoot and having portions of the Forest set aside for this type of hunting is desirable.” – WGFD scoping comments, November 8, 2007.</td>
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<td>346/18. The limited amount of off road travel proposed under all alternatives for motorized retrieval of big game does not gain hunters much ground for removing carcasses, but simply adds layers of complexity to the regulations, which will confuse people. This is especially the case when restrictions on the number of vehicles or weapons transportation are added to requirements for retrieving game off road with a motor vehicle. By having areas of the BHNF dedicated to low, moderate, and high open road densities, hunters can select an area in which to hunt that will let them legally get a vehicle closer in proximity to downed game, or further away – if that is the hunting experience they seek. Overall, we [Wyoming Game and Fish Department] feel simply restricting this type of off road vehicle use, combined with varied open road densities, offers the best and simplest solution. Such action would also keep regulation similar to the nearby Thunder Basin National Grasslands. We strongly recommend against implementing any proposals for motorized retrieval of game only in certain areas of the BHNF, for only certain species, within certain distance limits, and subject to a host of other restrictions. The confusion and inadvertent law breaking this will create is not balanced by the small gain hunters would enjoy.</td>
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<td>346/19. On page 54 of the DEIS it is stated that hunters “drive or chase game for a better shot...” However, Wyoming law strictly prohibits pursuing game with any motor vehicle. While this illegal activity may occasionally occur, the wording suggests it is common and accepted, which it is not.</td>
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<td>5-112. Alternatives D and E do not allow cross-country motorized travel to retrieve harvested game. The alternatives, associated effects, and related comments will be considered in the final decision.</td>
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<td>5-99. The recreation analysis of the DEIS and FEIS did not intend to state that illegal pursuit of game by motorized means is common or accepted. The analysis merely identifies, whether legal or illegal, how motorized users, particularly cross-country travel, can impact the hunting experience of others.</td>
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<td>346/20. With regards to off road travel for dispersed camping, we [Wyoming Game and Fish Department] encourage the BHNFR to limit off road vehicle travel to 100 feet or less for this purpose forest-wide, except in designated “roadless” or environmentally sensitive areas where it should be prohibited entirely. This course of action would have minimal impact on hunters, provide more forest-wide consistency, and minimize the potential for resource damage.</td>
<td>5-117. The DEIS and FEIS provide opportunities for dispersed camping to varying degrees in Alternatives A, B, and C. Effects of these alternatives on natural resources are disclosed in Chapter 3. Forest Plan guideline discourages dispersed recreation within 100 feet of streams and lakes. This guideline is incorporated into all the Alternatives.</td>
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<td>346/21. License sales and harvest statistics presented for elk and deer on page 48 of the DEIS are incorrect, and misapplied. Wyoming Game and Fish Department (WGFD) neither issues licenses valid only on the BHNFR, nor determines harvest levels for any animal specific to the BHNFR. Rather, license and harvest total are managed on a hunt area basis. Portions of the BHNFR in Wyoming overlap elk hunt areas 1, 116 and 117. Portions of deer hunt areas 2, 4, 6 and 9 also fall within the boundary of the BHNFR in Wyoming. The figures in the DEIS mistakenly represent license sales and harvest as particular to the BHNFR. This is not the case. The data presented also neglect elk harvest from hunt area 117, and deer harvest from portions of deer areas 6 and 9. In addition, with respect to deer hunting, only General deer licenses have been valid on the BHNFR in Wyoming since the early 1990s, with all doe/fawn licenses and take being restricted to private land only. These same general licenses are valid statewide in areas open to General license hunting for residents, and in hunt areas 1 through 6 for non-residents. Thus, we cannot determine how the license sale or harvest figures were calculated. It is also unclear why there is a row of data for “Deer” and one for “Mule Deer,” rather than white-tailed deer and mule deer.</td>
<td>5-106. The analysis of the DEIS in the recreation section, page 48, does lead the reader to believe that the entire hunt areas for either State only incorporates National Forest lands and that the harvested animals are only occurring on National Forest lands. However, there are private and other public lands within these hunt areas. The FEIS clarifies this information.</td>
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<td>346/22. We [Wyoming Game and Fish Department] are concerned that specific dates for roads proposed to be open seasonally are lacking. We recommend roads designated “open seasonally” allow motor vehicle travel between April 1st and December 15th. These dates would include the earliest opening date for spring turkey hunting and latest season date for elk hunting on the BHNFR. However, we fully expect weather conditions to prevent vehicle travel on some of these roads at times, and do not encourage snow removal or other activities to assure travel between these dates. Likewise, restricting use of wet roads to prevent severe damage and erosion should be implemented via proper signage. Having a variety of open and closed dates greatly adds to regulatory complexity and reduces compliance.</td>
<td>4-89. Seasonal closure dates will be defined in a route specific table on the motorized vehicle use map.</td>
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**Letter BH346 - Wyoming Game and Fish Department, John Emmerich, Deputy Director**

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<td>346/23. While some individuals own off-highway vehicles (OHV), there are many who cannot afford them, or choose not to hunt or recreate with them. Restricting portions of the forest to this type of travel only, as is proposed for several areas in various alternatives, discriminates against persons of limited income, or of a certain ethical position.</td>
<td>6-15. While the focus of this proposal is to designate routes and areas for motorized travel, the Forest is implementing broad Forest Plan direction to provide for a mix of recreation experiences, including nonmotorized experiences. The alternatives in this travel management EIS considered a range of motorized road, trail, and trailhead opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access within the Black Hills National Forest are in Alternatives A, B, and C. Lower levels of motorized use would be offered in Alternatives D and E.</td>
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<td>346/24. Based on our [Wyoming Game and Fish Department] observations, we are very concerned about increasing the amount of area open to only OHV use, as this will result in increased pioneering of “4-wheeler roads” and resource damage. We believe the best balance is to provide a few areas dedicated to this mode of travel similar to Alternative E.</td>
<td>5-17. Alternative D provides the greatest limitation on the number of OHV-only areas and the amount of motorized access to the Forest. The natural resource effects and effects on recreation are disclosed in Chapter 3.</td>
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<td>346/25. Alternative B represents a situation whereby much more of the central Bearlodge will be accessible only via OHV. This restricts access to some State lands, by requiring this same mode of travel.</td>
<td>4-42. The Forest Service recognizes the need for access to public lands and lands of other ownerships. All current legal access rights will be maintained and the Forest will work with all those who are entitled to legal access.</td>
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<td>346/26. Alternative B represents a situation whereby much more of the central Bearlodge will be accessible only via OHV. It is well documented from research done at the Starkey Experimental Forest and Range, and in other areas, that OHV operation disturbs game animals at greater distances than traditional motor vehicles or nonmotorized travel.</td>
<td>4-241. The DEIS and FEIS considered a range of alternatives for motorized opportunities. While Alternative C offered the greatest opportunity for motorized access on the Bearlodge District, Alternative D offers the least amount of motorized access. Each alternative was analyzed in detail and effects on natural resources including big game habitat were documented in Chapter 3.</td>
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<td>346/27. Alternative B represents a situation whereby much more of the central Bearlodge will be accessible only via OHV. Such designation will assuredly result in increased creation of illegal roads and resource damage.</td>
<td>4-241. The DEIS and FEIS considered a range of alternatives for motorized opportunities. While Alternative C offered the greatest opportunity for motorized access on the Bearlodge District, Alternative D offers the least amount of motorized access. Each alternative was analyzed in detail and effects on natural resources, recreation opportunities and management capabilities were documented in Chapter 3.</td>
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<td>346/28. We [Wyoming Game and Fish Department] generally support the proposed travel plan under all alternatives on the North Bearlodge, i.e., north of Highway 24 along USFS Rd #830. In all alternatives, this area is not proposed to significantly change compared to the current situation, which provides a large (approximately 25 mi²) area for walk-in hunting and other forms of recreation. This area offers some of the best hunting on the BHNF and is heavily used. Most of the current road closures here are effective and well</td>
<td>Route Specific. The Blue Ridge road (NFS road 830.4) was closed due to damage caused by motorized access on sensitive resources. This route was not considered for motorized access under any Alternative of the DEIS and FEIS to protect these resources.</td>
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Letter BH346 - Wyoming Game and Fish Department, John Emmerich, Deputy Director

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<td>followed by the public. In the past, USFS Rd #830.4 was open all the way to its terminus at the extreme northeast end of the forest boundary (Section 6 of Township 55, Range 62). In all the proposed alternatives it is indicated this road would be closed approximately where it runs into Section 11, Township 55, Range 63. We suggest this road be opened to the forest boundary, as was previously the case. This allows better access for hunters, and does not give people coming on to the BHNF from adjoining private land an unfair access advantage.</td>
<td>4-246. The DEIS and FEIS considered a range of alternatives for motorized game retrieval opportunities. Under all alternatives, the currently established walk-in only areas of Wood Canyon, Cook Lake, Rednose, and Sundance Burn have been retained as nonmotorized areas. Each alternative was analyzed in detail and effects on natural resources documented in Chapter 3.</td>
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<td>346/29. In the central portion of the Bearlodge (between Highway 24 and Interstate 90), we [Wyoming Game and Fish Department] fully support retaining walk-in access only to the Wood Canyon, Cook Lake, Rednose, and Sundance areas currently closed to motorized wheeled vehicles – except on existing open roads. This keeps another approximately 15 square miles designated for walk-in access.</td>
<td>4-243. The DEIS and FEIS considered a range of alternatives for motorized opportunities. Alternative C offered the greatest opportunity for motorized access on the Bearlodge District. Each alternative was analyzed in detail and effects on natural resources documented in Chapter 3.</td>
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<td>346/30. We [Wyoming Game and Fish Department] would encourage opening up more roads in the central Bearlodge to motorized travel, as it seems much of the Bearlodge Ranger District has proposed open road densities much lower than the remainder of the BHNF. Here, something along the lines of Alternative C, but with the majority of roads open to all legal vehicles, seems to present the best course of action. This would then create low, moderate, and high open road densities in this portion of the BHNF.</td>
<td>4-248. The DEIS and FEIS considered a range of alternatives for motorized opportunities. No motorized opportunities were considered under any alternative for the Scott-Hardy Springs area. Each alternative was analyzed in detail and effects on natural resources documented in Chapter 3.</td>
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<td>346/31. In the southern portion of the Bearlodge Ranger District, south of Interstate 90, we strongly support and commend the USFS for closing the Scott-Hardy Spring area to all motor vehicles under all alternatives. This is because this area provides some of the best big game and wild turkey habitat on the BHNF. Additionally the area abuts private land and has the ability to hold game animals on the BHNF if they are not heavily disturbed in the winter, preventing damage to private property.</td>
<td>4-247. The DEIS and FEIS considered a range of alternatives for motorized game retrieval opportunities. Under all Alternatives, the currently established walk-in only areas of Dugout, North Sand Creek, Hamilton, Sand Creek Roadless, and Upper Sand Creek have been retained as nonmotorized areas. Each alternative was analyzed in detail and effects on natural resources documented in Chapter 3.</td>
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<td>346/32. We [Wyoming Game and Fish Department] encourage the continuation of walk-in only access to the Dugout, North Sand Creek, Hamilton, Sand Creek Roadless, and upper Sand Creek Botanical Areas. These areas, taken together with the Scott-Hardy [Spring Area] and recommendations made concerning the BHNF north of I-90, would bring the total area on the Bearlodge Ranger District allocated to walk-in only access to about 50 mi². This is more than a</td>
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<td>reasonable amount, and should allow for increased open road densities in other areas of the District.</td>
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<td><strong>346/33.</strong> We [Wyoming Game and Fish Department] adamantly suggest the BHNF not implement the proposed OHV route in Dugout Gulch found in Alternatives B and C. Such action would add noticeably to disturbance of wildlife in this currently protected area, and invite pioneering of new roads and resource damage. Granting a quick and easy east-west connector route to OHV users at the expense of losing an area of crucial deer winter range currently closed to motor vehicles is not worth the trade-off. This is one case in which the needs of wildlife should outweigh the desires of recreationists.</td>
<td><strong>4-177.</strong> The DEIS and FEIS considered a range of alternatives for Dugout Gulch. Alternatives A, D, and E do not propose any public motorized use within the area.</td>
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<td><strong>346/34.</strong> We [Wyoming Game and Fish Department] support an area in the southern Bearlodge designated for OHV travel only (that portion of the BHNF in Sections 14, 21, 22, 23, 25 and 26 of Township 50, Range 61). However, overall motor vehicle travel is unreasonably restricted in all but Alternative C in those portions of the southern Bearlodge not discussed above. We are very concerned the majority of the Alternatives unnecessarily decrease hunter access in this area. The southern portion of the Bearlodge Ranger District currently has a large number of closed roads. However, many of these roads, while closed on paper, are neither effectively gated nor signed, and are frequently used by the public. We recommend the roads currently accessible and regularly driven, regardless of their current closure status be opened, while current, effective closures are retained. This would legalize and allow the level and type of vehicle access presently seen. Most of the recreational use in this area is by hunters, and they are actively pursuing game during the fall when disturbance probably has less impact to most wildlife species, and some disturbance of big game is expected.</td>
<td><strong>4-245.</strong> The DEIS and FEIS considered a range of alternatives for motorized opportunities. Each alternative was analyzed in detail and effects on natural resources documented in Chapter 3.</td>
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<td><strong>346/35.</strong> To best manage vehicle use on the BHNF and encourage widespread compliance, we strongly encourage the BHNF to ensure adopted regulations and maps are simple, straightforward, and easy to understand. Therefore, we suggest minimizing to the greatest extent possible the number of off-road areas; roads and trails open to different, specific vehicles; and/or seasons and types of use.</td>
<td><strong>4-340.</strong> It is anticipated that the Black Hills National Forest will be displayed on three motor vehicle use maps to provide clearly defined routes. A single map showing the whole Forest view would also be provided.</td>
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<td><strong>346/36.</strong> Literature Cited.</td>
<td>Attachment. Thank you for this information.</td>
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### Letter BH454 - Wyoming Honor Conservation Camp, Dennis Niemcyk, Trades Specialist

