U.S. Department of the Interior
Bureau of Land Management

July 2023

Canyonlands East Travel Management Plan

Environmental Assessment

DOI-BLM-ID-B000-2011-0002-EA

U.S. Department of the Interior
Bureau of Land Management
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CHAPTER 1. INTRODUCTION

The chapter includes information on the project area, the history of the project, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Bureau of Land Management (BLM) informed the public of the proposal and how the public responded.

1.1 Background

Comprehensive travel management planning has become one of the top priorities for federal land management agencies over the past decade. Increasing population throughout the western United States, shifts in demographics (age and mobility, amount of available leisure time, proximity of population centers to public lands, etc.) and technological advances in motorized and mechanized transportation (size, power, stability, and ease of control) have outpaced conventional agency transportation planning. From 1982 to 2001, off-highway vehicle (OHV) use, as a type of recreation, increased more than 100% across the United States, estimated at 40 million participants, or 1 in 5 people (Cordell et al. 2005). In Owyhee County, Idaho, alone, OHV registration increased 258% between 1998 and 2014 (Wulfhorst et. Al. 2016), with most use concentrated in motorized areas in the Owyhee Front (e.g., Murphy Subregion Travel Planning Area). Although many public lands have traditionally been open to cross country travel without restriction, these new pressures have necessitated a nation-wide change from passive to active transportation management.

Travel management planning is the proactive management of public access to protect and preserve natural/cultural resources in compliance with travel-related regulations and in accordance with the best land use management principles. It involves a comprehensive approach that considers various aspects of road and trail system planning and management, including natural resource management; road and trail design and maintenance; and recreational and non-recreational uses of roads and trails. Within these contexts, access to and within public lands is evaluated according to the effects of motorized and non- motorized travel on public lands and resources and on the people who use them.

The Omnibus Public Land Management Act of 2009 (123 Stat. 991; Public Law [PL] 111–11; hereafter referred to as OPLMA) directed the BLM to evaluate recreational travel and transportation on public lands in Owyhee County. In light of that mandate, the work required to fulfill it, and other laws and policies which counsel in favor of travel management, BLM has elected to consider non-recreational travel management and planning (such as permittees, lessees, and/or BLM employees performing agency work) in addition to the recreational travel that was the focus of OPLMA. Accordingly, this document considers Comprehensive Travel and Transportation Management (CTTM) planning in the area.

The Boise District Office has split the portion of Owyhee County located within its boundaries into five subregions: Canyonlands East, Canyonlands West, National Conservation Area (NCA), Grandview, and Silver City (see Figure A-1 in Appendix A). The existing routes in all of the subregions were inventoried beginning in 2004. The route inventory was completed with public

involvement and BLM validation in 2011 and 2012. This Travel Management Plan (TMP) is specific to the Canyonlands East Travel Management Area (TMA).

The Canyonlands East TMA is a subregion within the Bruneau Field Office (see Figure A-2 in Appendix A).

1.2 Purpose and Need

The purpose of this TMP is to designate a sustainable network of routes that provides for a variety of public recreation opportunities, promote safety for visitors utilizing the network of routes, addresses authorized and resource management access needs; while providing for enhanced resource protections, and brings travel and transportation management in the TMA into conformance with Designation Criteria identified in 43 CFR 8342.1 (see Appendix E for specific Designation Criteria).

The need is based in part on the OPLMA, which directs the BLM to complete a plan for recreational travel management. In addition, the 2015 Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendment (hereafter referred to as ARMPA) required new limitations on all travel, which also counseled in favor of new travel management planning, including planning that went beyond simply "recreational" travel. Finally, impacts caused by increased roading and unauthorized routes (including route proliferation on the landscape) added to the need to undertake the development of CTTM plans for public lands in Owyhee County. The CTTM planning being undertaken here will designate a motorized route system that complies with the BLM's national direction in light of increasing OHV use and public demand for access and BLM's regulatory obligation as stated in the Bruneau Management Framework Plan (MFP; 1983), in addition to balancing protections for natural and cultural resources with the demands for travel on BLM lands. There is a need to reduce the potential for proliferation of user-created routes or the use of routes that have not been evaluated and designated by the BLM for motorized travel.

1.3 Decision to be Made

The TMP will identify a system of all motorized and non-motorized access within the Canyonlands East TMA in Owyhee County. The Decision Record TMP will apply only to federal lands within the TMA. This TMP would ensure that users were aware that motorized travel would only be allowed to occur on routes designated by the BLM for such purpose.

1.4 Scoping and Issues

1.4.1 Scoping

The BLM has taken a variety of steps to inform the public, special interest groups, and local, state, and federal agencies about the Canyonlands East travel management planning process, and to solicit feedback from these interested parties to help shape the scope of this project. In developing the Canyonlands East TMA, the BLM met with a wide range of individuals, organizations and interest groups, including motorcycle groups, recreational aviation, All-Terrain

Vehicle (ATV) groups, 4×4 groups, environmental groups, Owyhee County Board of Commissioners, state and federal agencies, Native American tribes, and private landowners.

Route inventory data was updated between 2009-2010, and involved aerial image processing, field GPS validation, public input, working with interested organizations and individuals, and using GIS for corrections. The completed route inventory was posted on the BLM ePlanning website in the fall of 2010. The public was encouraged to participate, provide updates to the inventory, and comment on the process through outreach efforts including public scoping meetings, face-to-face meetings, and field visits. BLM accepted additional route inventory data and public input for approximately six months.

In 2014 and 2015, BLM spent 200 hours of interdisciplinary effort with BLM and contractor specialists evaluating and designating each individual route in the TMA. The BLM worked with the Owyhee Initiative, Inc. to develop route evaluation criteria. In 2015, the BLM shared the results of route evaluation in the form of four alternatives during a public scoping period. Public scoping meetings related to this environmental analysis took place December 10 and 11, 2015, and an internal scoping meeting by BLM was completed on October 29, 2015. The alternatives were mapped and posted on the BLM ePlanning website in PDF format, and route data were shared in a format that could be viewed using Google Earth. In total, 66 individuals and organizations submitted comments that were received at the close of the scoping period. These comments were analyzed and issue statements were developed (see Table D-3, Appendix D for a scoping comment summary). The recommended route designations for four alternative route networks are analyzed within this EA.

All comments received prior to and during the preparation of this environmental assessment were used to develop the baseline route inventory and project record. There were 78 miles of additional routes submitted by the public and added to Alternative A for evaluation (see Figure A-3 in Appendix A). The alternatives were developed after receiving input from the staff, management, cooperating agencies, and the public (as part of the scoping process). Similarly, proposed route designations were modified throughout the evaluation process following input from the staff, management, cooperating agencies, and the public. Those comments that raised issues within the scope of the EA were used to adjust the appropriate alternative(s). Throughout the preparation of the EA, the BLM updated the Boise District's Owyhee County travel management planning website to inform the public of the process, project activities, and availability of the EA.

In December 2016, after incorporating the scoping comments and concerns into this EA and completing analysis, and at the request of the public, the BLM offered a comment period to review the draft EA, maps, and route data on a web-based GIS platform for each alternative. Public review of the Canyonlands East Travel Management Draft EA occurred between November 16 and December 15, 2016. BLM continued to receive comments after the official 30-day comment period closed on December 15. BLM received 68 letters, containing 260 individual comments. Major concerns expressed in public and agency comments included the omission of aviation as a form of recreation and airstrips as part of the motorized route system in the TMP, concerns about access for livestock grazing, concerns about access for recreation (including hunting and trapping), concerns related to the designation of routes for single track users,

concerns pertaining to the omission of some routes, and concerns about potential impacts on wildlife species. All comments and their related responses can be found Appendix G. In some cases, comments resulted in modifications to this Final EA.

1.4.2 2023 Travel Planning Updates

Due to a shift in administrative priorities in 2017, the travels plans in Owyhee County were paused. BLM leadership has since directed staff to continue travel planning efforts and update the analysis/plan to reflect the most current information and data. For example, all resources were reviewed, and the analysis incorporated all current data (e.g., new sage grouse leks and new cultural sites). Additionally, lek buffer distance decreased from 0.8-mile to 0.25-mile to mirror guidance that was most appropriate in the 2015 ARMPA and the Canyonlands West route designation process. The Canyonlands East route designation was initially conducted prior to the finalization of the 2015 ARMPA, but the guidance in ARMPA, along with consultation with BLM Idaho State Office wildlife staff, suggested a buffer of at least 0.25 mile (0.4km) from occupied leks for noise and activities that do not result in habitat loss (such as recreation activities). This buffer is also the minimum distance for linear features (such as roads) found in the literature (Manier et al. 2014). Consequently, all motorized routes within the TMA that were associated with seasonal closures (e.g., March 25 – May 15) due to sage-grouse lekking activities were re-evaluated based on the new lek data and buffer modification. Closures were either removed from routes and airstrips that no longer intersected lek buffers (i.e., due to lack of occupancy or change in buffer distance) or were added to routes that intersected new leks (e.g., new occupied leks since 2014).

The Owyhee Land Exchange was completed, and the analysis was updated to reflect routes gained and lost through the exchange. As a result of the land exchange, 37 miles of routes were transferred to the state and BLM gained 4 miles of routes. New routes gained through the exchange were evaluated using the required Designation Criteria referenced in Appendix E. Additionally, e-bikes were identified as a mode of transportation and incorporated into the Designation Types. There have been no studies of the environmental impacts of e-bikes specifically. However, an initial study was undertaken by the International Mountain Bicycling Association to understand some of the physical impacts to trails associated with e-bikes and how they might differ from those associated with traditional mountain bicycles. Some differences between the impacts of Class 1 e-bikes and mountain bicycles were observed, particularly at turns and grade changes. Soil displacement measured in this study was not significantly different (statistically) from that associated with mountain bikes and was much less than that associated with motorcycle use (IMBA 2015). Due to limited non-motorized trail designations in the Canyonlands East TMP, as well as lack of e-bike environmental impact studies, e-bikes would not be authorized on designated non-motorized trails. Lastly, the description for ATV/UTV designations changed from 50 inches or less to 65 inches or less. This width determination was based on current UTV manufacture specifications for both the utility and sport models, with most machines meeting this width.

1.4.3 Issues

Through the internal and external scoping process, issues were identified and brought forward for analysis outlined in Table 1.

Table 1. Issues Analyzed in Detail

Resources	Issue Statement
Soils	How would the designed travel route network influence the potential for soil erosion?
Vegetation, Special Status Species, Noxious Weeds Invasive Plants	How would the designated travel route network impact native vegetation, special status species, and noxious weeds/invasive plants in the TMA?
Hydrology	How would the designated travel route network impact aquatic resources in the TMA?
Wildlife	How would the designated travel route network impact wildlife (e.g., special status species, migratory birds, raptors, big game) in the TMA?
Cultural Resources	How would the designated travel route network impact cultural resources in the TMA?
Recreation	How would the designated travel route network impact recreation opportunities, experiences, and access?

1.4.3.1 Issues Not Presented in Detail

What are the effects on air quality in the planning area? As motorized use in the planning area is currently low and dispersed and is not anticipated to increase to a great degree due to the remote nature of the area, implementation of any of the alternatives would not result in the production of vehicle or equipment emission, or particulate matter, above incidental levels as required by the Clean Air Act, as amended.

What are the effects of noise in the planning area? As motorized use in the planning area is currently low and dispersed, implementation of any of the alternatives would not result in significant changes in effects from noise; the occasional, short-term nature of noise associated with low levels of motorized use would only shift in location (routes used) between action alternatives.

What are the effects on fire and fuels management in the planning area? In accordance with 43 CFR 8340.0-5, travel management designations exclude military, fire, emergency, or law enforcement vehicles being used for emergency purposes, and would therefore allow motorized travel cross-country for the purpose of fire suppression. This resource was considered during route evaluation and designation, and the designation of a motorized route system would result in a beneficial effect on access for fire suppression activities and future fuel break planning; however, fire and fuels management does not inform the decision.