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<td>454/1. Road closure in Thomson Canyon. Road #816, Section #33: This is a good gravel road in the bottom of Thomson Canyon that we have been using for 50 years. The Canyon is landlocked and recently the landowner on the west side had denied access. BHNF seems to have no interest in gaining access for the public. I am going through the State to try and gain access by prescriptive right. There is still access from the east through BLM land. So I don’t think this road should be closed. The road is in the bottom of a steep canyon, therefore there is little resource damage that could be done., It this road is closed the whole canyon will become the “private” backyard of the west landowner, as he will have the right to control access to this land. He already claims it as his and this will make it impossible.</td>
<td>Route Specific. Thompson Canyon access. Although NFS road 816 provides access into Thompson Canyon, it must cross other ownership, and therefore cannot be designated as a trail. The Forest Service does not have the authority to designate a trail that crosses or enters other private ownership.</td>
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<td>454/2. Closing of road #726 in section #8. This is a nice road that we have been using for years. It is mostly graveled and goes into a beautiful valley. I do not see any reason to close this road to motor vehicles.</td>
<td>Route Specific. Portions of this road are designated as a trail open to vehicles 65 inches or less in Alternatives B and C on the South Dakota side. On the Wyoming side, Stots Canyon lies on private land.</td>
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<td>454/3. Closing of road 818.1A, 818.1B, 818.1F, and 818.1R on Elk Mountain, Section #10, and the main road to Elk Mountain Lookout Tower. These roads are well graveled roads and provide good access to an area that is great for hunting. I have been using them for years and do not see any reason to deny motor vehicle access to this area.</td>
<td>Route Specific. Portions of this road cross onto private land. The Forest Service does not have the authority to designate any travel routes onto or through private land.</td>
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<td>454/4. Closing of road #189.4B in section #1. This is a major graveled road that provides access to the old Crooks Lookout Tower. This road is in between 2 roads that are open and it provides a more direct access to the area. I do not see any reason to close this road.</td>
<td>Route Specific. This road was closed in order to protect wildlife security and habitat needs in this area. This decision was made in a previous NEPA analysis and decision.</td>
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<td>454/5. Closing of road #117.5C in section #32. This is a good gravel road that is on flat ground and in good condition. I do not understand any reason for closing this road.</td>
<td>Route Specific. This road is designated as open to highway-legal vehicles in all alternatives.</td>
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### Letter BH471 - Custer Conservation District, Jim Hughes, Chairman

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<td>471/1. We [Custer Conservation District] noted and support that the DEIS ensures administrative, contractor, and permittee access to Nation Forest System land to continue land stewardship activities like forest thinning, timber</td>
<td>4-80. This decision will not impact any current or existing legal rights of access to National Forest System lands.</td>
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**Letter BH471 - Custer Conservation District, Jim Hughes, Chairman**

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<td>Sales, weed treatment, rangeland management and grazing, and wildlife habitat improvement among others (DEIS page 19). We note that some routes will be closed under some alternatives. Be sure to retain any existing ROWs for those routes to ensure long-term access for administrative, contractor or permittee access for land management projects.</td>
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<td>471/2. We [Custer Conservation District] suggest the Forest Service include in the FEIS a requirement that all off-highway vehicles have an approved spark arresting muffler to prevent any chance of the OHVs starting a fire. That may already be a Forest Service requirement, but should be included in your final decision. We suggest adding to page 22 as a “feature common to all alternatives” to ensure its inclusion in closure orders and proper enforcement.</td>
<td>4-289. Approved spark arrestors are already required by Forest Service regulation.</td>
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<td>471/3. We [Custer Conservation District] do not support Alternative A – No Action. The rapidly increasing level of cross country travel is affecting natural resources on the Black Hills National Forest, e.g. increasing weed infestations, soil and water damage, and potential user conflicts.</td>
<td>2-25. We agree. The magnitude and intensity of motor vehicle use have increased to the point that the purpose and need cannot be met while still allowing the unrestricted cross-country travel that currently exists, as reflected in the no action alternative - Alternative A. The Forest's inability to actively manage the existing transportation system and enforce current travel rules have likely contributed to increased road and area use violations, user conflicts, and resource damage. A designated and actively managed system of roads, trails, and areas for motor vehicle use as reflected in the action alternatives is needed.</td>
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<td>471/4. We [Custer Conservation District] generally support the least miles of road and trail and cross-country travel (Alternative D) because of the direct link to soil and water erosion affecting downstream water quality, and weed infestation. However, we recognize the needs of varied users, and that a mix of attributes from each alternative may be appropriate for your final decision.</td>
<td>2-38. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing effects related to damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Alternative D proposes the smallest motorized travel system.</td>
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<td>471/5. Motorized game retrieval and dispersed camping is authorized in several alternatives. Such use could lead to increased weed infestations and resource problems. However, given the historic use some degree of limited motorized use is acceptable. We [Custer Conservation District] believe that big game (elk only) retrieval within 300 feet and dispersed camping within 100 feet of designated roads (179,000 acres anticipated) under Alternative B would seem reasonable. Under Alternative C, elk and deer retrieval within large areas and camping within 300’ of designated routes is more than is needed to provide that experience; the 473,500 acres is additional land subject to weed infestation and soil/water erosion.</td>
<td>5-87. The DEIS and FEIS alternatives considered a range of motorized opportunities for game retrieval and dispersed camping. Alternatives D and E do not provide motorized access for dispersed camping. Alternatives B and C provide varying degrees of motorized game retrieval. The natural resource effects analysis for these alternatives are in Chapter 3.</td>
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## Letter BH471 - Custer Conservation District, Jim Hughes, Chairman

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<td>471/6. The design criteria for Hydrology/Fisheries and Range and Weeds (pages 308-311) seem appropriate and we support them.</td>
<td>3-17. Thank you for your comment.</td>
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<td>471/7. We [Custer Conservation District] are concerned that inadequate funding would limit Forest Service ability to manage the system. We support some sort of reasoned user fee system with collected funds used specifically for trail system construction, rehabilitation, monitoring, maintenance, user education and law enforcement.</td>
<td>4-294. As authorized by the Recreation Enhancement Act of 2005, the Black Hills National Forest and the Black Hills National Forest Advisory Board (NFAB), acting as the Recreation Resource Advisory Council, established Special Recreation Permit Fees. These fees are necessary to develop, manage, and sustain any motorized trail system in a way that is equitable to the public, as well as socially, environmentally and economically sustainable. The Special Recreation Permit Fees would be initiated in 2010, after completion of the Travel Management Plan EIS and upon publication of the motor vehicle use map. This user-supported revenue stream would likely be supplemented from other sources such as grants and volunteer resources.</td>
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<td>471/8. The Forest Service needs to remain highly aware of the expected increase in motorized travel, no matter how it is directed. The selected plan must strongly consider conflicts with private land management and other forest users.</td>
<td>5-189. The DEIS disclosed the increase in sales of OHVs nationwide and the estimated number of motorized visitors to the Forest, on pages 50-51 (now p. 52 of the FEIS). Chapter 3 discloses the effects of the alternatives on natural resources and considers factors affecting adjacent landowners and other Forest users.</td>
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## Letter BH472 - Lawrence County Commissioners, Robert E. Ewing, Chair