What are the effects on visual quality and visual resource management in the planning area? Visual resources were considered during route evaluation, however designation of routes in this TMA would have no impact on visual resources. Developing a defined transportation network of designated routes within the analysis area would not impair visual resources because there would be no changes in line, form, texture, or contrast to the characteristic landscape from designation of routes. New route construction is not part of the proposed action or other alternatives. There would be an overall beneficial impact to visual quality across the planning area as a result of route closures under all the action alternatives.

What are the effects on range resources in the planning area? Motorized access to livestock facilities or other areas important for livestock management (e.g., salting, trailing) was considered during route evaluation and designation. There would be a net decrease in available miles of routes across all the action alternatives; however, as necessary, motorized access in addition to that provided under any alternative would be addressed with case-specific requests by permittees and if warranted, approved by the BLM authorized officer. These authorizations would be temporary for addressing maintenance issues and would not change the long-term route designations.

What are the effects on land use in the planning area? Access for land use activities was considered during route evaluation and designation, and route designations under each action alternative maintain motorized access to valid existing rights within the TMA. Motorized access for future land use activities would be addressed within the permitting process and evaluated under a separate NEPA process; therefore, motorized access for land use activities does not inform the BLM's decision.

What are the effects on areas of special designation (e.g., wild and scenic rivers, designated wilderness, Areas of Critical Environmental Concern [ACECs]) within and adjacent to the planning area? Special designations were considered during route evaluation and designation, and route designations under each action alternative are in conformance with the management objectives for each area. Additionally, wilderness areas were not considered, as motorized and mechanized use is prohibited and would not change under any alternative. There would be no adverse impacts to special designations.

What are the effects on Lands with Wilderness Characteristics (LWCs) in the planning area? Conformance of a designated motorized route system with LWC management objectives was considered during route evaluation and designation and would result in an overall decrease in total miles of routes in existing LWCs, which would improve wilderness characteristics of the LWCs; however, the conformance of any alternative with the existing LWC management objectives does not inform the BLM's decision. Any changes to the LWC inventory as a result of the implementation of any of the alternatives will be addressed in future land use planning efforts.

What are the effects on known paleontological resources in the planning area? Paleontological resources were considered during route evaluation and designation, and while the designation of a motorized route system would result in overall minor beneficial impacts to known paleontological localities, these resources are sparsely distributed across the TMA and do not inform the decision.

Would the action alternatives result in disproportionately high and adverse impacts to low-income or minority communities? An environmental justice baseline analysis was conducted and it was determined that there are environmental justice communities present in the study area. According to BLM guidance (IM 2022-059 and attachments), the BLM is committed to determining if its proposed and alternative actions would adversely and disproportionately impact minority, low-income, or Tribal populations. To determine if an action or alternative disproportionately and adversely impacts an EJ population, the BLM analyzes aggregate effects of all proposed actions and resources and cumulative effects of all proposed actions when

compounded by an impact when added to other past, present, and reasonably foreseeable future actions. Canyonlands East TMP impacts concerning soil, vegetation, hydrology, cultural resources, and wildlife will not disproportionately and adversely impact study area environmental justice communities. There is always potential for environmental justice communities to suffer disproportionate and adverse impacts through decreased recreation access. However, all alternatives maintain access to the Canyonlands East study area and some alternatives offer varying levels of opportunities for more diverse non-motorized and dispersed recreational activities. As such, no disproportionate and adverse impacts to environmental justice communities are anticipated and impacts (including cumulative impacts) to environmental justice communities are not discussed further in this EA.

What are the effects on economics and social values in the planning area? All actions and alternatives associated with the Canyonlands East TMP have the potential to result in small, localized impacts to Owyhee County's economics and social values. While there would be adverse impacts to motorized recreation under all action alternatives, the potential social and economic impact of route reductions are significantly minimized by reductions in environmental degradation and greater opportunities for diverse non-motorized recreation. OHV recreation will continue in the study area under all alternatives and there are sufficient alternate OHV trails in neighboring TMAs within Owyhee County. Moreover, alternatives B, C, and D offer opportunities for ecosystem regeneration and will improve non-market ecosystem services and sense-of-place valuations and support more resilient agricultural and ranching landscapes. As access for livestock grazing and other valid existing rights would be retained under all action alternatives, there would be no adverse impacts to economics and social values related to Owyhee County's ranching landscape.

CHAPTER 2. ALTERNATIVES

This chapter provides a detailed description of the No Action and Action Alternatives; the Action Alternatives are methods for achieving the stated purpose. These alternatives were developed based on an interdisciplinary planning effort and issues raised by the public and other agencies during project scoping efforts.

2.1. Travel Management Planning Designations

A BLM interdisciplinary team (ID Team) explored and evaluated alternatives to provide a range of travel management options that would meet the underlying need for the action, as presented in Section 1.2 of this EA. The ID Team began the route evaluation process by first defining the size, popularity, and condition of the route, identifying its uses (commercial, administrative, property, economics, and public uses), and determining the presence of special resource concerns. For each route, the ID Team also considered and addressed the 43 CFR 8342.1 Designation Criteria (see Appendix E), selecting applicable rationale demonstrating how the route would minimize impacts for each of the route's preliminary alternative designations. The ID Team used route characteristic information to make decisions on a route-by-route basis that would balance this information and led to the design of the route network that offers a range of reasonable action alternatives. This EA addresses the No Action (Alternative A) and three action

alternatives: Alternatives B, C, and D. The No Action Alternative is analyzed to provide a baseline for comparing the impacts of the action alternatives.

This TMP includes elements of inventory, route designation, transportation system planning, and implementation decisions. The BLM solicited public review and input on the route inventory during public scoping (see Appendix G for more detail). The route system proposed under each alternative has been designed to create a range of access opportunities, by both motorized, non-motorized, and non-mechanized means, while protecting important resources. To meet these objectives, some routes identified during the route inventory are proposed to be closed to motorized use, others are reserved for administrative or authorized motorized access only, and the rest would remain open for public motorized use, of which some would be subject to seasonal closures. All of the alternatives, except Alternative A (No Action), would close some routes to motorized vehicles. Segments of certain routes cross state and private land and the BLM acknowledges that it only has jurisdiction over routes on BLM-administered land. Thus, only routes on BLM-administered lands are addressed and will be designated in this TMP.

2.1.1 Designation Types

The alternatives analyzed in this EA include a variety of route designation types. These designations specifically address where OHVs are authorized (reference 43 CFR 8340 for OHV definition). Although designations are labeled using the 'OHV' reference per the CFR, the term encapsulates motorized vehicles in general and should not be confused to only mean off-highway vehicles. The route designation types also describe the kind of user that can utilize the route, how the use can occur, and when access to the route is allowed. These designations also apply to airstrips. For the Canyonlands East TMP, the public OHV designation for any given route falls into one of the following categories:

- OHV-Open – Open year-round to all motorized vehicle travel.
- OHV-Limited – Public motorized vehicle use limited to specified vehicle type, width, or mode of travel. This category also includes routes that are limited to authorized or administrative use only and may provide access to communication sites, grazing facilities, wildlife water developments, etc.
- OHV-Closed – Route not available for any motorized vehicle use.

Designation types are also summarized and cross referenced to 43 CFR 8340 in Table 2.1. Area and route designations, with the exception of designated wilderness areas, do not apply to vehicles being used by members of the Shoshone-Bannock Tribes or Shoshone-Paiute Tribes to access traditional use areas of importance to the tribes or to vehicles being used by members of the Shoshone-Bannock Tribes to exercise their tribally reserved treaty rights. Additionally, snowmobiles or machines designed for over snow use are OHVs, so OHV route designations in the Canyonlands East TMP apply to snowmobile use as well. Cross-country travel for over snow vehicles is not authorized. Snowmobile use in Owyhee County is low due to lack of favorable terrain and winter conditions compared to nearby Valley, Boise, and Elmore Counties (Black et al. 2017). Descriptions for the divisions of the three aforementioned OHV designations that were applied to the routes include:

- Open: Routes where all types of motorized and mechanized vehicle use are permitted at all times, and subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342. Since BLM does not have authority to manage state highways, they are included in the Open designation type.
- Seasonal Closure: Routes that are closed to public motorized and mechanized use with timing restrictions. Within the Canyonlands East TMA, seasonal closures would be implemented to protect two resources: greater sage-grouse lekking areas (March 25-May 15, 5:00 am-9:00am) and bighorn sheep lambing areas (April 15-June 15, 24 hours).
- ATV/Utility Terrain Vehicle (UTV): Routes that are restricted to use by technical 4x4-capable motorized vehicles, including motorcycles and e-bikes, that are 65 inches or less. This width determination was based on current UTV manufacture specifications for both the utility and sport models, with most machines meeting this width. Routes designated as ATV/UTV are subject to seasonal closures and ongoing monitoring.
- Single Track: Routes that are restricted to use by motorcycle, E-bikes (Class I, 2, 3 as defined in Secretarial Order 3376), bicycles, and non-motorized users. Routes designated as Single Track are also subject to seasonal closures and ongoing monitoring.
- Authorized only: These routes are available to the public for non-motorized travel only. Routes designated for authorized motorized use only. This authorized use, often termed "administrative access," is for motorized travel for purposes specifically related to completing Bureau work or specific work completed by a permittee associated with an approved BLM right- of-way or permit. Authorizations may be granted on a case-by-case basis with written approval from the BLM authorized officer with the exception of valid existing rights including Rights-of- Way, current easements, livestock grazing, and access to active mining claims. Routes designated as authorized use only may still be subject to seasonal closures, vehicle size class restrictions and ongoing monitoring.
- Non-motorized: Routes limited to non-motorized uses, such as bicycle, horseback, or hiking, and are subject to seasonal closures. E-bikes are not authorized on designated non-motorized routes.
- Non-mechanized: Routes limited to non-mechanized uses, such as horseback or hiking. Not subject to seasonal closures.
- Closed: Routes closed to motorized use due to resource concerns or conflicts.

Regardless of travel route designations, visitors can walk or horseback ride anywhere on BLM-managed lands within the Canyonlands East TMP (on routes or cross-country). However, mountain bikes (mechanized use) are limited to designated route travel.

Table 2.1. Designation Type Cross Reference to OHV Designation per 43 CFR 8340

Designation Type	43 CFR 8340 (OHV Designation)
Open	OHV Open
Seasonal Closure	Limited to seasonal use (OHV Limited)
ATV/UTV	Limited to ATV/UTV use (OHV Limited)
Single Track	Limited to motorcycles, including Class 1,2,3 e-bikes (OHV Limited)
Authorized Only	Limited to authorized use (OHV Limited)
Non-Motorized	Limited to non-motorized use (OHV Closed)
Non-Mechanized	Limited to mechanized use (OHV Closed)
Closed	OHV Closed

2.2 Alternative A (No Action Alternative)

This alternative represents the current management condition, as described in the Bruneau MFP, and this EA uses it for baseline comparative purposes. Travel is currently allowed on existing roads, primitive roads, airstrips, and trails (see Figure A-4 in Appendix A). The route designations under this alternative are displayed in Table 2.2.

Approximately 1,493 miles of routes and 14 airstrips would continue to be available for motorized recreation in this alternative. Any proposed closures or restrictions of existing routes to prevent resource damage or user conflicts would be reviewed and implemented subject to special rules provided under 43 CFR 8340. Formal proposals for new roads or trails would be evaluated in a site-specific EA. Cross-country travel on foot and horseback would continue to be allowed.