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<td>472/1. U.S. Forest Service projects are very important to Lawrence County, our communities, businesses and our residents. Over half of the land area of Lawrence County is National Forest lands and many roads located in the Forest are county roads or Forest Service roads that we maintain. We [Lawrence County Commissioners] and our staff, have reviewed the DEIS, maps, and your letter outlining some of the jurisdictional issues contemplated when designating routes to be used in the motorized travel management plan. As a general statement, we recognize that all publicly dedicated roads, county roads included, are open to any licensed vehicle subject to South Dakota statutes. The Lawrence County commissioners have been, and will continue to be, very active participants in Forest Service land management decisions. With the increasing numbers of participants in motorized recreation in the Black Hills National Forest, we know how important it is that all government agencies work together to promote access and trails for motorized recreation.</td>
<td>1-62. The Forest Supervisor met with representatives from counties containing National Forest System lands managed by the Black Hills National Forest at the scoping stage of the project. Copies of the DEIS were mailed to county commissioners for the counties of Crook, Weston and Campbell counties in Wyoming; and Lawrence, Meade, Pennington, Custer and Fall River counties in South Dakota. As the comment period ended, the Forest Supervisor contacted counties, cities, and towns in the Black Hills by letter to request information on their plans to allow access from the Forest into their jurisdictions. The Forest Supervisor allowed another 30 days for these comments. The Forest Service will consider comments received from these entities, and they will be considered in the decision.</td>
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<td>472/2. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County Commissioners] support using U07031 to connect NFS road 567.1 and NFS road 172.4 to Galena. We support using U070032 to connect NFS road 170.4 to Galena. Utilizing previously traveled trails in the Forest makes more sense than trying to gain access across private property. We also strongly support using connector routes through BLM lands to connect to the Deadwood/Lead areas. Those routes will get ATV traffic off paved highways, such as SD Hwy 14A.</td>
<td>Route Specific. U07031, U070032 are currently existing roads over which the Forest Service has no jurisdiction. The Forest Service would continue to work with other local governments to provide access into surrounding communities.</td>
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<td>472/3. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County commissioners] disagree with the comment that NFS road 535.1 is not under the jurisdiction of the Forest Service. We believe that road is under your jurisdiction because of your intention to close it last year. That road is used as the emergency access connecting the Two Bit Road with the Upper Two Bit Road (which is ultimately a connector of SD Hwy 385 and SD Hwy 14A). We requested, and again request, that you leave that road open for emergency access in case of fire or other catastrophic event. We aren’t asking for any improvements or designation in the trail system, just left open for emergency purposes.</td>
<td>Route Specific. The Forest Service portion of NFS road 535.1 was analyzed as a road open to highway-legal vehicles in Alternatives B, D, and E and as road open to all in Alternative C. The Forest Service would continue to work with other local governments to provide access into the surrounding communities. Any decision about routes selected will be documented in the record of decision.</td>
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<td>472/4. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County Commissioners] have no problem using that portion of the Yellow Creek Road under county jurisdiction as this could be a connector to Lead. Permission to cross BLM land may also be needed.</td>
<td>Route Specific. The Forest Service would continue to work with other agencies and local governments to provide access to surrounding communities including the connector into Yellow Creek Road.</td>
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<td>472/5. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County Commissioners] support the use of NHY7 (snowmobile trail) to make the connection to the Steel Wheel and the Hwy 385 corridor.</td>
<td>Route Specific. The route from Steele Wheel to the Highway 385 corridor was analyzed in various portions from road open to all to trail open to all to trail less than 50 inches. The Forest Service would continue to work with other local governments to provide access into the surrounding communities.</td>
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<td>472/6. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County Commissioners] have no problem using the portion of the road north out of Deadwood Denver Street that is under county jurisdiction. This would have to be coordinated with the BLM also.</td>
<td>Route Specific. NFS road 133.1 to Denver Street was analyzed in alternatives as being under other jurisdiction. The Forest Service will continue to work with other local governments to provide access to the Mt. Roosevelt area from Deadwood.</td>
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<td>472/7. Deadwood to Galena to Camp 5 to Boulder Park Area. We [Lawrence County Commissioners] recognize this area as a popular recreation area. We [Lawrence County Commissioners] strongly do not want Maitland Road out of Central City used in the trail system. This road has too much traffic already and we don’t see the benefit of OHV traffic directed that way when there aren’t many trails to access.</td>
<td>Route Specific. Maitland road was analyzed as other jurisdiction.</td>
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<td>472/8. Sturgis Area (portion located in Lawrence County). We [Lawrence County Commissioners] agree with both of your comments about Vanocker Canyon/Hwy 14A and the Galena Road. We urge you to find an alternate route in Vanocker Canyon for the OHV traffic.</td>
<td>Route Specific. Vanocker Canyon and Galena Road were analyzed as other jurisdiction.</td>
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<td>472/9. Brownsville. We [Lawrence County Commissioners] agree that SD Hwy 385 ditches are used by businesses along the highway to gain access to the forest. We also recognize these businesses along this highway are heavily reliant on OHV business. As there are both resource issues and safety issues in the ditch, we urge coordination with the State in alleviating those risks.</td>
<td>Route Specific. The Forest Service will continue to work with other local governments to provide access to these locations as appropriate.</td>
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<td>472/10. Brownsville. We [Lawrence County Commissioners] advise no OHV travel designation on the Nemo Road. This road is a paved forest highway with county maintenance and the traffic already is heavy.</td>
<td>Route Specific. Nemo Road was analyzed as other jurisdiction.</td>
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<td>472/11. Brownsville. We [Lawrence County Commissioners] could support a crossing on County Road 44 (Elk Creek) to access the Galena area.</td>
<td>Route Specific. The Forest Service would continue to work with other local governments to provide access into the surrounding communities as appropriate.</td>
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<td>472/12. Brownsville. We [Lawrence County Commissioners] do not support the use of the Englewood Road as an access from Brownsville to Englewood area as we do not see any connecting trails.</td>
<td>Route Specific. Englewood road was analyzed as other jurisdiction.</td>
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<td>472/13. Brownsville. We [Lawrence County Commissioners] could support use of the Custer Peak Road as an access to Custer Peak area and Minnesota Ridge area.</td>
<td>Route Specific. The Custer Peak road was analyzed as other jurisdiction and the connection roads (NFS road 516) to Custer Peak were analyzed in Alternative C as a road open to all and Alternatives B, D and E as a road open to highway legal. The Forest Service will continue to work with other local governments to provide access into the surrounding communities.</td>
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<td>472/14. Brownsville. We [Lawrence County Commissioners] do not support any use of the Custer Crossing Road as this is the main cut-across road from SD Hwy 385 to the Rochford Road. This road is heavily traveled already.</td>
<td>Route Specific. The Custer Crossing road was analyzed in all alternatives as other jurisdiction.</td>
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<td>472/15. Brownsville. We [Lawrence County Commissioners] do not support using the Rochford Road as this is a forest highway with county maintenance and a heavily traveled road already.</td>
<td>Route Specific. The Rochford Road was analyzed in all alternatives as other jurisdiction.</td>
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### Letter BH472 - Lawrence County Commissioners, Robert E. Ewing, Chair

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<td>472/16. Rochford (portion located in Lawrence County). We [Lawrence County Commissioners] support usage of the Merritt Estes Road to gain access to the Centennial Trail only. We realize there are parking issues at the Pilot Knob parking area and overflow parking is at the Sugar Shack. We urge you to find an alternate access to continue to Nemo. We could support South Boxelder Forks road usage to connect Nemo to the Centennial Trail and the Nemo area.</td>
<td>Route Specific. Merritt Estes road was analyzed as other jurisdiction. The Centennial trail was analyzed as a trail less than 50 inches in Alternatives B, C, and E. It was removed from Alternative D. The portion of the South Boxelder road that connects to the Centennial trail was analyzed as other jurisdiction. The Forest Service will continue to work with other local governments to provide access into the surrounding communities.</td>
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<td>472/17. Spearfish. We [Lawrence County Commissioners] do not support usage of NFS road 134 Tinton Road (the portion under county maintenance) as an access to Spearfish as this is a residential area and would enter into Spearfish residential areas.</td>
<td>Route Specific. NFS road 134 Tinton Road was analyzed in all alternatives as open to highway legal vehicles only.</td>
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<td>472/18. Spearfish. We [Lawrence County Commissioners] urge coordination with South Dakota Department of Game, Fish, and Parks through lands owned by them for access from Spearfish to the Spearfish Peak area.</td>
<td>5-183. The Forest Service coordinated throughout the development of this project with State and local officials to provide the best information for motorized access to the Forest.</td>
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<td>472/19. Spearfish. We [Lawrence County Commissioners] urge you to designate the Big Hill Trailhead as a motorized trailhead. We realize Big Hill trail is a nonmotorized trail, but there are parking issues for motorized vehicles who wish to travel to the Iron Creek/Higgins Gulch areas.</td>
<td>Route Specific. Big Hill trailhead was analyzed in all Alternatives as an existing facility. Any decision about trailheads selections will be documented in the record of decision.</td>
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### Letter BH473 - Environmental Protection Agency – Region 8; Larry Svoboda, Director, NEPA Program. Ecosystems Protection and Remediation; Jody Ostendorf, NEPA Lead Reviewer