Table 2.2. Route Designations – Alternative A (No Action)

Designation	Mileage	Definition
Highway	70	Open to public motorized use.
Open	1,422	Open to public motorized use.
Total	**1,493**	

Airstrips		
Designation	**Count**	Definition
Open	14	Open to public aviation use.
Closed	0	Aviation use prohibited.
Total	**14**	

2.3 Action Alternatives

2.3.1 Applicable Resource and Route Management Guidance

The BLM applies the management recommendations and Desired Future Conditions for Transportation Planning as specified in the 2009 OPLMA and the 2015 ARMPA. The decisions for Transportation Planning from the OPLMA and ARMPA replace some of those from the 1983 Bruneau MFP; some resource and route management prescriptions from the 1983 Bruneau MFP are still applicable (see Section 2.5 and Appendix E). These management recommendations and Desired Future Conditions provide the objective for route management within the Canyonlands East TMP and were considered during the route evaluation and designation process. Detailed information for each route can be found in the route reports in the project record. Progress in meeting these objectives will be determined through monitoring (see Appendix F). The specific guiding documentation and route management objectives applicable to this TMP are detailed in Appendix E.

2.3.2 Criteria for Action Alternatives Development

The route inventory was updated between 2009-2010 and the public was provided an opportunity to comment and contribute routes to the inventory for evaluation and designation in 2010 (see Appendix G to review public comments and BLM response). Public and stakeholder input, as well as the need to conform with guidance contained in applicable land use plans and regulations (including those contained in 43 CFR 8342.1) and guidance contained in BLM's Travel and Transportation Management Handbook (BLM 2012) informed the ID Team's development of a reasonable range of alternatives to present to the public during the scoping period. Conformance with BLM's motorized route designation criteria (34 CFR 8342.1) can be found in Appendix E. The reasonable range of alternatives offers a distinct range of management strategies that respond to the purpose and need (see Section 1.2), and includes a maximum resource protection alternative, a maximum public access alternative, and a hybrid alternative that balances resource protection with the need for public motorized access.

Maintaining access for the multitude of activities that occur within the TMA was considered a priority when developing the action alternatives, with a tendency not to designate routes as limited or closed if the routes were identified as high use and/or improved, provide access to non-BLM-managed lands, connected to other routes with similar designations, provided access to remote reservoirs, accessed military facilities and sites, accessed active mineral and mining locations, are used for livestock operations (e.g., trailing or salting) or accessed livestock facilities that require frequent access, are routes with current rights-of-way, or are cherry-stem and boundary routes that provide access to wilderness areas.

Important or sensitive resources were considered in proposing closed or limited route designations for each action alternative. Route proximity to these resources, either alone or in combinations, would trigger a seasonal restriction, limited to authorized use, or closed route designation, and may include wildlife use, cultural or historic resources, sensitive plant species, redundant routes, highly erosive soils, multiple crossings of ephemeral waterways and washes,

perennial water and fisheries, and/or wet meadow habitats. Routes that would be closed, seasonally restricted, and/or limited to authorized use across all action alternatives are those that occur in proximity to habitats critical to survival of wildlife species, including Greater sage-grouse lekking areas, bighorn sheep lambing areas, and big-game winter habitat.

2.3.3 Alternative B

This alternative is designed to provide maximum resource protection while still providing reasonable motorized access. The primary management emphasis would be the protection and enhancement of natural resource values through a substantial reduction in the travel routes available for motorized or mechanized use. This alternative reduces the potential for human uses and influences resulting from the presence and use of routes to affect known sensitive resources. Reclamation of closed routes would be prioritized based on wildlife habitat, soil loss potential, cultural resource impacts, or other resource protection needs.

This alternative would provide the lowest number of designated travel routes within the planning area (See Figure A-5 in Appendix A). The alternative protects access to valid existing rights, allows for necessary OHV access for authorized users, and for administrative purposes, such as maintenance of authorized utilities/facilities, range improvements and mining claims. A summary of the route designations and associated mileage for Alternative B is described in Table 2.3.

Table 2.3. Route Designations – Alternative B

Designation	**Mileage***	**Definition**
Highway	70	Open to public motorized use.
Open	388	Open to public motorized use.
Seasonal Closure	123	Closed to public motorized use during certain seasons or times.
Non-mechanized	8	Limited to non-mechanized uses, such a horseback, or hiking.
Non-motorized	11	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Authorized Only	267	Limited to administrative motorized use.
Authorized Only, Seasonal Closure	30	Limited to administrative motorized use but closed to administrative motorized use during certain seasons or times.
Closed	594	Motorized use prohibited.
Total	**1,493**	
Airstrips		
Designation	**Count**	Definition
Open	5	Open to public aviation use.
Closed	9	Aviation use prohibited.
Total	**14**	

2.3.4 Alternative C

This alternative is designed to balance motorized access with the protection of the area's natural and cultural resources. The primary management emphasis is to provide the public with motorized opportunities while protecting critical soils, crucial wildlife habitat, sensitive plants, cultural and historic resources, and authorized mining activities. It balances resource protection with ongoing human uses and their influences, which could impact sensitive resources from the presence or use of routes.

This alternative protects access to valid existing rights and allows for necessary OHV access for specific users for administrative purposes, such as maintenance of authorized utilities/facilities, range improvements and mining claims (see Figure A-6 in Appendix A). A summary of the route designations and associated mileage for Alternative C is described in Table 2.4.

Table 2.4. Route Designations – Alternative C

Designation	**Mileage***	**Definition**
Highway	70	Open to public motorized use.
Open	681	Open to public motorized use.
Seasonal Closure	171	Closed to public motorized use during certain seasons or times
Single Track	16	Limited to single track uses, such as motorcycle, bicycle, or e-bikes.
Non-Mechanized	5	Limited to non-mechanized uses, such a horseback, or hiking.
Non-motorized	10	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Authorized Only	200	Limited to administrative motorized use.
Authorized Only, Seasonal Closure	36	Limited to administrative motorized use but closed to administrative motorized use during certain seasons or times.
Closed	303	Motorized use prohibited.
Total	**1,493**	
Airstrips		
Designation	**Count**	Definition
Open	7	Open to public aviation use.
Closed	7	Aviation use prohibited.
Total	**14**	

2.3.5 Alternative D

This alternative is designed to be the least restrictive to motorized public access while providing reasonable protection to priority and high priority natural and cultural values. The emphasis for this alternative would be to provide for continued motorized access while maintaining the integrity of existing vegetation, and while improving resource conditions through route closures in areas with existing resource damage or serious visitor conflict.

This alternative would designate the highest number of route miles within the planning area (see Figure A-7 in Appendix A) and close the fewest miles of routes. These designations would maintain the maximum amount of access to valid existing rights, OHV access for specific users for administrative purposes, and the greatest level of public motorized access for recreation. A summary of the route designations and associated mileage for Alternative D is described in Table 2.5.

Table 2.5. Route Designations – Alternative D

Designation	**Mileage***	**Definition**
Highway	70	Open to public motorized use.
Open	1,048	Open to public motorized use.
Seasonal Closure	53	Closed to public motorized use during certain seasons or times
ATV/UTV	6	Limited to use by technical 4x4 capable motorized vehicles.
Single Track	47	Limited to single track uses, such as motorcycle, bicycle, or e-bikes.
Non-mechanized	5	Limited to non-mechanized uses, such a horseback, or hiking.
Non-motorized	1	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Authorized Only	49	Limited to administrative motorized use.
Authorized Only, Seasonal Closure	8	Limited to administrative motorized use but closed to administrative motorized use during certain seasons or times.
Closed	206	Motorized use prohibited.
Total	**1,493**	
Airstrips		
Designation	**Count**	Definition
Open	10	Open to public aviation use.
Closed	4	Aviation use prohibited.
Total	**14**	

2.3.6 Alternatives Considered but Not Analyzed in Detail

R.S. 2477 Alternative. Numerous public comments have discussed issues surrounding Revised Statute (R.S.) 2477 assertions, and as such, the BLM considered an alternative that designates all routes associated with R.S. 2477 assertions as open. R.S. 2477 is a section of the Mining Act of 1866 that granted "the right-of-way to the State for construction of highways over public lands not reserved for public uses." It was repealed by the Federal Lands Policy and Management Act in 1976. The extent and nature of the rights-of-way granted by R.S. 2477 and the access routes that qualify as highways for the grant are in dispute. Some members of the public regard R.S. 2477 rights-of-way as important components of state and local infrastructure, and as essential to the economic growth and social well-being of western communities. Others are concerned that recognition of extensive R.S. 2477 rights-of-way would interfere with the BLM's ability to protect and manage wilderness values and other resources on public lands.

In the Canyonlands East Travel Management Plan, Alternative A designates existing routes that Owyhee County asserts are R.S. 2477 "highways" as open. In some cases, routes the County identified could not be field verified and therefore were not included in the alternative. However, while Alternative A includes routes claimed as R.S. 2477 highways, a travel management plan is not intended to provide evidence, bearing on, or address the validity of any R.S. 2477 assertions. R.S. 2477 rights are determined through a process that is entirely independent of the BLM's planning process. Consequently, Canyonlands East TMP did not take into consideration R.S. 2477 evidence, or make determinations as to the validity of those claims because it was beyond the scope of this EA. The BLM bases travel management planning on purpose and need related to resource uses and associated access to public lands and waters giving consideration to the relevant resources. At such time as a decision is made on R.S. 2477 assertions, the BLM will adjust its travel routes accordingly.

Complete Route Closure Alternative. The BLM considered an alternative that would not designate any routes available for motorized recreational use. Although this alternative would provide the maximum protection of natural resources in the "limited" OHV category area, it would be at the expense of the motorized recreating public. The Bruneau MFP's management for OHV use was amended by the OPLMA, which directs that all existing routes be managed in a "limited to designated roads and trails" OHV category until travel management planning is completed for the affected area(s). This category allows for OHV use on certain routes that have been designated for that use. In effect, the "limited" OHV area would become a de facto "closed" OHV area and would require a land use plan amendment to implement this alternative in its entirety. In addition, it would not meet the purpose and need of this TMP. Furthermore, closing all routes in the "limited" area would block access to other areas that remain "open" to OHV use. For these reasons, this alternative is not a viable alternative to carry forward for detailed analysis.

2.4 Summary of Route Mileage for all Alternatives

Table 2.6 includes a summary of the route mileage of the No Action Alternative and three action alternatives described above, providing a comparison of miles of routes and number of airstrips that would be designated under each of the alternatives.

Table 2.6. Route Mileage and Airstrip Summary, by Alternative

Route Mileage				
Designation	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Highway	70	70	70	70
Open	1,422	388	681	1,048
Seasonal Closure	0	123	171	53
ATV/UTV	0	0	0	6
Single Track	0	0	16	47
Non-mechanized	0	8	5	5
Non-motorized	0	11	10	1
Authorized Only	0	267	200	49
Authorized Only, Seasonal Closure	0	30	36	8
Closed	0	594	303	206
Total	**1,493**	**1,493**	**1,493**	**1,493**
Airstrips				
Designation				
Open	**14**	**5**	**7**	**5**
Closed	**0**	**9**	**7**	**9**
Total	**14**	**14**	**14**	**14**

2.5 Compliance and Conformance

This alternatives included in this EA conform to the following plans (see Appendix E for a more detailed description):

- Bruneau Management Framework Plan (Recreation Management Objective #1 [BLM 1983:161], Multiple Use Recommendation R-1.2(5) subsection c) as required by 43 Code of Federal Regulations (CFR) 1610.5
- Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan (Management Direction [MD] TTM1, MD TTM 4) as required by CFR 1610.5 (BLM 2015a).
- Owyhee Canyonlands Wilderness and Wild and Scenic River Final Management Plan (BLM 2015b)

2.5.1 Relationship to Statutes, Regulations, or Other Plans

This section lists applicable statues, regulations, and other plans to this TMP and Environmental Assessment (EA); see Appendix E for a more detailed discussion.

- National Environmental Policy Act of 1969 (NEPA), PL 91-190, 42 United States Code (USC) 4321-4370(e) as amended and BLM NEPA Handbook (H-1790-1) (BLM 2008)
- Federal Land Policy and Management Act of 1976 (FLPMA), as amended
- 43 CFR 8342, Designation of Areas and Trails
- Executive Order (EO) 11644 (February 8, 1972), as amended by EO 11989 (May 24, 1977)
- BLM Land Use Planning Handbook (H-1601-1) Appendix C
- BLM Travel and Transportation Handbook (H-8342) and Manual (M-1626)
- Endangered Species Act of 1973 (ESA), Section 7, as amended
- The Bald and Golden Eagle Protection Act of 1940, as amended
- The Migratory Bird Treaty Act of 1918 (MBTA)
- National Historic Preservation Act of 1966, as amended (NHPA)
- 2014 State Protocol Agreement between Idaho State Historic Preservation Office and the BLM
- Fort Bridger Treaty of 1868 (15 Stat. 673)
- EOs 11593, 13007, and 13175
- Antiquities Act of 1906
- Archaeological Resource Protection Act (ARPA)
- American Indian Religious Freedom Act (AIRFA)
- Native American Graves Protection and Repatriation Act (NAGPRA)
- Paleontological Resources and Preservation Act (PRPA) (16 USC 470aaa-11)
- Environmental Justice (Executive Order 12898)
- EO 13807 and Secretarial Order (SO) 3355

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter describes the existing conditions relevant to the issues presented in Section 1.4.3 and discloses the potential impacts of the proposed action and alternatives."

General Setting

The Canyonlands East TMA is in southwest Idaho and encompasses 796,052 acres (see Figure A-2 in Appendix A). The planning area is a mixture of land management jurisdictions and includes lands managed by the BLM (644,457 acres), the State of Idaho (88,139 acres), the

Department of Defense (657 acres), and private landowners (62,799 acres). The analysis area for the affected environment includes the CE TMA, as well as routes that extend beyond the TMA boundary; these routes are considered in this analysis for connectivity and continuity. Therefore, the analysis area for the affected environment consists of the CE TMA and buffered routes being considered in this EA and TMP; the total area is 815,677 acres and will be referred to within this document as the TMA analysis area.

This area contains a variety of landscapes, ranging from high desert to remote rivers in deep canyons, and is characterized by its remoteness. It hosts vegetative zones ranging from sagebrush to high- elevation aspen, and supports a variety of wildlife, including the Greater sage-grouse. The Bruneau River Canyon and Valley represent the eastern edge of the TMA, the Big Jacks Creek Canyon is near the western edge, while the Blackstone Desert represents the southeastern portion of the TMA.

The Canyonlands East TMA is characterized as sparsely populated and remote, and the route network enables public and private access related to grazing operations, (28 active grazing allotments with 10 permittees) hunting, trapping, OHV riding, and whitewater rafting. Public visitation for recreational purposes is low compared to the Boise or Owyhee Front; and use is concentrated in the spring and fall months when the weather is cooler. Three current mining operation is within the TMA boundaries. The elevation of the TMA varies from approximately 7,500 feet near the Nevada state line to under 3,000 feet at the northern boundary of the TMA.

The existing transportation system within the TMA includes a State Highway 51, county roads, private routes, and approximately 1,493 miles of routes across public lands. Some routes extend beyond the TMA boundary and are considered in this analysis for connectivity and continuity. The major road in the planning area is Idaho State Highway 51, which runs north to south through the TMA for approximately 70 miles. There are no incorporated cities or towns in the Canyonlands East TMA, although numerous private ranches are located throughout.

3.1 Issue 1: Soils- How would the designated travel route network influence the potential for soil erosion in the TMA?

3.1.1 Affected Environment

The soils in the planning area are extremely diverse, resulting from the variability in parent materials, slope, aspect, elevation, climate, and vegetative communities. Fourteen soil units compose over 60% of the soils in the TMA, briefly described in Table B-1 in Appendix B. Soils information for the planning area was obtained from the NRCS soil surveys for Owyhee County (NRCS 2016). The dominant soil orders in the Owyhee High Plateau MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are well drained, clayey or loamy, and shallow or moderately deep.

Soils that would be affected by the action alternatives can be classified into two distinct types: 1) gravel and sandy loams and 2) clay and silt loams. Generally, gravel and sandy loams occur in the Snake River Plains Major Land Resource Area (MLRA), while clay and silt loams are

primarily located in the Owyhee High Plateau MLRA within the project area. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) provides maps and full descriptions of both these MLRAs (NRCS 2006).

The NRCS Soil Survey of Owyhee County Area, Idaho (NRCS 2016) describes the occurrence and characteristics of these soil types in detail. Compaction of soils has the potential to reduce soil porosity and permeability, and soil types that are most susceptible to compaction are loamy sands and gravelly soils with a wide range of particle sizes (Webb and Wilshire 1983). Erosive soils are more susceptible to accelerated erosion than other soils because they are inherently less stable. Soils in the TMA with the highest potential for erosion include types of soils with sandy loam or gravelly surface textures (Lovich and Bainbridge 1999). Susceptibility of soil types to erosion can be estimated using the K factor. K factor is a soil erodibility factor which represents both susceptibility of soil to sheet and rill erosion by water, and can be grouped in low, medium, and high erosion risk groups. In the TMA, roughly 12% of soils (96,033 acres) fall within the high erosion risk group, 54% (423,787 acres) fall within the medium erosion risk group, 30% (240,135 acres) fall within the low erosion risk group, and 4% (27,826) of soils have an unknown risk for erosion (NRCS 2016).

3.1.2. Environmental Impacts

3.1.2.1 Impacts of Alternative A

The analysis area for impacts to soil resources consists of the motorized route network and airstrips. Impacts are considered in terms of miles of routes and number of airstrips on identified erosive soils, and total overall miles of routes and number of airstrips across the TMA. Mechanical disturbance of soils from motorized vehicle activities could result in soil compaction, diminished water infiltration, impaired or diminished function of soil stabilizers such as biotic soil crusts and accelerated erosion rates causing rills and gullying. Compaction of soils has the potential to decrease the infiltration of surface water as well as inhibiting the growth of root systems, thus increasing precipitation runoff; as the precipitation runoff rate increases, rates of soil erosion are accelerated, leading to the formation of erosional features on road surfaces. In addition, dry, powdery soils may be susceptible to wind erosion where vegetation has diminished as a result of vehicle travel.

There are currently 264 miles (19% of the current system) of unpaved routes that occur on soils that have a high risk for erosion (high K-factor range) and 736 miles (52% of the current system) of unpaved routes that occur on soils that have a medium risk for erosion (medium K-factor). Impacts from motorized use would be more severe on the 264 miles of unpaved routes, as these soils are more sensitive to disturbance since they include types of soils with sandy loam or gravelly surface textures (see Table B-2, Appendix B for route miles by K-factor range). Continued motorized use of existing routes would continue to contribute to localized soil erosion and result in loss of site productivity and sediment delivery to hydrologic systems.

3.1.2.2 Impacts of Alternative B

This alternative would have the greatest beneficial impact to soil resources in the TMA. Under Alternative B, 135 of the 264 miles of routes (51%) in soils with a high K-factor range and 309

of the 736 miles of routes (41%) in soils with a medium K-factor range would be designated as closed or non-motorized, reducing impacts of motorized use on routes after they revegetate. Another 472 miles of routes outside of highly erosive soil areas would also be designated as closed or non-motorized (see Table B-3, Appendix B for miles of motorized routes by K-factor range). While impacts would be similar to Alternative A on routes designated for motorized use, the closure or non-motorized designation routes on high or medium erosive soils would prevent further degradation and provide a major, long-term benefit to sensitive soils resources. Natural revegetation of the 588 overall miles of routes that would be designated as closed would stabilize soils and decrease the potential for erosion. Non-motorized designation of 20 overall miles of routes would result in revegetation of a portion of route width and reduce adverse soils impacts. An overall reduction of route miles could decrease the rate of soil erosion occurring and prevent the formation of erosional features across the TMA. The retained motorized routes and airstrips would be susceptible to soil erosion and compaction; however, the severity of impacts across the TMA with this alternative would be decreased compared to current conditions.

3.1.2.3 Impact of Alternative C

Under Alternative C, 74 of the existing 264 miles of routes (28%) that occur in soils with a high K-factor range and 141 of the 736 miles of routes (19%) in soils with a medium K-factor range would be designated as closed or non-motorized. Another 243 miles of unpaved routes occurring outside of highly erosive soil areas would also be designated as closed or non-motorized. Approximately 1,087 miles of unpaved motorized routes would be retained for motorized use (see Table B-4, Appendix B for miles of motorized routes by K-factor range). Alternative C would have a moderate beneficial impact to soil resources in the TMA.

3.1.2.4 Impacts of Alternative D

Under Alternative D, 44 of the existing 264 miles of unpaved routes (17%) that occur in soils with a high K-factor range and 95 of the 736 miles of routes (13%) in soils with a medium K-factor range would be designated as closed or non-motorized. Another 165 miles of unpaved routes occurring outside of highly erosive soil areas would also be designated as closed or non-motorized. Approximately 1,194 miles of unpaved routes would be retained for motorized use (see Table B-5, Appendix B for miles of motorized routes by K-factor range). Alternative D would have a minor beneficial impact to soil resources in the TMA.

3.2 Issue 2: Vegetation, Special Status Species, and Noxious Weeds and Invasive Plants- How would the designated travel route network impact native vegetation, special status species, and noxious weeds/invasive plants in the TMA?

3.2.1 Affected Environment

Vegetation

Vegetation is an important biotic component of the landscape because it stabilizes watersheds and provides cover, browse, nesting, and rearing habitat for a diverse assemblage of wildlife and

multiple uses. Vegetation also aids in maintaining healthy watersheds and streams by protecting soils, regulating stream flows, and filtering sediments from water. Distinct vegetation communities within the TMA are influenced by characteristics such as soil depth, texture, and chemistry; climate variables, particularly temperature, total and seasonal distribution of precipitation and wind; and topographic features, most importantly elevation, aspect, and slope. Plant communities respond to other environmental influences, such as wildlife and livestock foraging, rodent burrowing, and fire. Plants themselves also influence soil chemistry and soil resistance to wind and water erosion.

The TMA is located in a semi-arid steppe climate with little annual rainfall and wide variation in temperatures throughout the year. Topology consists of tablelands, dissected lava plains, valleys, alluvial fans, and scattered mountains. Basins and hills are generally dominated by big sagebrush and grasses. Sagebrush species may include Wyoming big sagebrush (*Artemisia tridentata* spp.*wyomingensis*), black sagebrush (*A. nova*), mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), low sagebrush (*A. arbuscula*), common grasses are Indian ricegrass (*Achnatherum hymenoides*), Sandberg bluegrass (*Poa secunda*), and cheatgrass (*Bromus tectorum*). At higher elevations, aspen (*Populus tremuloides*) and mountain shrubs (e.g. Antelope bitterbrush – *Purshia tridentata,* mountain mahogany – *Cercocarpus sp.*) are more abundant. Riparian areas are vegetated with emergent vegetation types such as sedges (*Carex sp.)*, rushes (*Juncus sp.*) and willows (*Salix sp.*); the transition zone at the edge of the riparian area is often dominated by sagebrush. Table B-6 in Appendix B provides general vegetation classification and proportions for the TMA as defined by Tagested and Downs (2007).

BLM Special Status Plant Species

Special status plants are sensitive species considered by the BLM to be rare in terms of global and/or state distribution. Each special status plant is ranked according to its range wide and state rarity based on the Natural Heritage Program (IDF&G Conservation Data Center) and assigned a 'type' number by the BLM. Special status plant species occur in a variety of plant communities and physical habitats, many of which have distinctive soil types, and several often occur together. The general habitat types that support special status plants are lake-bed sediments, sagebrush steppe, sandy soils, lithic soils, and wetland areas including playas and hot springs.

Table B-7 in Appendix B provides a list of all special status plants known to occur in the TMA, along with their current status and habitat requirements. Several endemic taxa are also found here, including Mulford's milkvetch (*Astragalus mulfordiae*) among others. A portion of the affected environment of the TMA analysis area is in Nevada. The BLM Sensitive Species list for Nevada differs from the Idaho list. However, there are currently no known special status plant populations occurring in the Nevada portion. in the portion that occurs in Nevada.