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<td>473/1. EPA is primarily concerned about impacts to water quality, aquatic resources and wildlife habitat from new road construction. We are concerned that the transportation system is being expanded when currently the existing system and non-system roads are damaging water, soil and habitat resources, as documented in the DEIS.</td>
<td>4-5. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing effects related to damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Alternative D proposes the smallest motorized travel system. Little new road construction is proposed under any of the action alternatives. The potential increase in the total miles of Forest Service roads and trails as described in Chapter 2 of the EIS is primarily a reflection of the miles of existing, unauthorized routes proposed for designation on the motor vehicle use map. It is expected that designation of any of these existing, unauthorized routes would lead to increased monitoring and maintenance to detect and mitigate any resource damage that may occur.</td>
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<td>473/2. The DEIS does not describe how the proposed closure of unclassified roads will be implemented and enforced while residential development adjacent to the national forest and off-highway vehicle use is increasing.</td>
<td>4-55. Agree. This proposal does not include closing or decommissioning of routes not designated for travel. However, the reduction of use on routes not designated was considered as a reasonably foreseeable action in the cumulative effects analysis. The analysis assumes that the public would largely comply with the motor vehicle use map, but recognizes that law enforcement would have a role to play.</td>
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<td>473/3. Display of the Motor Vehicle Use Map (MVUM) would make it easier for recreationists to comply with the system, and for the Agency to enforce it.</td>
<td>4-340. It is anticipated that the Black Hills National Forest would be displayed on three motor vehicle use maps for the Forest to provide clearly defined routes. A single whole Forest view map would also be provided.</td>
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<td>473/4. EPA believes that Alternative D is the environmentally preferable alternative. Alternative D would provide the smallest motorized travel system and would emphasize user safety. It would provide 580 miles of mixed-use roads and 320 miles of motorized trails, and prohibit motorized cross-country use for any reason, with exceptions only for emergency and administrative access.</td>
<td>2-38. The Forest Service acknowledges that EPA identified Alternative D as the environmentally preferable alternative. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing effects related to damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Alternative D does propose the smallest motorized travel system.</td>
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<td>473/5. EPA believes that Alternative D is the environmentally preferable alternative. This alternative seems most consistent with the National Forest Management Act requirement that the Forest Service manage forest in an ecologically sustainable manner that “protects soil and water resources, streams, stream banks, shorelines, wetlands, fish, wildlife and the diversity of plant and animal communities.” 36 CFR 219.27(a)(4)(1982).</td>
<td>2-38. The Forest Service acknowledges that EPA identified Alternative D as the environmentally preferable alternative and believes it is most consistent with NFMA. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing effects related to damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. However, Alternative D proposes the smallest motorized travel system.</td>
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<td>473/6. EPA believes that Alternative D is the environmentally preferable alternative. It is most consistent with Executive Order 11644 (as amended by EO 11989) that states that designation decisions shall locate areas and trails open to ORV use so as to “minimize harassment of wildlife” and to “be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands.”</td>
<td>2-38. The Forest Service acknowledges that EPA identified Alternative D as the environmentally preferable alternative and believes it is most consistent with EO 11644 as amended. Alternative D proposes the smallest motorized travel system. The Department of Agriculture produced the 2005 Travel Management Rule to be consistent with Executive Orders 11644 and 11989, and to serve as the means to implement the policy direction contained in those Executive Orders. The 2005 Travel Management Rule places more emphasis on considering the effects of motorized trails and areas, than of roads. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included</td>
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<td>473/7. The DEIS states that the Motor Vehicle Use Map (MVUM) for Alternative D would “make user compliance and law enforcement easier. Resource damage, conflicts with nonmotorized recreationists and system maintenance costs would be reduced, and motorized users would find a planned travel system designed to meet their needs” (page 28). In contrast, the DEIS does not demonstrate how the proposed action will protect resources and be ecologically sustainable. While the DEIS provides information on stream crossing and fisheries impacts, the Forest Service does not appear to use that analysis to support decision making that is consistent with the Executive Orders (11644 and 11989).</td>
<td>3-91. Consistent with the 2005 Travel Management Rule, development of all the action alternatives specifically included considering effects of trails with the objective of minimizing effects related to damage to soil, watershed, vegetation, other forest resources, harassment of wildlife, disruption of wildlife habitats, and conflicts between motorized trail use and existing uses. Design criteria listed in Appendix B would be part of the alternatives. The effects of implementation of the alternatives on natural, social and cultural resources are disclosed in Chapter 3 of the EIS.</td>
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<td>473/8. EPA evaluates the potential effects of proposed actions and the adequacy of the information in the DEIS. We rate this DEIS an “EC-2” (environmental concerns, insufficient information) under EPA’s ratings criteria. The EC rating indicates that the reviewer has identified environmental impacts that should be avoided in order to adequately protect the environment. These are described in the attached comments. We also recommend additional analysis and information to fully assess and mitigate all potential impacts of the management actions.</td>
<td>2-61. Thank you for your comment. EPAs comments were valuable to the Forest Service and will be considered in developing the decision. Designation decisions will be made in accordance with the criteria in § 212.55 of the Travel Management Rule.</td>
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<td>473/9. [From Attachment 1] EPA is concerned that the proposed action could exacerbate existing water quality impairments on several streams on the BHNF. Alternative B would have 547 road/trail crossings on perennial streams, 20 miles of road/trail within 30 feet of perennial streams and 125 miles of road/trail within 119 feet of perennial streams forest wide (Table 29, page 123). There are several streams within the BHNF that are listed as impaired and not supporting designated beneficial uses due to temperature (SD DENR 2008, DEIS page 118). They include Battle Creek, Bear Butte Creek, Elk Creek, Grizzly Bear Gulch, North Fork Rapid Creek, Rapid Creek, Spring Creek, Victoria Creek and West Strawberry Creek. French Creek is also listed as impaired due to dissolved oxygen from natural and drought-related sources.</td>
<td>3-37. The Forest Service has developed a protocol to inventory and assess road-stream crossings. The criteria to assess and prioritize the remediation of stream crossings is a management decision independent of the inventory and assessment protocol. Routes prioritized for remediation on page 308 of the DEIS (now Table B-3, p. 353) were identified based on them being non-system routes that may lack proper engineering design and therefore had the greatest potential for an additive incremental impact compared to the baseline condition. Mitigating stream crossings on streams that are temperature impaired due to natural causes (page 141 of this document) may provide some positive benefits, but is not likely to address the actual source of impairment (natural causes). A table has been added to the Hydrology section in Chapter 3 of the FEIS detailing the number of...</td>
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<td>Dissolved oxygen and temperature are directly related. The DEIS states that summer water temperature is increased, and winter water temperature is decreased, in part, because of road crossings that remove riparian vegetation, unmitigated low-water crossings, and from off-road vehicles crossing streams. It is not clear from the DEIS how many of the 547 road/trail crossings that would be permitted under Alternative B would cross those impaired water bodies. EPA supports the need for a stream-crossing inventory protocol for the transportation system that gives priority to the impaired streams, and those with the most crossings.</td>
<td>crossings of impaired streams by alternative. Alternative B would reduce the current 131 road and trail crossings of these streams to 30.</td>
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<td>473/10. [From Attachment 1] EPA believes the travel management plan should not permit any Off-Highway Vehicle (OHV) use within 30 feet of an impaired water body. If proposed trails go up and down drainages or cross impaired water bodies in the proposed action, EPA recommends that those trails be immediately closed. EPA is concerned that allowing OHVs to continue to impact those waters will lead to further degradation of water quality.</td>
<td>3-76. Effects to riparian areas and wetlands were analyzed in the hydrology, botany and wildlife sections of the DEIS. As outlined in the DEIS and the FEIS, no streams are listed as impaired due to sediment. Design criteria would minimize impacts to the stream when trails are in proximity to the stream.</td>
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<td>473/11. [From Attachment 1] In Appendix B: Design Criteria Common to All Alternatives, the Forest Service proposes armoring or remediating a number of perennial stream crossings which are prioritized based on level of use, degree of impact and aquatic resource value (DEIS page 308). EPA notes that the list does not include all of the impaired streams listed above (Battle Creek, Bear Butte Creek, Elk Creek, Grizzly Bear Gulch, North Fork Rapid Creek, Rapid Creek, Spring Creek, Victoria Creek and West Strawberry Creek). Please clarify whether that means the streams not included in the table have no stream crossings, or whether impairment is not considered part of the prioritization criteria. EPA recommends that all crossings of impaired water bodies should have the highest priority for armoring or remediation, and those crossings should be closed.</td>
<td>3-32. The majority of streams listed as impaired due to water temperature were due to natural sources. Prioritizing stream crossings on these impaired waters would have some beneficial effect, but would not be likely to address the true source of impairment. Prioritization based on other criteria may be more appropriate. The prioritization factors for stream crossing remediation have been clarified in the FEIS, Appendix B, described as follows. Only perennial stream crossings on user-created routes or proposed new routes that would require construction were field-inspected and prioritized for remediation. These routes were considered to have the greatest potential to adversely affect water quality and aquatic resources, and thus are the most likely to appear on the list in Appendix B. Crossings on previously engineered system routes were presumed to pose less need for remediation. Only impaired streams crossed by user-created routes or proposed new routes requiring construction are identified in the list in Appendix B.</td>
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<td>473/12. [From Attachment 1] The perennial stream crossings proposed for three years of monitoring includes two impaired water bodies, Elk Creek and Victoria Creek, and EPA recommends that those crossings be eliminated from the travel system (DEIS page 309).</td>
<td>Route Specific. Many existing system roads cross Elk Creek in many different locations. These routes were analyzed in various alternatives as roads open to all or roads open to highway legal vehicles. Several currently unauthorized routes crossing Elk Creek or Victoria Creek were proposed for designation in the</td>
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<td>473/13. [From Attachment 1] In “Alternatives Considered but Eliminated from Detailed Study” the DEIS states that the document will “consider the effects of motorized route designation on nonmotorized recreation opportunities” (page 35). In response to a request from the Norbeck Society and other organizations to designate additional “Walk-In Areas” for additional protection from impacts from motorized trails, the Forest Service states that “designation of nonmotorized routes is not the focus of this project.” However, the Travel Management Rule criteria for designation of roads, trails and areas states that, among others, the responsible official must consider effects, with the objective of minimizing impacts to soil, watershed, vegetation and other forest resources; harassment of wildlife and significant disruption of wildlife habitats; and conflicts between motor vehicle use and existing recreational uses of NFS lands (212.55(b)).</td>
<td>5-162. Alternatives in the DEIS and FEIS do comply with the Travel Management Rule and provide for a variety of motorized and nonmotorized recreational opportunities. The natural resource effects analysis of the Alternatives are in Chapter 3.</td>
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<td>473/14. [From Attachment 1] The Motor Vehicle Use Map (MVUM) provides information on motorized use, but there is no way to know from the maps how the proposed transportation system will impact nonmotorized users such as hikers, campers and mountain bikers. The MVUM should clearly identify primitive and semi-primitive areas on the forest such as wilderness, roadless areas and botanical areas so that nonmotorized recreationists will be able to avoid user conflicts.</td>
<td>4-343. The Motor Vehicle Use Map would follow national direction and symbology to be consistent with the overall program nationwide. It would not likely contain any additional information pertaining to semi-primitive or primitive areas. The effects of motorized use on nonmotorized recreation in each alternative are disclosed in Chapter 3 of the FEIS.</td>
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<td>473/15. [From Attachment 1] EPA is very concerned that the proposed action would open additional roads to motorized opportunities inside areas with Recreational Opportunity Spectrum (ROS) for nonmotorized activities (page 56). For semi-primitive nonmotorized areas, three areas – Dugout, Cook Lake and Sundance Burn – would have roads open to motorized use. Of the roaded natural nonmotorized areas, Bogus Jim, Smith Draw, Eagle Cliff, Forbes Gulch and Wood Canyon would see new roads opened to motorized use. Of the roaded natural nonmotorized areas, Bogus Jim, Smith Draw, Eagle Cliff, Forbes Gulch and Wood Canyon would see new roads opened to motorized use. According to Table 13, page 57, 38 miles of semi-primitive nonmotorized and 109 miles of roaded natural nonmotorized roads or trails currently available for nonmotorized recreationists would be opened up to motorized use. The DEIS</td>
<td>5-151. Alternative D was designed to reduce the impacts of motorized recreation on existing primitive, semi-primitive and roaded natural nonmotorized settings on the Black Hills National Forest within the Forest Service's jurisdiction. All action alternatives would reduce the area open to cross-country motorized use across the Forest by several hundred thousand acres. Effects are disclosed in Chapter 3.</td>
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states that this is not consistent with the Forest Plan guideline for ROS designations because the motorized users would impact the nonmotorized users. However, the DEIS does not analyze the impact of this decision on nonmotorized users. According to Table 9 on page 51, less than 10 percent of the BHNF 1.2 million acres of forest are nonmotorized. More than 90 percent of the BHNF is open to motorized use. Yet, the 2008 update to the National Visitor Use Monitoring project reflects that only 1.9 percent of NF recreational visitors listed their primary activity as OHV use (USDA Forest Service 2008c) (DEIS page 94). Therefore, this travel management plan appears to be designed for the benefit of a clear minority of recreationists on the forest. EPA strongly urges the Forest Service to reconsider opening any currently nonmotorized areas up to motorized use.

473/16. [From Attachment 1] Based on Figures 10-14, pages 120-122, EPA is concerned that the DEIS does not propose any closure or decommissioning of roads or trails. The pictures show significant impacts to sediment, stream integrity, wetlands and floodplains on the Forest from OHV use. The Travel Management Plan provides for temporary, emergency closures based on a determination of considerable adverse effects (212.52(2)). According to the Travel Management Plan, if the responsible official determines that motor vehicle use on the Forest is directly causing or will directly cause considerable adverse effects on soil, vegetation, wildlife, wildlife habitat, or cultural resources, the responsible official shall immediately close that road, trail or area to motor vehicle use until the adverse effects have been mitigated or eliminated and measures have been implemented to prevent future recurrence. EPA does not believe the DEIS supports the Forest Service determination that there are no such areas on the Forest and, in fact, those photographs contradict that determination. EPA recommends that the FEIS identify the roads and trails that have incurred considerable adverse effects and propose closure of those areas until the impacts can be mitigated.

473/17. [From Attachment 1] EPA is concerned that limited motorized cross-country use will be allowed on 179,000 acres for retrieving harvest elk within 300 feet of certain designated roads, and for dispersed camping within 100 feet of certain designated roads (page 25). This seems inconsistent with the Travel Management Rule Q-and-A section in the Federal Register stating that provision 212.51(7)(b) should be applied “sparingly,” to avoid undermining the

4-75. This analysis includes the evaluation of user-created routes and system routes for possible designation into the Forest motorized travel system. The evaluation of each route considered factors such as compatibility with existing land prescriptions and/or designations, impacts to the resource, wildlife objectives, safety, existing and/or potential conflicts as well as information provided from the public. These routes will also need to meet existing objectives, standards and specifications as identified within Forest Service Manuals and Handbooks. Routes that are determined to provide a benefit to the public and are consistent with the above factors are likely candidates for inclusion into the transportation system. The decision may include the designation of some routes that currently do not meet established standards with the caveat that they be brought up to standard prior to being formally included within the transportation system. Opportunities to mitigate ongoing resource damage on nondesignated routes would be pursued under other project-specific proposals. Closure orders to protect resources can be imposed at any time.