Noxious Weeds and Invasive Plants

"Noxious weed" is a legal designation made by the Idaho State Department of Agriculture about invasive nonnative plants 1) that are potentially more harmful than beneficial, 2) whose adverse impacts exceed the cost of control, and 3) that have the potential of being eradicated. Most of the TMA analysis area consists of native plant communities with few, scattered noxious weed populations, consisting of approximately 1% of vegetative cover species (see Table B-8 in Appendix B).

Eleven plant species identified by the State of Idaho as noxious weeds are known to occur within the TMA analysis area; Table 3.8 provides a list of the noxious weeds known to occur, along with an estimation of their distribution within the TMA analysis area.

In addition to the State-listed noxious weeds, seven common invasive plant species occur in the TMA analysis area (Table B-9 in Appendix B). An example is exotic annual grasses, such as cheatgrass, that are common to dominate in many lower-elevation areas (especially the northern part of the TMA), often replacing native species, such as sagebrush. The following invasive species list is not exhaustive but addresses the most common invasive plant species that occur within the TMA analysis area.

Cheatgrass is an invasive, exotic, annual grass that is found throughout the TMA analysis area in the shrub understory, and can be the dominant species in some areas, especially in disturbed areas and adjacent to existing trails. Oftentimes, it can become established in an area after existing native vegetation is disturbed by fire or mechanical activities. Years with above-average precipitation result in increased cheatgrass production, particularly when concentrated in the late winter and early to mid-spring. Cheatgrass is much more flammable than the native species it replaces when cured out. Locations of cheatgrass and other weeds have been documented during past treatment activities. The majority of treatments have occurred following wildfires. Treatment data show that many invasive species infestations tend to follow route corridors, as vehicles readily spread weed seed along the disturbed route corridors. Exotic annual communities vary greatly with soil type, former vegetation community composition, and history of disturbance.

3.2.2 Environmental Impacts

3.2.2.1 Impacts of Alternative A

Vegetation

The analysis area for direct and indirect impacts to vegetation consists of the footprint of the route network, airstrips, and the area between routes within the TMA.

Potential impacts to vegetation are specified in terms of the following impact indicators:

- Change in miles of routes and number of airstrips within general vegetative cover types
- Route density within general vegetative cover types

Route density can be used as an indicator for direct and indirect impacts to vegetation and the landscape to which it contributes. In general, an area with more routes (expressed as higher route density) would have more degraded vegetation than an area with lower route density, if all other factors are equal. Impacts associated with a higher route density would be more detrimental in low elevation, salt desert scrub communities which are less tolerant of disturbance. This is due to finer soil textures (erodibility/K-factor) and lesser precipitation than higher elevation, coarser textured sites. See the Soils Environmental Impact Section 3.1.2 for more in-depth discussion on erosion capability. Table B-10 in Appendix B describes miles and route densities of general vegetative cover types within the TMA.

Routes generally degrade native vegetation through vegetation removal and edge effects into adjacent habitat (Forman and Alexander 1998; Jones et al. 2008; Trombulak and Frissell 2008; Walker and Everett 1987). Impacts include erosion and sedimentation associated with routes, noxious weed/invasive species proliferation, habitat fragmentation, depressed vegetation vigor due to production and deposition of dust from route travel, and impacts from increased human presence, such as human-caused fires, illegal dumping, and other activities. These off-route impacts often extend several feet and potentially beyond on either side of a route. These impacts occur wherever there are existing routes, and can occur simultaneously with edge effects described below, depending on conditions.

Additionally, the impervious nature of compacted soils along routes and paved road surfaces can increase runoff and generate greater moisture availability immediately along routes (Ouren et al. 2007), creating edge effects in which conditions promote increased cover, vigor, and abundance of plant species compared to areas without routes. Networks of routes fragment intact native vegetation, and the resulting edge effects generate conditions that promote the encroachment of non-native and invasive plant species directly adjacent to trails (Lovich and Bainbridge 1999). Bare ground created by routes increases the rate of evaporation of available moisture, increases the risk of wind and water erosion, and creates conditions favoring establishment of invasive plant species (see Noxious Weeds and Invasive Plants section below for more detailed discussion).

Other indirect effects include increased amounts of airborne pollutants and dust raised by motorized traffic. Airborne contaminants generated by engines can settle onto plants or soils and function as fertilizers (particularly carbon dioxide and nitrogen oxide), which has the potential to alter growth rates and community composition (Bazzaz and Garbutt 1988). Fugitive dust from motorized vehicle traffic adversely affects vegetation in the vicinity of routes. A blanket of dust on plant foliage inhibits plant growth rates through reduction of photosynthesis; reducing plant size and survival (Ouren et al. 2007). Weakened native vegetation provides an increased opportunity for exotic and invasive species to increase in cover and distribution, effectively out-competing native vegetation for soil nutrients and soil moisture.

Currently, the No Action Alternative would continue to have effects to vegetation, especially in the following communities which have an overall higher route density (Table B-10, Appendix B); big sagebrush (543 miles, 1.17 mi/mi^2), seeding (102 miles, 1.78 mi/mi^2), rabbitbrush (51 miles, 1.27 mi/mi^2), salt desert shrub (91 miles, 2.55 mi/mi^2), greasewood (12 miles, 3.49 mi/mi^2), and sparse vegetation/natural barren areas (22 miles, 2.86 mi/mi^2). Overall, route density across vegetative communities within the TMA is at 1.18 mi/mi^2.

Although they cumulatively represent less than 10 percent of the TMA, the most sensitive vegetation types (salt desert scrub, greasewood, sparse vegetation/natural barren areas) have double/triple the route density of other vegetation categories. General impacts described above are more intense in these vegetation types due to fine soil textures and lack of moisture. See the Soils Affected Environment Section 3.1.1 for additional information.

Edge effects would continue to influence distribution and species composition of vegetation along all 1,493 miles of motorized routes and 14 airstrips across the TMA. Impacts could include more dust deposition, proliferation of noxious and invasive weeds, route widening, potentially exacerbate erosion and off- site sedimentation and general human presence impacts could be expected to occur to vegetation where there are existing routes.

Long term, populations of existing plants, native and invasive, would decrease as soil is exposed due to continued use of routes. Subsequently, the long-term effects of exposed soil along routes would result in ground moisture rates decreasing, accelerated erosion, and any viable seed reserves in the soil would be lost.

BLM Special Status Plant Species

Potential impacts to special status plant species are specified in terms of the following impact indicators:

- Number of motorized routes intersecting populations of special status plants
- Number of motorized routes and airstrips within 0.25 mile of populations of special status plants

The number of populations of known (recorded within the last 20 years) special-status plants within 0.25 mile of routes are reflected in Table B-11 in Appendix B. This table describes the species and number of populations of special status species directly and indirectly impacted by motorized routes.

Currently, a total of 51 routes intersects populations of special status plants, with the same route occasionally intersecting multiple populations of the same and/or a number of populations of different species, totaling 105 identified route/population intersections across the TMA. The TMA contains approximately 82 populations within 0.25 mile of the route network, for a total of 106 routes occurring 535 times within 0.25 mile of these populations.

Under the No Action Alternative, special status plant species are expected to be impacted through dust deposition, the proliferation of noxious and invasive weeds, route widening, potentially exacerbate erosion and off-site sedimentation, and general human presence impacts are expected to occur to these plant communities where there are existing routes, particularly along routes that carry larger volumes of traffic. Germinating seeds and seedlings of both native vegetation and special status species are sensitive to motorized vehicle use of routes and can be killed by direct contact with tires or buried by soil erosion and impacted by compaction (CEQ 1979).

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional affects to existing populations of special status species (particularly where motorized routes intersect populations), and increased severity of impacts to the existing affected area. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural climatic fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Potential impacts to noxious weeds and invasive plant species are specified in terms of the following impact indicators:

- Number of motorized routes and airstrips intersecting or is proximate (i.e., within 300 feet) to populations of noxious weeds and invasive plants

- Change in miles of motorized routes and number of airstrips

Routes may be the first point of entry for noxious weeds and invasive plants into a landscape, and the route can serve as a corridor along which the plants are distributed farther into the landscape (Greenberg et al. 1997; Lonsdale and Lane 1994). A single OHV can disperse more than 2,000 invasive noxious knapweed seeds over a 10-mile radius, even when kept on a gravel road (Montana State University Extension Service 1992). In areas of disturbance, direct impacts to vegetation include reduced vegetative cover and reduced growth rates, which increase potential for non-native and pioneering species to become established (Ouren et al. 2007), and increased moisture availability along routes promotes increased vegetative cover of plants that can withstand recurring disturbance. Over the long term, as invasive and non-native species populations increase in size, they would continue to encroach into the native vegetation, out-competing native species, particularly after disturbance events (Adams et al. 1982). Networks of routes fragment intact habitat and create edge habitats, which generate conditions that promote the encroachment of non-native and invasive plant species.

Currently all 1,493 miles of routes and 14 airstrips are open for public motorized use identified in the inventory, which allows for the continued dispersal of weed species throughout the planning area. Across the TMA, 186 routes were identified to intersect existing populations of noxious weeds and invasive plants. More than 570 populations of weeds occurring within 300 feet of these routes have been identified since 2001. No airstrips intersect, nor occur within 300 feet of existing populations of noxious weeds or invasive plants. Over the long term, as invasive and non-native species populations increase in size, they would continue to encroach into the native vegetation, out-competing native species. This would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.2.2.2 Impacts of Alternative B

Vegetation

The reduction in miles of motorized routes under Alternative B would reduce overall impacts to vegetation across the TMA, and the closure of 594 miles of routes and nine airstrips would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. Table B-12 in Appendix B describes changes in miles within general vegetative cover types and route densities from the No Action Alternative.

Under Alternative B, the vegetation communities with the highest route densities would be salt desert shrub (55 miles, 1.53 mi/mi^2), sparse vegetation/natural barren areas (11 miles, 1.44 mi/mi^2), and greasewood (7 miles, 1.96 mi/mi^2). This represents an overall reduction in miles of route within these communities by 40 to 50 percent across these vegetation types from Alternative A (Table B-12, Appendix B). The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate thus stabilizing these areas and allowing plants to recolonize. Overall, route density across vegetative communities within the TMA under this alternative is 0.69 mi/mi^2.

Retained motorized routes would continue to affect native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 879 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional vegetation affected, and increased severity of impacts to the existing affected area. Impacts in the form of increased dust deposition, noxious and invasive weed proliferation, and route widening potentially exacerbate erosion and off-site sedimentation, and general human presence impacts could be expected to occur to vegetation along the retained route network. Over the long term, populations of existing plants, native and invasive, would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation.

BLM Special Status Plant Species

Alternative B would result in the closure or non-motorized designation of 26 of the existing 51 routes that intersect 42 special status plant populations (40%). The closures would help to protect the populations from disturbance and make suitable habitat more hospitable for some species without edaphic properties. The closure or non-motorized designation of 61 routes within 0.25 mile of 209 populations of special status plants would result in a reduction of 39% of populations of plants within 0.25 mile of motorized routes. The 63 plant populations that intersect motorized routes and 326 plant populations that occur within 0.25 mile of routes that would be retained for motorized use under this alternative would continue to affect populations of special status plant species within the TMA (see Table B-13 in Appendix B for a comparison of impacts by species).

This alternative would provide substantial benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative B, closure of 594 miles of routes would provide a substantial reduction of opportunities for dispersal of weed species throughout the TMA. Additionally, 92 of 186 routes (49%) that currently intersect existing populations of noxious weeds and invasive plants would be designated as closed or non- motorized. One hundred ninety-one populations of noxious weeds or invasive plants occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be reduced commensurate with the miles of currently open routes that would be closed. The substantial reduction in miles of motorized routes under this alternative would limit the spread of noxious

weeds and invasive weeds where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. The spread of noxious weeds would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes, though to a lesser degree than the No Action Alternative.