5-91. The DEIS and FEIS alternatives considered a range of designated cross-country motorized opportunities. Alternatives D and E provide no cross-country motorized travel. The natural resource effects analysis for this alternative are disclosed in Chapter 3 of the EIS.
The DEIS states that land management agencies, including the Forest Service, and some states across the country have started establishing legal limits for sound emissions from OHVs, including motorcycles. The DEIS proposes to establish a 96 DB(A) sound emission limit for OHVs on the BHNF roads and trails. This noise level was selected because it is the maximum level currently mandated by at least five states. The DEIS also states that 96 DB(A) is regarded as an adequate limit by the EPA (DEIS page 76). Please provide your source for that statement.

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<td>473/18. [From Attachment 1] The DEIS states that land management agencies, including the Forest Service, and some states across the country have started establishing legal limits for sound emissions from OHVs, including motorcycles. The DEIS proposes to establish a 96 DB(A) sound emission limit for OHVs on the BHNF roads and trails. This noise level was selected because it is the maximum level currently mandated by at least five states. The DEIS also states that 96 DB(A) is regarded as an adequate limit by the EPA (DEIS page 76). Please provide your source for that statement.</td>
<td>4-330. The source of the statement made in the DEIS is the following: Motorcycle Sound Working Group. 2005. Sound Advice – Stakeholder Assessments and Recommendations of the Motorcycle Sound Working Group. EPA-approved sound limits are currently 80 dB(A) for vehicles displacing less that 171cc and 82 dB(A) for those over 170cc, based on a precise, engineering acceleration test measured from a distance of 50 feet. Because the EPA test procedure is not practical for in-field enforcement, the Motorcycle Industry Council worked with the Society of Automotive Engineers (SAE) to develop a quick, easy and economical stationary sound test procedure, SAE J1287. A sound level of 96 dB(A) utilizing SAE J1287 is the lowest limit that does not prohibit the use of OHVs meeting the EPA sound limits.</td>
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<td>473/19. [From Attachment 1] According to the National Institute for Occupational Safety and Health (NIOSH), noise levels above 85 dB(A) can cause hearing injury. The Federal Highways Administration considers noise levels above 75 dB(A), or any increase of 30 DB(A) or more above existing noise levels, a severe noise impact. Some States define what a severe impact is in their policy and have a procedure for dealing with severe impacts. Other States deal with severe impacts on a case-by-case basis. Decibel measurements are made on a logarithmic scale, which means that an increase of 10 decibels</td>
<td>4-317. The Black Hills National Forest proposes a 96 dB(A) sound limit based on the Society of Automotive Engineers (SAE) J1287 Stationary Test. This limit was proposed because 96 dB(A) is the lowest limit that does not prohibit the use of OHVs meeting the EPA sound limits. EPA standards pre-empt the adoption of more stringent state standards. Most vehicles able to pass the 96 dB(A) stationary test meet or exceed the EPA test. The SAE J1287 Stationary Test is the most practical for the field and for enforcement testing.</td>
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<td>approximates a perceived doubling of the noise level. A noise source measuring 70 dB(A) is therefore 10 times louder than a source measuring 60 dB(A) and 100 times louder than a source reading 50dB. The average background noise in a typical home is between 40 and 50 dB(A). Therefore, the FS is proposing to allow noise levels that are 400-500 times louder than a typical home. The DEIS states that much of the land on the periphery of the Forest, and the 300,000 acres of State and private land within the BHNF administrative boundary is prized for private subdivision development, private ranches and land speculation whose end purpose is generally residential development (DEIS page 1). Given the patchwork nature of the BHNF, with widespread residential property mixed in with public land, EPA is very concerned about the impacts to private homeowners of allowing OHVs with those noise levels to pass through residential areas.</td>
<td>4-322. The FHWA descriptor cited has not been applied as management direction to the lands in the project area. The Federal Highway Administration's sound limits are based on Society of Automotive Engineers (SAE) ON-HIGHWAY test procedure J2825. The Black Hills National Forest proposes a sound limit based on SAE off-road test procedure J1287. See further response in letter/comment 473/18 (Public Concern 4-330).</td>
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<td>473/20. [From Attachment 1] EPA recommends that the Forest Service adopt legal limits for sound emissions based on recommendations of the Federal Highway Administration for “Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.” For those purposes the proposed limit is 60 DB(A). If that is not feasible, the Forest Service could propose an emission limit of 70 DB(A), which is recommended for “Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.” For more information, please see: <a href="http://www.fhwa.dot.gov/environment/noise/polguide/regulations.htm#pg3">http://www.fhwa.dot.gov/environment/noise/polguide/regulations.htm#pg3</a></td>
<td>4-250. The Forest is committed to using whatever funds it has available to accomplish the purposes of the final decision in a targeted, efficient manner. Funding could include appropriations, cooperative relationships with other government entities, volunteer agreements, and user fees. Forest Service law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting National Forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users would support enforcement efforts by promoting voluntary compliance.</td>
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<td>473/21. [From Attachment 1] The Travel Management Rule references the “need for maintenance and administration of roads, trails and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration” (Section 212.55(a)). There is also a requirement that the responsible official “monitor the effects of motor vehicle use on designated roads and trails and in designated areas” (Section 212.57). EPA is concerned with the lack of resources identified for enforcement and maintenance of the transportation system. The DEIS states that “current Forest Service law enforcement resource alone are not at a level that would make enforcement of the prohibition of motorized-mixed use on</td>
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<td>NFS roads,” and “limited enforcement success has likely contributed to increased road and area use violations, user conflicts and resource damage (DEIS page 75). The DEIS also states that “annual road maintenance resources are approximately 50 percent of what is needed,” and “current maintenance funds are not sufficient to maintain the current trail system to standard” (DEIS pages 80-81). EPA is concerned that the Forest Service is proposing to add 1,450 miles of motorized-mixed use trails to a transportation system it currently cannot afford to maintain, and issue a Motor Vehicle Use Map (MVUM) that the Forest Service has insufficient resources to enforce.</td>
<td>4-53. The evaluation of all routes considered factors such as compatibility with existing land prescriptions and/or designation, impacts to the resource, wildlife objectives, safety, existing and/or potential conflicts as well as information provided from the public. Administrative use routes would provide needed access to the Forest Service to accomplish management tasks. All routes would need to meet existing objectives, standards and specifications identified in Forest Service manuals and handbooks.</td>
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<td>473/22. [From Attachment 1] EPA is concerned that many of the user-created routes that will be added to the designated system were not designed or engineered in a way that considered slope and erosion impacts, redundancy and minimizing impacts to soil, watersheds, vegetation, wildlife and habitat.</td>
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<td>477/1. We [Crook County Board of Commissioners] feel that the magnitude of the changes proposed within the action alternatives will create a confused and frustrated public that is accustomed to an open unless posted closed approach to travel on the Forest. Alternative C is the only one that even slightly recognizes the current and ever-growing demand for quality motorized recreational opportunities.</td>
<td>2-36. Thank you for your comment. Alternative C does propose the largest transportation system. However, all the action alternatives propose opportunities for motorized recreation. They vary only in the amount and location of those opportunities. Table 7 on page 39 in Chapter 2 of the DEIS compared the recreational opportunities proposed for the range of alternatives. The State of Wyoming has implemented an Off-road Recreational Vehicle (ORRV) Program. It is the intent of the Forest to enroll all roads and trails designated for motorized use in the Wyoming portion of the Black Hills in the Wyoming State ORRV program.</td>
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<td>477/2. Only three areas [in Alternative C] totaling ten acres, would be designated for “concentrated cross-country” travel. Going from the current situation of 864,000 acres open to unrestricted motorized cross-country travel to so few acres open to concentrated cross-county travel (and in the other</td>
<td>5-80. Page 37 of the DEIS provides explanation for the proposed elimination of the cross-country recreational travel.</td>
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Letter BH477 - Crook County Board of Commissioners; John A. Moline, Jr. Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member

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<td>alternatives ZERO acres of either open or concentrated cross-country travel), is inadequate and unrealistic. Sufficient signage and proactive educational efforts and material must be a part of the plan if the public’s compliance with the new system is desired.</td>
<td>5-88. The DEIS and FEIS Alternatives considered a range of motorized opportunities for game retrieval and dispersed camping. Alternative C delineates areas within which motorized game retrieval would be allowed for elk and deer. The EIS explains the proposed restrictions on cross-country travel for game retrieval in Chapter 2. The natural resource effects analysis for the alternatives are in Chapter 3. The 300-foot width for dispersed camping was chosen to be consistent with Region 2 guidance and designations for motorized dispersed camping used on other national forests.</td>
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<td>477/3. [In Alternative C] limited use cross-country travel parameters for game retrieval and dispersed camping are in need of change. We [Crook County Board of Commissioners] support allowing game retrieval deer and elk without any time or distance limitations, and cross-country travel for dispersed camping to be expanded to 200 yards off a designated road or trail.</td>
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<td>477/4. We [Crook County Board of Commissioners] support continued, unchanged motorized access necessary for permitted uses on the Forest, which include but are not limited to, grazing, timber and fuel management, mineral exploration, and firewood cutting.</td>
<td>3-52. As stated in Chapter 2 of the Draft EIS under &quot;Features Shared by all Alternatives - Administrative use&quot; as permit holders allowances would be available to do work directly related to the management on the permit. This has been carried forward to the final EIS.</td>
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<td>477/5. From a socio-economic perspective, motorized transportation on the Forest provides significant positive impacts within the county, region and state. As the ORV use survey done by the State of Wyoming demonstrates, the economic benefits directly connected with this use are important to the local and state economy. Those benefits include jobs and business opportunities created and supported by the use, and revenues for state and local governments (sales tax, gasoline tax, lodging tax, permit fees).</td>
<td>6-21. The Forest Service recognizes the importance of motorized vehicle recreation and events in the Black Hills area and has analyzed and presented the contribution of those activities on the employment and labor income within the seven-county Black Hills area. For a summary of the analysis and conclusions regarding economic impacts associated with the plan alternatives, see response to Public Concerns 6-2, 6-13, and 6-15. The analysis completed for the Black Hills applies a well documented modeling system, modeling inputs comply with the Data Quality Act (see response to Public Concern 6-18), and are similar to the methods adopted by the Wyoming Department of State Parks and Cultural Resources in their economic assessment of off-road vehicle use (2006).</td>
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<td>477/6. The 1998 Crook County Land Use Plan and the land use and/or natural resource plans for the other counties in the Black Hills should be considered and noted accordingly within the text of the plan.</td>
<td>1-63. The Forest Service consulted with Crook County prior to issuing the Draft EIS, and provided a copy of that document to the County to solicit comments on the travel management plan project. The Forest Service continues to be willing to involve Crook County in the planning process and during implementation.</td>
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<td>477/7. There appear to be no specific accommodations for persons with disabilities or other physical limitations to enjoy recreational uses on the Forest. We [Crook County Board of Commissioners] would like there to be</td>
<td>5-141. The EIS considered a range of alternatives for motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access are in Alternatives B and C. Persons with disabilities</td>
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**Letter BH477 - Crook County Board of Commissioners; John A. Moline, Jr. Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member**