3.2.2.3 Impact of Alternative C

Vegetation

The reduction in miles of motorized routes under Alternative C would reduce overall impacts to vegetation across the TMA, and the closure of 303 miles of routes would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. While growth of population and recreational use is expected to increase and potentially impact vegetation within the route influence zone along motorized routes, reducing the total miles available for motorized use would limit opportunities for the spread of noxious weeds and invasive plants. Table B-14 in Appendix B describes the changes in route miles per general vegetative cover type from the No Action Alternative.

Under Alternative C, the vegetation communities with the highest route densities would be salt desert shrub (67 miles, 1.88 mi/mi^2), sparse/naturally barren areas (16 miles, 2.06 mi/mi^2) and greasewood (8 miles, 2.44 mi/mi^2). This represents an overall reduction in miles of route within these communities by 26 to 30 percent across these vegetation types from Alternative A (Table B-14, Appendix B). The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate. Overall, route density across vegetative communities within the TMA would be 0.92 mi/mi^2

Retained motorized routes would continue to have an adverse effect on the native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 1,174 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional vegetation affected, and increased severity of impacts to the existing affected area. Increased road influence zone impacts in the form of more dust deposition, noxious and invasive weed proliferation, route widening, potentially exacerbate erosion and off-site sedimentation and general human presence impacts could be expected to occur to vegetation along the retained route network.

Over the long term, existing native and invasive plant populations would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation. Subsequently, the long-term effects of reduced erosion and sedimentation of streams would result in increased water quality.

Special Status Plant Species

Under Alternative C, 15 of the existing 51 routes (29%) that intersect 19 special status plant populations (18%) would be designated closed or non-motorized, and 37 of the 106 existing routes (35%) within 0.25 mile of 100 populations of special status plants (21%) would be designated closed or non-motorized. Thirty-six routes would continue to intersect 86 populations, and 69 routes that occur within 0.25 mile of 425 populations would be retained for motorized use (see Table B-15 in Appendix B for a comparison of impacts by species).

Alternative C would have a moderate reduction of impacts to special status plant species in the TMA.

This alternative would provide moderate benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative C, closure of 303 miles of routes would provide a moderate reduction of opportunities for dispersal of weed species throughout the TMA. Additionally, 41 of 186 routes (22%) that currently intersect existing populations of noxious weeds and invasive plants would be designated as closed or non- motorized. One hundred populations of noxious weeds or invasive plants occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be reduced commensurate with the mileage of currently open routes that would be closed. The moderate reduction in the miles of motorized routes under this alternative would limit the spread of noxious and invasive weeds where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. These routes with noxious weeds would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.2.2.4 Impacts of Alternative D

Vegetation

The reduction in miles of motorized routes under Alternative D would reduce overall impacts to vegetation across the TMA, and the closure of 206 miles of routes would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. While growth of population and recreational use is expected to increase in route influence zone impacts along retained motorized routes, reducing the total miles available for motorized use would limit opportunities for the spread of noxious weeds and invasive plants. Table B-16 in Appendix B describes the changes in route miles and densities compared to the No Action Alternative.

Under Alternative D, the vegetation communities with the highest route densities would be salt desert shrub (78 miles, 2.19 mi/mi^2), sparse/naturally barren areas (18 miles, 2.38 mi/mi^2) and greasewood (10 miles, 2.99 mi/mi^2). This represents an overall reduction in miles of route within these communities by 14 to 17 percent across these vegetation types from Alternative A (Table B-16, Appendix B) The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate. Overall, route density across

vegetative communities within the TMA would be reduced to 1.01 mi/mi^2 and would have moderate beneficial impacts to the current condition of vegetation across the TMA.

Retained motorized routes would continue to have an adverse effect on the native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 1,281 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that additional vegetation would be affected, and the severity of impacts would increase in affected areas. Increased road influence zone impacts in the form of more dust deposition, noxious and invasive weeds proliferation, route widening, potentially exacerbate erosion and off-site sedimentation and general human presence impacts could be expected to occur to vegetation along the retained route network.

Over the long term, existing native and invasive plant populations would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation. Subsequently, the long-term effects of reduced erosion and stream sedimentation would result in increased water quality.

Special Status Plant Species

Under Alternative D, 11 of the existing 51 routes (22%) that intersect 14 special status plant populations (13%) would be designated closed or non-motorized, and 27 of the existing 106 routes (25%) within 0.25 mile of 62 populations of special status plants (12%) would be designated closed or non-motorized. Forty routes would continue to intersect 91 populations and 79 routes that occur within 0.25 mile of 473 populations would be retained for motorized use (see Table B-17 in Appendix B for a comparison of impacts by species). Alternative D would have a slight reduction in impacts to special status plant species in the TMA.

This alternative would provide moderate benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural climatic fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative D, closure of 206 miles of routes and four airstrips would provide a minor reduction of the opportunities for dispersal of weed species throughout the TMA. Additionally, 27 of 186 routes (15%) that currently intersect existing noxious weed and invasive plant populations would be designated as closed or non- motorized. Sixty-seven noxious weed or invasive plant populations occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be

reduced commensurate with the miles of currently open routes and number of airstrips that would be closed. The moderate reduction of the miles of motorized routes under this alternative would limit the spread of noxious weeds and invasive plants where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. These routes would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.3 Issue 3: Hydrology- How would the designated travel route network impact aquatic resources in the TMA?

3.3.1 Affected Environment

The TMA analysis area is within the Middle Snake-Boise hydrologic basin (Hydrologic Unit Code [HUC] 170501) (HUC 2) and includes parts of two hydrologic subbasins (HUC 4s): Upper Owyhee (HUC 17050104), and Bruneau (HUC 17050102). This TMA includes approximately 225 miles of unnamed perennial streams and 2,206 miles of named and unnamed intermittent streams (Idaho Department of Environmental Quality [IDEQ] 2020; U.S. Geological Survey [USGS] 2017. Additionally, 619 perennial and intermittent water bodies- including 39 reservoirs, 135 perennial and 248 intermittent lake/ponds, 189 playas, and 8 swamp/marshes- as well as 340 springs, both developed and natural are present within the TMA (USGS 2017). Much of the area receives less than 12 inches of precipitation annually. Therefore, most stream flows result from snowmelt that produces peak discharges in the spring and recharges groundwater levels.

The general fluvial geomorphology of many of the streams along the front range of the Owyhee Mountains is low-sinuosity, high-gradient, V-shaped channels. When the streams flow into the lower- gradient plains, they typically increase in sinuosity (though in some areas access to the lower plains has been lost, and these channels have straightened) and become chisel-shaped channels. Under deteriorating conditions, width to depth ratios increase, eroded banks become evident, and streams can become severely entrenched. In some cases, natural stream channels are developing within the entrenched channels.

Surface water quality varies throughout the TMA, and is dependent on geology, soils, and uses, riparian and wetland vegetation, and water discharge. Section 303(d) of the Clean Water Act establishes requirements for States to identify and prioritize water bodies that do not meet water quality standards and develop a water quality improvement plan, called a total maximum daily load (TMDL), for each water body not meeting water quality standards. These water bodies are placed into Category 4, and those in the 4a Category have had a TMDL completed and approved by the U.S. Environmental Protection Agency. Water bodies in Category 5 are those that do not meet water quality standards for one or more beneficial uses due to one or more pollutants. Streams and water bodies can be placed on both lists. Overall, there are approximately 421.5 miles of Category 4a and 103 miles of Category 5 streams in the TMA (see Table B-18, Appendix B for a detailed description of these listed streams). Streams within the TMA are on the Category 4a list for temperature (25.2 miles), and sedimentation (64.6 miles), and/or on the

Category 5 (303[d]-listed) list for biota/habitat assessments (273.9 miles), and mercury (57.8 miles) (IDEQ 2020).

Motorized routes have the potential to increase input of sedimentation, turbidity, and pollutants within affected watersheds, reducing stream habitat and adversely affecting water quality and subsequently, riparian and aquatic habitats. Acceleration of surface-water runoff and soil erosion can be caused by compaction of soils, disruption of soil crusts, and reduced vegetation cover. Sediment and other debris that erode from the surfaces of the routes could be flushed into aquatic systems, resulting in increased stream water turbidity. Pollutants associated with deposition of emissions and spills of petroleum products could be absorbed into soils and sediments or dissolved in runoff. Surface water runoff and erosion of contaminated soils could introduce potentially toxic chemicals into aquatic systems. Routes also provide human access, and the activities that accompany this access can magnify the adverse effects on aquatic systems beyond those solely from routes themselves.

Presence of routes is correlated with changes in the hydrologic and geomorphic processes that shape aquatic systems and riparian habitat (Gucinski et al. 2001). These changes include severing connections between streams and adjacent floodplain networks, the conversion of subsurface to surface flow by intercepting groundwater flowpaths, and finally, routes can divert flow to streams, which can increase runoff, the likelihood of flash floods and erosion (Forman 2004; Gucinski et al. 2001). Routes in proximity to watercourses tend to increase overland flow sediment transport capacity (Hinckley et al.1983) by causing changes to the surface that alter patterns of runoff. Vehicle tracks and roads in riparian areas smooth obstructions to overland flow, which in turn increases flow rates, leading to accelerated erosion and increased creation of continuous rills and channels. These rills and gullies can grow into continuous gullies (Heede 1983) over time, which can directly transport sediment and pollutants into waterways. This primary impact would result in continued increases of suspended sediment loads from stream crossings, which occur at higher levels along routes that carry larger volumes of traffic, and soil erosion and its delivery to streams from roads and routes, particularly during precipitation events (Brown 1994). Additionally, contaminants contained in soils from exhaust or spills can be transported into aquatic systems by precipitation events or wind-based erosion (Forman et al. 2003).

3.3.2 Environmental Impacts

3.3.2.1 Impacts of Alternative A

The analysis area for direct impacts to hydrological resources consists of the footprint of the current route network and airstrips, and for indirect impacts, route mileages within 300 feet of perennial or intermittent (which includes ephemeral) streams.

Potential impacts to hydrology are specified in terms of the following impact indicators:

- Number of route crossings of perennial and intermittent waterways
- Number of route crossings of Category 4a and 5-listed waterways
- Change in miles of routes and number of airstrips within riparian habitat (300 feet of perennial and intermittent streams, waterbodies and springs)
- Change in miles of routes and number of airstrips within riparian habitat of Category 4a and 5-listed waterways (300 feet)

- Route density in riparian areas (defined as 300ft on either side of a perennial or intermittent streams, waterbodies and springs)

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) used road density as one of 11 variables to model the status of aquatic and terrestrial systems at a landscape scale (Quigley et al. 1996). ICBEMP consistently found roads to be associated with degraded systems using a road density class to classify degradation as low (<0.1-0.7 mi/mi^2), moderate (0.7-1.7 mi/mi^2), and high (1.7-4.7 mi/mi^2). Route density is used in this analysis as a metric for comparing potential impacts of routes between alternatives.

Currently 1,493 miles of existing routes and 14 airstrips are available for motorized travel and there are 1,247 crossings of intermittent or perennial streams by motorized routes. No airstrips cross perennial or intermittent streams. Sixty-one crossings occur in Category 4a and 5-listed streams and approximately 30 miles of existing routes are within 300 feet of Category 4a and 5-listed streams, as described in Table B-19 in Appendix B. Additionally, 427 miles of motorized routes and one airstrip occur within 300 feet of perennial and intermittent streams, waterbodies, and springs at a density of 1.42 mi/mi^2.

Under Alternative A impacts to hydrological resources is expected, especially in areas where concentration of routes is high. Existing routes would continue to contribute to an increase of drainage densities of small watersheds, increasing runoff and stream flow during high-flow events, and consequently increased erosion and introduction of more sediment into the stream system (Furniss et al. 2000). Increases in fine sediment impair the growth and survival of aquatic life, including aquatic insects and fish. The overall result of increased sedimentation into stream systems would result in continued failure to meet IDEQ water quality standards for Category 4a and 5-listed streams and potential impairment of new streams, in addition to impacts to riparian and aquatic habitats.

3.3.2.2 Impacts of Alternative B

Alternative B would have the greatest beneficial impact to live water and stream habitats of the alternatives. Of the existing 1,247 crossings of existing perennial and intermittent streams, 491 would be located on routes that would be designated as closed or non-motorized under Alternative B. Twenty-two of the stream crossings that would be designated as closed or non-motorized occur in Category 4a and 5-listed streams, and 39 crossings would be retained. Crossings retained in the route network as either open to public motorized use or authorized use only are described in Table B-20 in Appendix B.

There are 183 miles of routes and one airstrip that lie within 300 feet of perennial and intermittent streams, waterbodies, and springs that would be closed or designated as non-motorized; approximately 11 miles of these routes lie within 300 feet of Category 4a and 5-listed streams. Closure of the 183 miles of routes and one airstrip within 300 feet of streams would result in a total of 244 miles of retained motorized routes occurring within 300 feet of streams at a density of 0.81 mi/mi^2. This would reduce the route density when compared to the current situation, placing density in the lower spectrum of the moderate category. Alternative B provides the most benefits to hydrologic function and riparian habitats in response to a reduction in total route density.

This alternative would close 594 miles of routes and 9 airstrips, and substantially reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings. The closures

would reduce the number of stream crossings from the current condition by 39%, and commensurately reducing existing impacts to watershed conditions and improving hydrological function across the TMA. The closure of a substantial number of stream crossings would reduce the impacts from sedimentation, turbidity and pollutants entering the system, particularly along routes that carry larger volumes of traffic. More specifically, the closure of 36% of existing crossings in Category 4a and 5-listed streams would improve water quality in already impaired waterbodies. Overall, the closure of stream crossings would have direct benefits to water quality and aquatic habitats across the TMA.

There would be a direct benefit to riparian and aquatic habitats and a reduction in the potential for erosion-caused sedimentation and contamination by pollutants from runoff with the closure or non- motorized designation of 43% of routes within 300 feet of all streams across the TMA. The 19 miles of routes within 300 feet of Category 4a and 5-listed streams (equaling 37% of existing mileage) would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. The reduction of motorized routes would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and decrease the potential for migration of sediments and contaminates into aquatic habitats, as well as decreasing the opportunities for expansion of surface disturbance caused by human access.

3.3.2.3 Impact of Alternative C

Alternative C would reduce impacts to water quality associated with current conditions. Of the existing 1,247 crossings of existing perennial and intermittent streams, 249 would be located on routes that would be designated as closed or non-motorized under Alternative B. Ten of the stream crossings that would be designated as closed or non-motorized occur in Category 4a and 5-listed streams, and 51 crossings would be retained. Crossings retained in the route network as either open to public motorized use or authorized use only are described in Table B-21 in Appendix B. Additionally, there are 97 miles of routes and one airstrip that lie within 300 feet of perennial and intermittent streams that would be closed or designated as non-motorized; approximately 5 miles of these routes lie within 300 feet of Category 4a and 5-listed streams.

Closuring of 97 miles of routes and one airstrip would result in a total of 330 miles of retained motorized routes occurring within 300 feet of streams at a density of 1.10 mi/mi^2. This would reduce the route density when compared to the current situation, placing density within the moderate category. A reduction in route density would moderately benefit hydrologic function and riparian and aquatic habitats in response to a reduction in total route density.

This alternative would reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings, particularly along routes that carry larger volumes of traffic. The closure of 303 miles of routes across the TMA is reflected in a reduction in number of stream crossings from the current conditions by 20%, commensurately reducing the existing impacts to watershed and hydrological function across the TMA. More specifically, the closure of 16% of existing crossings in Category 4a and 5-listed streams would improve water quality in already impaired waterbodies. Overall, the closure of stream crossings would have moderate direct benefits to water quality and aquatic habitats across the TMA.

There would be a direct benefit to riparian and aquatic habitats and a reduction in the potential for erosion-caused sedimentation and contamination by pollutants from runoff with the closure or non- motorized designation of 23% of routes within 300 feet of all streams across the TMA.

Sixteen percent of routes within Category 4a and 5-listed stream would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. Overall, the reduction of a moderate percentage of motorized routes would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and thus lessen the potential for sedimentation and contamination produced by vehicle travel from entering streams and aquatic habitats, as well as decreasing the opportunities for expansion of surface disturbance caused by human access.

3.3.2.4 Impacts of Alternative D

Of the existing 1,247 crossings of existing perennial and intermittent streams, 163 would be located on routes that would be designated as closed or non-motorized under Alternative B. Ten of the stream crossings that would be designated as closed or non-motorized occur in Category 4a and 5-listed streams and 51 crossings would be retained. Crossings retained in the route network as either open to public motorized use or authorized use only are described in Table B-22. There are 59 miles of routes that lie within 300 feet of perennial and intermittent streams that would be closed or designated as non-motorized; approximately 3 miles of these routes lie within Category 4a and 5-listed streams.

Closure of the 59 miles of routes and one airstrip would result in a total of 368 miles of retained motorized routes and no airstrips occurring within 300 feet of streams at a density of 1.22 mi/mi^2. This would reduce the route density when compared to the current situation, placing density within the moderate category, and nearly double what (Lee et al. 1997) determined as being generally associated with low degradation. Alternative D would provide minor benefits to hydrologic function and riparian and aquatic habitats compared to Alternative A in response to a reduction in total route density.

This alternative would reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings, particularly along routes that carry larger volumes of traffic. The closure of 206 miles of routes and four airstrips across the TMA is reflected in a 13% reduction in number of stream crossings from the current conditions, commensurately reducing the existing impacts to watershed and hydrological function across the TMA. More specifically, the closure of 16% of existing crossings in Category 4a and 5-listed streams would improve water quality in already impaired waterbodies. Overall, the closure of stream crossings (including Category 4a and 5-listed and non-listed streams) would have minor direct benefits to water quality and aquatic habitats across the TMA.

Alternative D would directly benefit riparian and aquatic habitats and reduce the potential for erosion- caused sedimentation and contamination by pollutants from runoff with the closure or non-motorized designation of 14% of routes and one airstrip within 300 feet of all streams across the TMA. Twelve percent of routes within 300 feet of Category 4a and 5-listed streams would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. Overall, the reduction of a minor percentage of motorized route length would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and thus lessen the potential for sedimentation and contamination produced by vehicle travel from entering streams and aquatic habitats.

3.4 Issue 4: Wildlife- How would the designated travel route network impact wildlife (e.g., special status species, migratory birds, big game, pollinators, threatened and endangered species) in the TMA?

3.4.1 Affected Environment

The TMA analysis area contains expanses of desert plains, deep canyons, and mountains in essentially natural condition, which provide habitat for a variety of native wildlife. General habitat within the TMA analysis area includes shrub-covered plateaus and foothills, deep rocky canyons, and variably sized creeks and wet meadows. The area is quite open, with the main form of cover for larger animals being topographic, which is abundant due to the many ravines, rocky outcrops, and drainages. Vegetative habitat types for wildlife within the TMA analysis area are made up primarily of sagebrush steppe, salt desert scrub, and aspen communities, which are restricted to higher elevations, in addition to riparian ecosystems along the river canyons and perennial streams. Several riparian areas provide quality habitat, water, and cover for most wildlife species in the area, although some streams and riparian areas are in a degraded condition and have established, invasive vegetation populations.

Sagebrush steppe is found in upland habitats, in addition to along watercourses through salt desert shrub habitat. Sagebrush supports rabbit species, migratory birds such as the Greater sage-grouse, and various small mammals, such as kangaroo rats, in addition to several species of reptiles. Grassland is found where shrub-grasslands have been disturbed by fire, and also supports some migratory bird species and small mammals, as well as foraging habitat for raptor species. Rock outcrops, canyon walls, and talus are attractive to many animals, such as raptors, reptiles, and bats, for breeding, food, and cover.

General wildlife species likely to occur in the area include Greater sage-grouse, mountain lion, bobcat, badger, coyote, black-tailed jack rabbit, cottontail rabbit, gopher snake, western rattlesnake, and several bird and small mammal species. The TMA analysis area also contains important habitat for raptor species that use the area for foraging and/or nesting activities.

Threatened and Endangered Species

The only listed Threatened, Endangered or Candidate species that may occur within the TMA analysis area is the bull trout (*Salvelinus confluentus*) (USFWS 2016). This species is discussed in detail in the Fisheries section.

Fisheries

The TMA analysis area comprises low-elevation sagebrush desert basins that are part of the mainstem Snake, Bruneau, and Owyhee River watersheds. Much of the area receives an average of 10-20 inches of precipitation annually (PRISM 2023). Most stream surface flows result from snowmelt at higher elevations, producing peak discharges in the spring. Water from the melting snowpack also recharges groundwater levels. Many of the smaller streams have perennial to intermittent surface flows that originate as flowing springs.

The length of streams with perennial surface flow and the length of intermittent streams vary from year to year depending on precipitation levels, particularly the amount of winter snowpack. During years of greater water availability, redband trout and other fishes are distributed to lower elevations in streams (Zoellick 1999). Extended periods of drought reduce the area over which

fish are distributed and also the size of fish populations (Dunham et al. 1997). Streams provide habitat for a variety of both cool-water and cold-water–adapted fish species, including one special status fish species: redband trout (Oncorhynchus mykiss gibbsi) and one listed species: bull trout (*Salvelinus confluentus*). Cool-water– adapted fish species include members of the minnow and sucker families (Cyprinid and Catostomid fishes). Most of these species can tolerate cool- to warm-water conditions (> approximately 77 degrees Fahrenheit [°F]) for limited amounts of time.

Key general indicators of aquatic habitat condition of sagebrush desert streams include: 1) stream shading provided by riparian plant communities, 2) adequate riparian and wetland vegetative cover to stabilize streambanks and channels, and 3) stream substrate composition (≤15% fines – substrate particles the size of sand or smaller).

Bull trout were listed as threatened in 1999, and in October 2010, the Bruneau River from the mouth of the Jarbidge River downstream to the Buckaroo Ditch Dam was designated as critical habitat for bull trout by the USFWS. The Bruneau River makes up much of the eastern edge of the TMA analysis area, and upstream of its confluence with the Jarbidge River, it provides suitable winter habitat for migratory bull trout. Bull trout require cold, clear waters (less than 55°F) and low levels of silt, as well as the ability to migrate throughout river systems for reproduction. Currently, it is unknown if bull trout occur within designated critical habitat located in the Bruneau River downstream of the Jarbidge confluence.

Redband trout are a subspecies of rainbow trout that are native to streams east of the Cascade Mountains (Behnke 1992). They are a BLM special status species and also listed as a species of special concern by the State of Idaho and the American Fisheries Society. Within the TMA analysis area, redband trout are widely distributed and have been documented along approximately 190 miles of streams. Redband trout abundance increases significantly as the aquatic habitat condition rating increases. Increases in stream shade provided by riparian shrubs and trees are a strong predictor of redband trout abundance in southwestern Idaho streams (Zoellick and Cade 2006).

BLM Special Status Species

BLM special status species are those species federally identified as threatened, endangered, proposed, or candidate species, and species identified by the State of Idaho as sensitive species. Table B-23 in Appendix B contains a list of BLM Type 1 and Type 2 Special Status Species thought to occur within the Bruneau Field Office boundaries, though because the Bruneau Field Office contains land outside of the TMA analysis area, only some species are assumed to occur within the TMA analysis area.

Greater Sage-grouse (*Centrocercus urophasianus*): In March of 2010, the sage-grouse was determined by the USFWS to warrant protection under the ESA but was precluded from listing due to other species of higher listing priority. Subsequently, ARMPA policy on conservation policies and objectives were published to facilitate identifying, maintaining, and restoring habitat for sage-grouse with the intention of ensuring the persistence of the species. In September of 2015, USFWS determined that listing of the Greater sage-grouse under the ESA was not warranted, due to this and other landscape-scale conservation efforts.