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<td>exceptions made on their behalf so as to continue to allow them a full range of opportunities.</td>
<td>would have the same access rights as the general public.</td>
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<td>477/8. We [Crook County Board of Commissioners] fear that the approach being taken in the draft document [DEIS] will lead to noncompliance by regular Forest users and ultimately result in further restriction and possible prohibition of motorized travel within the Black Hills National Forest We urge planners to be cognizant of the on-the-ground realities of this issue and to incorporate as much motorized access as is possible.</td>
<td>5-25. Alternative C provides the highest level of motorized routes for the Forest. Effects on natural resources are disclosed in Chapter 3.</td>
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**Letter BH480 - Crook County Natural Resource District, Board of Supervisors, Wayne Garman, Chairman**

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<td>480/1. Water quality issues are important to all of us, and they are especially important to the Crook County Natural Resource District (CCNRD). Any changes to the current travel management plan should take into consideration issues related to water quality. A reduction in the amount of roads/trails will have the effect of condensing public use, therefore increasing the pressure on areas where travel is permitted. Proper consideration should be given to travel areas around streams and lakes so the impact on water quality will be minimal. We feel that, in the long term, protecting water quality is in the interest of all those who utilize National Forest lands and should be a cornerstone of any forest management plan.</td>
<td>3-27. General and route-specific design criteria have been identified to maintain water quality. The effects of implementing the alternatives upon a variety of resources including water quality are disclosed in Chapter 3 of the EIS.</td>
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**Letter BH549 - Standing Rock Sioux Tribe, Orvis Little Eagle for Ron His Horse Is Thunder, Chairman**

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<td>549/1, 2. Although the Standing Rock Sioux Tribe appreciates the efforts the Forest Service is making by attempting to manage motorized vehicle traffic in the Black Hills National Forest -- reducing adverse impacts caused by unmanaged and unregulated cross-country and road and trail usage -- the Standing Rock Sioux Tribe as all Lakota/Dakota/Nakota tribes believes that the</td>
<td>1-2. The legal issues surrounding the Black Hills Treaties and the 1980 Supreme Court decision to award monetary damages for the taking of the Black Hills are beyond the scope of this DEIS. However, the Black Hills National Forest has a legal trust responsibility to actively engage in a government-to-government relationship with sovereign tribal nations. This responsibility is articulated in laws</td>
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### Letter BH549 - Standing Rock Sioux Tribe, Orvis Little Eagle for Ron His Horse Is Thunder, Chairman

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<td>Black Hills are sacred and were wrongfully taken by the U.S. Government. The Tribe’s position hasn’t changed since the Supreme Court decided United States v. Sioux Nation of Indians, et al., 448 U.S. 371, 100 S. Ct. 2716 (U.S. 1980) on June 30, 1980. That position is that the Standing Rock Sioux Tribe rejects the offer of payment to settle the Sioux Nation’s claim for the Black Hills affirmed by the United States Supreme Court in that case. The Black Hills are not for sale! While the Lakota/Dakota/Nakota tribes have not obtained justice in the federal courts, we look to Congress for legislation mandating the return of federal lands in the Black Hills Accordingly, while we appreciate the efforts of the Forest Service to maintain the natural beauty of the Black Hills while managing public use, we strongly oppose all new construction in our sacred He Sapa. We continue to oppose the -- in our view -- unlawful use and/or destruction of He Sapa and its natural resources. We remain deeply concerned about the protection of Lakota/Dakota/Nakota cultural resources in the Black Hills. The DEIS offers several alternative for travel management in the Black Hills. The Standing Rock Sioux Tribe, like the other Lakota/Dakota/Nakota tribes, continues to oppose the -- in our view -- unlawful use and/or destruction of He Sapa and its natural resources. We oppose all federal activity in the Black Hills that the Tribes have not been consulted on. Therefore, while we recognize that the alternative that offers the least amount of destruction of the forest while creating the most opportunity for the Forest Service to manage traffic is best for He Sapa and its natural resources, we oppose all federal activity in the Black Hills. As noted above, the Black Hills are not for sale!</td>
<td>and executive orders as explained in the Cultural Resources section of Chapter 3 of the FEIS. The Forest maintains a notification mailing list for sixteen (16) federally recognized tribes, and regularly consults with Tribal representatives regarding projects authorized under the NHPA and the National Environmental Policy Act (NEPA). The 16 different tribes from five states have expressed traditional cultural, spiritual, or geographical interests in the Black Hills. Each tribe was sent a copy of the Black Hills National Forest Travel Management Plan DEIS (USDA Forest Service 2009) on March 12, 2009, with an invitation to comment and a Forest Service contact. Invitations were subsequently extended to each of the 16 Tribes to attend a formal government-to-government consultation meeting hosted by the Forest near Custer, SD, on April 21, 2009. The primary purpose of that meeting was to discuss any questions or issues that Tribal representatives may have had pertaining to the Travel Management Project. The purpose and need for this project includes reducing adverse impacts caused by unmanaged route and area usage. The decision on this project would lead to accomplishing this objective.</td>
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### DEIS Post Comment Period Letter - Fall River County Commissioners; Joe Falkenburg, Chairman; Mike Ortner, Vice-Chair; Glen Reaser, Member; Joe Allen, Member; Anne Cassems, Member

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<td>Comment 1. The Fall River County Commissioners realize that only a small part of the Black Hills National Forest land (46,000 acres) extends into our county. Although this is a small portion of the vast acreage under your control, it is a significant acreage to our county because we depend on</td>
<td>1-3. The Black Hills National Forest is managed under the principles of sustained multiple use as directed under the Multiple-use Sustained-Yield Act and other legislation relating to the National Forests. In carrying out this task the Forest Service strives to manage timber, livestock grazing, mining, and outdoor</td>
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DEIS Post Comment Period Letter - Fall River County Commissioners; Joe Falkenburg, Chairman; Mike Ortner, Vice-Chair; Glen Reaser, Member; Joe Allen, Member; Anne Cassems, Member

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<td>recreation/tourism dollars to help our economy. The Forest Service acres in Fall River County have long been hunted for deer, antelope and elk and contain other significant botanical and archeological resources. It is our intention to do everything in our power to keep public use of the public lands controlled by the Forest Service.</td>
<td>recreation in a manner that is environmentally sustainable over the long term. The purpose and need for this project includes elements of developing a transportation system to meet increasing demand for recreational opportunities and providing a range of quality experiences; reducing adverse impacts caused by unmanaged uses; and aligning travel and recreation opportunities with the management capabilities of the Forest. By meeting these objectives to the Forest Service intends to satisfy the mandate of multiple use management.</td>
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<td>Comment 2. Nonetheless, we [Fall River County Commissioners] certainly agree that the Unauthorized Route Miles (land where ATV’s currently travel off-trail) need to be significantly curtailed as the ATV’s are destroying the vegetation in some areas.</td>
<td>1-4. The Black Hills National Forest is managed under the principles of sustained multiple use as directed under the Multiple-use Sustained-Yield Act and other legislation relating to the national forests. In carrying out this task the Forest Service strives to manage timber, livestock grazing, mining, and outdoor recreation in a manner that is environmentally sustainable over the long term. The purpose and need for this project includes elements of developing a transportation system to meet increasing demand for recreational opportunities and providing a range of quality experiences; reducing adverse impacts caused by unmanaged uses; and aligning travel and recreation opportunities with the management capabilities of the Forest. By meeting these objectives, the Forest Service intends to satisfy the mandate of multiple use management.</td>
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<td>Comment 3. We [Fall River County Commissioners] also have concerns about the few but detrimental number of careless ATV operators who cut fences and leave gates open.</td>
<td>4-251. Forest Service law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting Forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users would support enforcement efforts by promoting voluntary compliance.</td>
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<td>Comment 4. To close Fall River County to motorized game retrieval, however, makes no sense. Large game animals cannot be drug by one person for very far. It is only reasonable to allow motorized game retrieval on Forest Service lands in our county. Game retrieval also occurs during a time of the year when other tourism is low and the growing season is over so there is almost no damage to the botanical resource. Game retrieval is also easily enforced , since every off-road vehicle should have a harvested animal to show to the officers. ALLOW motorized (large animal) game retrieval.</td>
<td>5-97. The alternatives in the draft and final EIS provide a range of options for game retrieval. The effects of these options on various resources are discussed in Chapter 3 of the EIS. The effects and public comments will be considered in the final decision.</td>
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**DEIS Post Comment Period Letter - Fall River County Commissioners; Joe Falkenburg, Chairman; Mike Ortner, Vice-Chair; Glen Reaser, Member; Joe Allen, Member; Anne Cassems, Member**

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<td>Comment 5. We [Fall River County Commissioners] would support Alternative C.</td>
<td>2-36. Thank you for your comment.</td>
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<td>Comment 6. We [Fall River County Commissioners] also note that on our maps of Alternative C, you have omitted the Forest Service road located in Section 31, Township 7, Range 3, which is indicated on the other versions of the maps. Please add that road back on to Alternative C.</td>
<td>Route Specific. NFS road 318.3B was included in Alternative B and thus can be considered for selection in the decision.</td>
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<td>Comment 7. We hope that you will diligently enforce the new rules and prevent further damage to our lands by careless motorized vehicle operators.</td>
<td>4-259. Forest Service law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting National Forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users support enforcement efforts by promoting voluntary compliance. The final rule will not increase the agency's budget or the number of law enforcement officers. However, the final rule will facilitate enforcement by substituting a regulatory prohibition for closure orders and providing for a motor vehicle use map.</td>
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**Letter Dated June 29, 2009 - Crook County Board of Commissioners; John A. Moline, Jr., Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member**

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<td>Comment 1. The Forest Service has failed to map, present to the public and consider all of the “trails” within the Black Hills National Forest that are actually used for and are suitable for travel for MPV’s, ORV’s, and other motorized travel. Trails are generally thought of by the public and should include “any roads or trails which have been graded or constructed to carry vehicular traffic, or on which repeated vehicular traffic has created well defined tracks.” See definition below. This is the definition of an established road that is open to public use on State School lands owned by the State of Wyoming and some of which actually exists within the Black Hills National Forest. The “trails” that exist in the Black Hills National Forest such as logging roads, skidder trails and trails that are currently in use by motorized vehicles have not</td>
<td>The purpose of this analysis was to lead to designation of a motorized travel system that could meet the increasing demand for recreational travel and provide a range of quality experiences within the management capability of the Forest; and which could reduce adverse impacts from unmanaged cross-country and route travel. This analysis was not designed to be a comprehensive, all-inclusive analysis of the suitability of every single route, existing or possible. We do not believe such an analysis is necessary to develop a motorized travel system that is satisfying to users, protects resources and is feasible to manage. This analysis evaluated user-created routes and system routes for possible designation into the Forest travel system. The formal NEPA analysis process was preceded by extensive public involvement in which the public was solicited for</td>
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<td>been considered by the Forest Service. By definition a trail is not a Forest Service trail unless it has been identified and managed as a “trail” by the Forest Service. The Forest Service only has 36 miles of designated “trails.” The public actually uses more than 36 miles of what they consider to believe are trails. The failure to include what the public actually believes are “trails” and that are currently being used by the public has deceived the public into believing that the Forest Service is not closing that many roads and trails within the Black Hills National Forest that are actually being used and are suitable for MPV’s, ORV’s and other motorized travel. This deception has caused public comment to be made without all of the facts necessary to make informed comments. It has also caused Forest Service personnel to present alternatives without considering all of the trails or other areas within the Black Hills National Forest that are actually used and suitable for travel for MPV’s, ORV’s and other motorized travel. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative” be adhered to until the following recommendation is followed: Map all of the roads, trails, and any roads or trails which have been graded or constructed to carry vehicular traffic, or on which repeated vehicular traffic has created well defined tracks” such as logging roads and trails, and other areas within the current motorized area within the Black Hills National Forest that are suitable for travel for MPV’s and ORV’s and other motorized travel.</td>
<td>routes that should be considered for designation for public use under the 2005 Travel Management Rule. A large number of routes were considered for designation. On the Bearlodge Ranger District, all routes currently open to public travel, and all routes currently closed, were considered for designation. The evaluation of routes considered factors such as compatibility with existing land prescriptions and/or designations, impacts to resources, wildlife objectives, safety, existing and/or potential conflicts as well as information provided from the public. Selected routes would need to meet existing objectives, standards and specifications as identified within Forest Service Manuals and Handbooks.</td>
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<td>Comment 2. The Forest Service has failed to map and consider all of the lands and other areas within the current motorized area within the Black Hills National Forest that are suitable for travel for MPV’s and ORV’s and other motorized travel. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative” be adhered to until the following recommendation is followed: Consider all of the lands and other areas within the current motorized area within the Black Hills National Forest that are suitable for travel for MPV’s and ORV’s and other motorized travel.</td>
<td>2-24. An interdisciplinary process was used to identify routes suitable for public motorized use designation, including all identified nonsystem routes, in the range of alternatives. The analysis identified natural and cultural resource concerns, recreation, access needs, and other related considerations consistent with the 2005 Travel Management Rule to develop the range of alternatives. A range of alternatives was developed to consider a variety and mix of motorized travel opportunities on and off routes. The effects of the alternatives are disclosed in Chapter 3 of the EIS.</td>
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<td>Comment 3. The Forest Service has failed to consider the effect of the Board of County Commissioners in and for Crook County, Wyoming neither designating nor not designating any of the County Roads within the Black Hills National Forest on the State of Wyoming ORV System for Roads or Trails. The Board</td>
<td>1-62. The Forest Supervisor met with representatives from counties containing National Forest System lands managed by the Forest Service at the scoping stage of the project. Copies of the DEIS were mailed to county commissioners for the counties of Crook, Weston and Campbell counties in Wyoming; and Lawrence,</td>
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Letter Dated June 29, 2009 - Crook County Board of Commissioners; John A. Moline, Jr., Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member

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<td>of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Consider the effect of the Board of County Commissioners in and for Crook County, Wyoming neither designating nor not designating any of the County Roads within the Black Hills National Forest on the State of Wyoming ORV System for Roads or Trails.</td>
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<td>Meade, Pennington, Custer and Fall River counties in South Dakota. As the comment period came to a close the Forest Supervisor contacted counties, cities and towns in the Black Hills to request information on their plans to allow access from the Forest into their jurisdictions. The Forest Supervisor allowed another 30 days for these comments. The Forest Service will respond to comments received from these entities, and they will be considered in the record of decision. Roads known to be of County jurisdiction on the Bearlodge Ranger District were considered under all alternatives as “Other Jurisdiction” and only open to highway-legal vehicles. The effects of designating trails that dead-end at these roads were considered in the Recreation section in Chapter 3 of the EIS.</td>
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| Comment 4 |
| The Forest Service has failed to consider the Crook County Land Use Plan pursuant to the Federal Land Policy and Management Act of 176 (FLPMA) and the National Environmental Policy Act of 1969 (NEPA). The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Consider the Crook County Land Use Plan pursuant to FLPMA and NEPA. |
| **1-63.** The Forest Service consulted with Crook County prior to issuing the draft EIS, and provided a copy of that document to the County to solicit comments on the travel management plan project. The Forest Service continues to be willing to involve Crook County in the planning process and during implementation. The Forest Service has complied with applicable laws and policies and has acted in good faith to involve the County and solicit their views. |

| Comment 5 |
| The Forest Service has failed to present its plan to the Crook County Land Use Planning and Zoning Board for a public hearing pursuant to the Crook County Land Use Plan pursuant to FLPMA and NEPA. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Present the Black Hills National Forest Plan to the Crook County Land Use Planning and Zoning Board for a public hearing pursuant to the Crook County Land Use Plan pursuant to FLPMA and NEPA. |
| **1-63.** The Forest Service consulted with Crook County prior to issuing the draft EIS, and provided a copy of that document to the County to solicit comments on the travel management plan project. The Forest Service continues to be willing to involve Crook County in the planning process and during implementation. The Forest Service has complied with applicable laws and policies and has acted in good faith to involve the County and solicit their views. |

| Comment 6 |
| The Forest Service has failed to consider the effect of concentrating motorized travel within the Black Hills National Forest. Currently motorized travel exists on 864,000 acres of the 1.2 million acres of the Black Hills National Forest and after this plan is imposed that will reduce motorized travel to about 28,000 acres or about 4%. Under Alternative B, the proposed action, limited motorized cross-country travel is proposed, and only for dispersed camping (on 63,500 acres, within 100 feet of certain designated roads) and retrieval of harvested elk (on 179,000 acres, within 300 feet of certain designated roads). The Forest Service has failed to consider the impact |
| **5-20.** The EIS considered a range of motorized opportunities across the alternatives, and disclosed effects to natural and cultural resources, recreationists and neighbors in Chapter 3. |
**Letter Dated June 29, 2009 - Crook County Board of Commissioners; John A. Moline, Jr., Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member**

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<td>to the environment upon the area that will be subject to the increased travel, the increased impact to the roads and trails caused by the concentrated motorized travel and the loss of access to most of the National Forest by the public that uses motorized travel within the Black Hills National Forest. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Consider the effect of concentrating motorized travel within the Black Hills National Forest.</td>
<td>5-141. The EIS considered a range of alternatives for motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access are in Alternatives B and C. Persons with disabilities would have the same access rights as the general public.</td>
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<td>Comment 7. The Forest Service has failed to consider the impact to persons with disabilities and other persons with physical restrictions that these proposed alternative plans will have on their use of the Black Hills National Forest.</td>
<td>4-250. The Forest is committed to using whatever funds it has available to accomplish the purposes of the final decision in a targeted, efficient manner. Funding could include appropriations, cooperative relationships with other government entities, volunteer agreements, and user fees. Forest Service law enforcement personnel play a critical role in ensuring compliance with laws and regulations, protecting public safety, and protecting National Forest resources. The Forest Service also maintains cooperative relationships with many State and local law enforcement agencies that provide mutual support across jurisdictional boundaries. Education and cooperative relationships with users would support enforcement efforts by promoting voluntary compliance.</td>
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<td>Comment 8. The Forest Service has failed to consider the impact of actually enforcing existing laws that protect the Black Hills National Forest before imposing any of these action alternatives. Currently the Black Hills National Forest does not enforce any laws that protect the forest lands from the violators of existing laws. The Forest Service is understaffed and has failed to allocate adequate personnel to protect the resource. The action alternatives will create more restrictive use of the Black Hills National Forest and more foreseeable violations of the law. The Forest Service neither has the resources nor the personnel to enforce any of the proposed action alternatives.</td>
<td>2-118. State traffic laws apply on NFS roads as provided for in 36 CFR 212.5(a) (1). State governments have long taken the lead in establishing registration, safety, and licensing requirements for motor vehicles and motor vehicle operators, providing a consistent framework for users within State boundaries. The Forest Service may designate certain NFS roads open to non-highway-legal motorized vehicles (motorized mixed use). These decisions would be made in the Record of Decision and will be informed by a motorized mixed-use analysis.</td>
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<td>Comment 9. The Board of County Commissioners in and for Crook County, Wyoming, is opposed to designating any public roads, street or highway that is open to travel by a car, pickup, truck or commercial vehicle such as a logging truck onto the ORV system.</td>
<td>4-118. State traffic laws apply on NFS roads as provided for in 36 CFR 212.5(a) (1). State governments have long taken the lead in establishing registration, safety, and licensing requirements for motor vehicles and motor vehicle operators, providing a consistent framework for users within State boundaries. The Forest Service may designate certain NFS roads open to non-highway-legal motorized vehicles (motorized mixed use). These decisions would be made in the Record of Decision and will be informed by a motorized mixed-use analysis.</td>
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<td>Comment 10. The Board of County Commissioners in and for Crook County, Wyoming, is opposed to designating any public roads, street or highway that is open to travel by a car, pickup, truck or commercial vehicle such as a logging truck onto the ORV system. It is unsafe to allow unlicensed operators to operate an unlicensed vehicle without insurance on the same public road as these types of vehicles. The Board is not opposed to allowing the legal operation of MPV’s with licensed operators to operate a licensed vehicle with insurance on public roads.</td>
<td>The Forest Service recognizes and agrees with the Board's concern for safety with respect to unlicensed operators and vehicles operating on public roads with other traffic. The alternatives address this concern in different ways. Alternative D minimizes the roads where mixed-use would occur with the intent of increasing safety for users. The decision will be informed by a mixed-use analysis.</td>
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<tr>
<td>Comment 11. The Board of County Commissioners in and for Crook County, Wyoming, is opposed to designating any public roads, street or highway that is open to travel by a car, pickup, truck or commercial vehicle such as a logging truck onto the ORV system. All existing trails whether designated or not in Black Hills National Forest should remain open for travel for MPV’s and ORV’s and if the Forest Service chooses to restrict travel from larger motorized vehicles on a road it should be designated and enrolled on the ORV Trails system.</td>
<td>4-30. Trail opportunities for vehicles 65 inches or less in width have been provided for in Alternatives B, C, and D of the FEIS to varying degrees. Effects to the natural resources for this activity are disclosed in Chapter 3.</td>
</tr>
<tr>
<td>Comment 12. The Board of County Commissioners in and for Crook County, Wyoming, is opposed to designating any public roads, street or highway that is open to travel by a car, pickup, truck or commercial vehicle such as a logging truck onto the ORV system. The Forest Service should restrict operations of MPV’s, ORV’s and other motorized travel due to weather, elk calving, nesting and other local conditions on a case-by-case basis to protect the resource.</td>
<td>4-66. This analysis evaluated the designation of user-created routes and system routes as part of the Forest motorized route system. Seasonal restrictions are proposed on some routes for resource protection purposes. The evaluation of each route considered factors such as compatibility with existing land prescriptions and/or designations, impacts to the resource, wildlife objectives, safety, existing and/or potential conflicts as well as information provided from the public. These routes would also need to meet existing objectives, standards and specifications as identified within Forest Service Manuals and Handbooks. Routes that are determined to provide a benefit to the public and are consistent with the above factors could be designated as part of the transportation system. The data relating to all routes from this analysis would be kept in the administrative record.</td>
</tr>
<tr>
<td>Comment 13. The Forest Service in Chapter 2 of the DEIS under Administrative Access has provided for access by permit holders, but does not clearly specify that access to the entire permit area is available for all vehicles and equipment historically or currently used and such vehicles and equipment as may be available in the future. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the &quot;no action alternative&quot; be adhered to until the following recommendation is followed:</td>
<td>3-47. Administrative access was addressed in Chapter 2 of the draft EIS under &quot;Features Shared by all Alternatives - Administrative use&quot;, and also in Chapter 3, Range section- &quot;Assumptions The DEIS stated that access would be allowed to contractors and permit holders operating within the terms and scope of their contract or permit, and reasonable access would be allowed as appropriate for other local, State and Federal agencies to manage their adjacent or isolated parcels. Administrative access as a concept would not restrict any type of vehicle. This has</td>
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**Letter Dated June 29, 2009 - Crook County Board of Commissioners; John A. Moline, Jr., Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member**

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<td>Ensure that historic and continued access for all permit holders on the Forest are maintained and honored.</td>
<td>been carried forward to the final EIS.</td>
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<tr>
<td>Comment 14. The Forest Service in Chapter 2 of the DEIS under Administrative Access has provided for access by contractors, but does not clearly specify that access to the entire contract area is available for all vehicles and equipment historically or currently used and such vehicles and equipment as may be available in the future.</td>
<td>See response to Comment #13 above.</td>
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<td>Comment 15. The Forest Service in Chapter 2 of the DEIS under Administrative Access provides “Reasonable administrative access for other local, State and Federal agencies…” but fails to provide for access by private landowners. It also mischaracterizes this access as some sort of agency concession rather than the restatement of a right. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the &quot;no action alternative” be adhered to until the following recommendation is followed: Ensure that historic and continued access for all in-holders on the Forest are maintained and honored.</td>
<td>4-40. The Forest Service recognizes the need for people to be able to access public and private lands in ways that do not create resource damage. All current legal access rights would be maintained and the Forest would work with all requiring legal access.</td>
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<td>Comment 16. The present Forest Service policy that provides only one access to in-holdings poses health and safety risks in the case of an emergency situation (certainly fire and possibly flood).</td>
<td>See response to Comment #15 above. In the event of an emergency, no inholding would be denied emergency egress from their properties. The agency policy stipulating only one access point is intended to avoid the development of numerous individual driveway accesses from a single subdivided parcel, which could increase resource damage. Local ordinances and State laws govern development on private lands.</td>
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<td>Comment 17. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to.</td>
<td>Thank you for your comment.</td>
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<td>Comment 18. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative” be adhered to until the following recommendation is followed: Consider the impact to persons with disabilities and other persons with physical restrictions that these proposed alternative plans will have on their use of the Black Hills National Forest.</td>
<td>4-105. A roads analysis was conducted on Forest high-speed roads resulting in a Roads Analysis Report published in October 2005. A travel analysis was conducted on high-clearance roads, trails, and unauthorized routes resulting in a Travel Analysis Process Report published in September 2007. These reports provide a technical, science-based review of the Forest transportation system. The EIS considered a range of alternatives for motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access are in Alternatives B and C. Persons with disabilities...</td>
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Letter Dated June 29, 2009 - Crook County Board of Commissioners; John A. Moline, Jr., Chairman; J.W. Hadley, Vice-Chairman; Kelly B. Dennis, Member

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<td>Comment 19. Therefore the Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Consider the impact of actually enforcing existing laws that protect the forest before imposing these alternative plans upon the Black Hills National Forest.</td>
<td>would have the same access rights as the general public.</td>
</tr>
<tr>
<td>Comment 3. The Board of County Commissioners in and for Crook County strongly recommends that Alternative A, the “no action alternative,” be adhered to until the following recommendation is followed: Consider the effect of the Board of State Land Commissioners in and for the State of Wyoming neither designating nor not designating “any roads or trails which have been graded or constructed to carry vehicular traffic, or on which repeated vehicular traffic has created well defined tracks” that are on State Land located within the boundaries of the Black Hills National Forest on the State of Wyoming ORV System for Roads or Trails.</td>
<td>This proposal and the forthcoming decision address roads, trails and areas under the jurisdiction of the Forest Service as administered by the Black Hills National Forest. The decision will not address the management of routes by other jurisdictions.</td>
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Letter BH614 - Crook County Land Use Planning and Zoning Commission; Jeanne A. Whalen, Chairman

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<td>614/1. We [Crook County Land Use Planning and Zoning Commission] feel that the magnitude of the change proposed within the action alternatives will create a confused and frustrated public that is accustomed to an open unless posted closed approach to travel on the Forest. Alternative C is the only one that even slightly recognizes the current and ever-growing demand for quality motorized recreational opportunities.</td>
<td>2-36. Thank you for your comment. Alternative C does propose the largest transportation system. However, all the action alternatives propose opportunities for motorized recreation. They vary only in the amount and location of those opportunities. See Table 7 on page 39 in Chapter 2 for a comparison of the recreational opportunities proposed for the range of alternatives. The State of Wyoming has implemented an Off-road Recreational Vehicle (ORRV) Program. It is the intent of the Forest to enroll all roads and trails designated for motorized use in the Wyoming portion of the Black Hills in the Wyoming State ORRV program.</td>
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### Letter BH614 - Crook County Land Use Planning and Zoning Commission; Jeanne A. Whalen, Chairman

#### Comment No. and Comment | Public Concern No. and Response
--- | ---
614/2. Only three areas [in Alternative C] totaling ten acres, would be designated for “concentrated cross-country” travel. Going from the current situation of 864,000 acres open to unrestricted motorized cross-country travel to so few acres open to concentrated cross-county travel (and in the other alternatives ZERO acres of either open or concentrated cross-country travel), is inadequate and unrealistic. Also, sufficient signage and proactive educational efforts and materials must be a part of the plan if the public’s compliance with the new system is desired. | 5-80. Page 34 of the DEIS provides explanation for the proposed elimination of the cross-country recreational travel.

614/3. Limited use cross-country travel parameters for game retrieval and dispersed camping are also in need of change. We [Crook County Land Use Planning and Zoning Commission] support allowing game retrieval deer and elk without any time or distance limitations, and cross-country travel for dispersed camping to be expanded to 200 yards off a designated road or trail. | 5-88. The DEIS and FEIS Alternatives considered a range of motorized opportunities for game retrieval and dispersed camping. Alternative C delineates areas within which motorized game retrieval would be allowed for elk and deer. The EIS explains the proposed restrictions on cross-country travel for game retrieval in Chapter 2. The natural resource effects analysis for the alternatives are in Chapter 3. The 300-foot width for dispersed camping was chosen to be consistent with Region 2 guidance and designations for motorized dispersed camping used on other National Forests.

614/4. We [Crook County Land Use Planning and Zoning Commission] support continued, unchanged motorized access necessary for permitted uses on the Forest, which include but are not limited to, grazing, timber and fuel management, mineral exploration, and firewood cutting. | 3-52. As stated in Chapter 2 of the Draft EIS under "Features Shared by all Alternatives - Administrative use" as permit holders allowances would be available to do work directly related to the management on the permit. This will be carried forward to the Final.

614/5. From a socio-economic perspective, motorized transportation on the Forest provides significant positive impacts within the county, region and state. As the ORV use survey done by the State of Wyoming demonstrates, the economic benefits directly connected with this use are important to the local and state economy. Those benefits include jobs and business opportunities created and supported by the use, and revenues for state and local governments (sales tax, gasoline tax, lodging tax, permit fees). | 6-21. The Forest Service recognizes the importance of motorized vehicle recreation and events in the Black Hills area and has analyzed and presented the contribution of those activities on the employment and labor income within the seven-county Black Hills area. For a summary of the analysis and conclusions regarding economic impacts associated with the plan alternatives, see response to Public Concerns 6-2, 6-13, and 6-15. The analysis completed for the Black Hills applies a well-documented modeling system. Modeling inputs comply with the Data Quality Act (see response to Public Concern 6-18), and are similar to the methods adopted by the Wyoming Department of State Parks and Cultural Resources in their economic assessment of off-road vehicle use (2006).

614/6. The 1998 Crook County Land Use Plan and the land use and/or natural resource plans for the other counties in the Black Hills should be considered and noted accordingly within the text of the plan. | 1-63. The Forest Service consulted with Crook County prior to issuing the Draft EIS, and provided a copy of that document to the County to solicit comments on the travel management plan project. The Forest Service continues to be willing to involve Crook County in the planning process and during implementation.
Letter BH614 - Crook County Land Use Planning and Zoning Commission; Jeanne A. Whalen, Chairman

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<td>614/7. There appear to be no specific accommodations for persons with disabilities or other physical limitations to enjoy recreational uses on the Forest. We would like there to be exceptions made on their behalf so as to continue to allow them a full range of opportunities.</td>
<td>5-141. The EIS considered a range of alternatives for motorized road and trail opportunities and disclosed effects in Chapter 3. The greatest motorized opportunities and access are in Alternatives B and C. Persons with disabilities would have the same access rights as the general public.</td>
</tr>
<tr>
<td>614/8. We [Crook County Land Use Planning and Zoning Commission] fear that the approach being taken in the draft document will lead to noncompliance by regular Forest users and ultimately result in further restriction and possible prohibition of motorized travel within the Black Hills National Forest We urge planners to be cognizant of the on-the-ground realities of this issue and to incorporate as much motorized access as is possible.</td>
<td>5-25. Alternative C provides the highest level of motorized routes for the Forest. Effects on natural resources are disclosed in Chapter 3.</td>
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Letter Dated January 15, 2010 - Wyoming Game and Fish Department John Emmerich, Deputy Director

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<td>Comment 1. Comments on the Draft Environmental Impact Statement of the BHNF Travel Management Plan were provided to your travel management officer from the Wyoming Game and Fish Department (WGFD) in a May 13, 2009 letter. In that latter, the WGFD encouraged the USFS to prohibit off road retrieval of game… I would like to further clarify the WGFD position on this issue. This is important because inconsistencies have come to light between the positions of South Dakota Game, Fish and Parks and those of the WGFD; and we feel it is in the sportsman’s best interest strive for some degree of forest-wide consistency. Based upon the proposed open route density on the Wyoming side of the BHNF, the WGFD believes allowing up to 300 feet of motorized retrieval for elk from open, enrolled trails and roads would provide more of the aforementioned forest-wide consistency and not result in significant, negative impacts to wildlife habitat.</td>
<td>5-86 (it won’t damage the forest) Thank you for your comment. The Forest Service appreciates the clarification on the part of the Wyoming Game and Fish Department of their position on this issue, and agrees that consistency across State lines would be in the best interest of Forest users. The Forest Service views the Department as an important partner in resource management and values their input on the game retrieval proposal and its potential effects.</td>
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<td>Comment 2. However, the WGFD wishes to stress this activity be permitted only for elk carcass retrieval, and not opened to all game species. In our estimation, about 150 to 200 elk are currently being harvested on an annual basis off BHNF lands in Wyoming. Due to the location and timing of much of this harvest, 300 feet of off road or closed road travel from an open route will probably result in minimal habitat and wildlife disturbance. Additionally, if the BHNF moves forward, as anticipated, to allow the same distance of off road travel for other, limited activities (such as dispersed camping) it would again seem to augment consistency while providing some degree of habitat protection. Finally, having more regularity across State lines in relation to game retrieval should reduce confusion among hunters.</td>
<td>5-107 (retrieval for elk only)</td>
</tr>
<tr>
<td>See response to Comment 1 above. The alternatives vary in how they address game retrieval and dispersed camping. The input from the Wyoming Game and Fish Department will be considered in the decision on this project.</td>
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Appendix J: Map Packet

-- Please see separate packet of maps for FEIS Alternatives A through E --
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