The TMA analysis area falls within the Great Basin Core population of sage-grouse and contains over 583,333 acres of key habitat for this species, with approximately 614,714 acres identified as

winter habitat (see Figure A-8 in Appendix A). Additionally, approximately 149,738 acres have been identified as perennial grassland with a high potential for restoration. The TMA analysis area contains some of the largest, unburned intact sagebrush habitat remaining within Idaho, as well as the largest area with a high density of leks.

Of the 815,677 acres that comprise the TMA analysis area, 667,897 acres are designated as Priority Habitat Management Areas (PHMAs) or 82% of the TMA analysis area. PHMAs are areas that have been identified as having the highest value to maintaining the species and its habitat. PHMAs inform land use measures that are designed to minimize or avoid habitat disturbance. Additionally, Important Habitat Management Areas (IHMAs), which consist of BLM-administered land that provide management buffers and connect areas of PHMAs, consist of areas that contain habitat of moderate to high value and/or populations that are outside PHMAs. After the 2015 Soda Fire, habitat hard triggers were tripped and the identified 45,541 acres of IHMAs within the TMA are consequently managed as PHMAs. Finally, there are also General Habitat Management Areas (GHMAs), consisting of habitat that is occupied seasonally or year-round and located outside of PHMAs and IHMAs, and provides greater flexibility for land use activities. There are 92,502 acres of GHMAs within the TMA. These habitat designations were established by the ARMPA, discussed in more detail in Appendix E.

Specific areas have been identified as Biologically Significant Units (BSUs), which are geographical areas within Greater sage-grouse habitat that contains relevant and important habitats which is used as the basis for comparative calculations to support evaluation of changes to habitat (BLM 2015a). There are 654,429 acres of BSUs within the TMA analysis area.

Sage-grouse are dependent on sagebrush throughout the year, for both food and cover. Important winter habitat is composed of vegetation such as mountain big sagebrush, Wyoming big sagebrush, and/or low sagebrush communities, of which portions of the sagebrush extrudes from snow accumulation and provides important forage. Sage-grouse are completely dependent on sagebrush during late fall and winter (Connelly et al. 2000). During the nesting season, sage-grouse require sagebrush for cover and food, grasses for nesting cover, and forbs for food and nesting cover. In later summer and fall, as the vegetation dries, riparian areas, springs, moist meadows, and higher elevations where green forbs to eat can be found are used (Connelly et al. 2000; Connelly et al. 2004). Range-wide population decline of this species is associated with loss of sagebrush habitats (Connelly et al. 2004), and preservation of remaining habitat is important for persistence.

Lekking habitat consists of low sagebrush flats, openings in vegetation, burned areas, and some types of cropland. The leks within the TMA analysis area are generally located throughout the southern half of the TMA. In 2021, there were 87 occupied[1] leks documented inside or within 1 mile of the TMA analysis area, 61 of which were identified as active.[2] Lek attendance is determined by counting the occurrence of male birds, and often demonstrates fluctuations from year to year. Sage-grouse spend winter at lower elevations or in windswept areas where snow depths do not preclude access to sagebrush. Data indicate hens move their broods higher up the mountains and/or to more moist areas where forbs remain more succulent later into the summer.

[1] Occupied – a lek that has been active at least 1 breeding season within the current 5-year period.

[2] Active – a previously identified lek that has been attended by > 1 displaying male sage-grouse during the current breeding season.

Pollinators: BLM manages for pollinators such as bees, butterflies, bats, and moths under the Strategic Plan for Pollinator Conservation (BLM 2022) and the Special Status Species Management Manual (6840 Manual, BLM 2008b). Pollinators are crucial for the proliferation of flowering plant species which are the cornerstone for sagebrush obligate wildlife, as well as big game (Gilgert and Vaugh 2011). This is especially true for greater sage grouse which rely heavily on pollinating insects as a vital protein source during brood- rearing, as well as consumption of forbs pollinated by insects during nesting (Dumroese et al 2016). Pollinators occur across all habitats/vegetation types; impacts to vegetation inherently impacts pollinators through reduction/increase/quality of floral resources for food and nesting habitat. For analysis purposes, impacts associated with sage grouse, especially during brood rearing and nesting periods extend to pollinators. See also Section 3.2 - Vegetation.

Pygmy Rabbit (*Brachylagus idahoensis*): The pygmy rabbit is a sagebrush obligate found from 2,900 feet to over 6,000 feet in elevation in southwestern Idaho. The pygmy rabbit is the smallest rabbit in North America. This species prefers dense big sagebrush habitat, utilizing sagebrush for both food and cover. Research indicates that large areas of habitat may be needed to conserve pygmy rabbits to accommodate seasonal, regional, and potentially annual variation in resource availability and to maintain linkages among populations (Sanchez and Rachlow 2008). As one of two rabbit species in North America that dig their own burrows, pygmy rabbits are usually only found where there are deep loamy or sandy loam soils. This secretive species is likely sensitive to motorized recreation and high levels of use which could lead to local extirpations. Recent surveys indicate that pygmy rabbits are sparsely distributed across southwestern Idaho, though within the TMA analysis area there is nearly 102,000 acres of modeled suitable habitat. Research has shown that pygmy rabbits are capable of dispersing long distances and that conservation of this species will require large tracts of suitable habitat (Estes-Zumpf and Rachlow 2009).

Golden Eagle (*Aquila chrysaetos*): Golden eagles are protected under the Bald and Golden Eagle Protection Act, as amended in 1990. BLM manages golden eagles under Executive Order 13186 Sec. 3, which directs federal agencies to promote the conservation of migratory bird populations. Golden eagles are found throughout the northern hemisphere, though in the United States they are primarily found west of Texas, favoring habitats that consist of open terrain cut by canyons with upward drafts help with takeoff and soaring. Nests are generally located in open or semi-open habitats such as cliffs, trees, or human-made structures that are close to hunting areas. Golden eagles prey on a variety of species but the majority of the diet in this portion of their range consists of jackrabbits and squirrels (Kochert 1972), and reproductive success of this species is closely tied with availability of this prey species (Murphy 1975, Steenhof and Kochert 2012. Golden eagles are known to be very sensitive to disturbance during the breeding season, particularly during incubation (Snow 1973).

Ferruginous Hawk (*Buteo regalis*): The ferruginous hawk is a species considered a sensitive species by the BLM. A relatively uncommon species, ferruginous hawks are unique among raptors that occur within the TMA in that they forage and nest selectively in grassland habitats (Lehman et al. 1996). They are an open-country species that inhabits grasslands, shrub-steppes, and deserts of the Snake River Plain in Idaho (Ng et al. 2020), and appear to avoid narrow canyons, high elevations, and forest interiors. They nest in trees and shrubs, on cliffs, pinnacles, rock outcrops, buttes, banks, slopes, and utility structures. In the TMA and nearby, they also nest on military towers and artificial nest platforms. This species is very sensitive to human disturbance during the nesting season, and may even abandon a nest during the pre-egg laying

period and incubation period due to a single disturbance (Clark et al. 1989). They feed primarily on small mammals, such as jackrabbits and ground squirrels, though they often have a larger prey base than other raptors (DeGraaf et al. 1991), and productivity is closely linked to prey abundance. The species faces local extinctions in Idaho due to habitat loss caused by agriculture development and urbanization, livestock grazing, reduction in prey populations either through habitat loss or poisoning to control small-mammal populations, illegal shooting, and human disturbance.

Sagebrush Sparrow (*Artemisiospiza nevadensis)*: This species of sparrow is a sagebrush obligate and exists in sagebrush shrublands dominated by big sagebrush with perennial bunchgrasses, although it occasionally can be found in other shrub habitats. In the northern Great Basin, sagebrush sparrows use low and tall sagebrush/bunchgrass, juniper/sagebrush, mountain mahogany/shrub, and aspen/sagebrush/bunchgrass communities as primary breeding and feeding habitats (Paige and Ritter 1999). They nest within the TMA analysis area, although they likely avoid areas experiencing moderate to high levels of human disturbance. Impacts to this species are discussed under Migratory Birds section.

Brewer's Sparrow (*Spizella breweri*): Brewer's sparrow is considered a sagebrush obligate. It is widespread and highly associated with sagebrush shrublands having abundant, scattered shrubs and short grass. It can also be found in mountain mahogany, rabbitbrush, pinyon-juniper, or bunchgrass grasslands (Paige and Ritter 1999). Brewer's sparrows are more likely to occur in sites with high shrub cover and large patch size. The species has been documented in the TMA analysis area and uses the TMA analysis area for nesting and foraging to some degree. Impacts to this species are discussed under Migratory Birds section.

Colombia Spotted Frog (*Rana luteiventris*): Generally, Columbia spotted frogs are a widely distributed species, but southern Idaho represents the southern portion of their range, where they reside in isolated patches of suitable habitat. Spotted frogs in southwestern Idaho are within the Great Basin subpopulation (or clade), and genetic analysis suggests that populations have undergone recent declines (Funk et al. 2008). In 1993, this Great Basin subpopulation was determined by the USFWS to warrant protection under the ESA but was precluded from listing due to other species of higher listing priority (USFWS 1993), and in October of 2015 it was removed from the Candidate list due to collaborative conservation efforts significantly reducing threats to the species (USFWS 2015).

This species is most likely to occur near permanent water along the edges of ponds or lakes or in pools along slower-moving streams where algae persists. Historically, beaver ponds were common in low- gradient streams throughout the Owyhee Mountains, but beaver populations were severely reduced in the 1800s as a result of trapping, and therefore frog habitat used to be much more abundant than it is currently. There are modern records of Columbia spotted frogs occurring within the TMA analysis area near Mary's Creek, Little Blue Creek, and Sheep Creek.

Migratory Birds

The TMA analysis area likely provides suitable habitat for several migratory bird species, which were formerly referred to as neo-tropical birds. While some birds are habitat specific, there is generally some overlap of use between habitat types. Common species found in open grass-dominated habitats within the TMA analysis area are vesper sparrow, meadowlark, and horned lark. Common bird species of sagebrush shrubland habitats likely to be found in the TMA analysis area include sage thrasher, Brewer's sparrow, loggerhead shrike, sagebrush sparrow,

and lark sparrow. There is little mountain shrubland in the TMA analysis area, but where it becomes dense, species such as northern flicker, western and mountain bluebird, and warbler species may be common. Riparian habitat made up of willows, dogwood, cottonwood, and mountain alder, usually host a unique group of species including yellow warbler, Bullock's oriole, western kingfisher, and flycatcher species. The riparian bird community is normally more distinct from surrounding upland communities.

Big Game

Pronghorn: The entire TMA analysis area is classified as American pronghorn (Antilocapra americana) general habitat, and pronghorn are present throughout the year although they are highly mobile and likely avoid areas of human activity when possible. The analysis area also includes 80,216 acres of important migration corridors as pronghorn move from summer and fall to winter seasonal use areas. Pronghorn are generally found in shrub steppe and grassland habitats, and of particular importance to populations is the presence of succulent forbs, an essential component of the vegetative community for lactating does. For winter survival, high-quality browse that protrudes above the snow level is crucial (Yoakum 2004). There are approximately 157,379 acres of pronghorn winter habitat across the TMA analysis area.

California Bighorn Sheep: California bighorn sheep (*Ovis canadensis californiana*) have been documented within the TMA where suitable habitat is found. The TMA analysis area contains approximately 101,250 acres of habitat within its boundaries, and 1,200 acres of this habitat is classified as lambing habitat. This species is also considered a BLM special status species in addition to being a hunted trophy animal. In the southwestern portion of Idaho, bighorn sheep habitat is narrowly defined, consisting of steep rocky canyons. The Idaho Department of Fish and Game manages bighorn sheep populations as Population Management Units (PMUs). Three PMUs (Jack's Creek, Bruneau-Jarbidge, and Owyhee River) occur within and proximate to the TMA, in steep, rugged, open terrain. Surveys conducted in 2008 estimate a total population near 650 bighorns for the three PMUs. Bighorn sheep generally respond negatively to any type of human disturbance (IDFG 2010).

3.4.2 Environmental Impacts

3.4.2.1 Impacts of Alternative A

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-24 in Appendix B for Alternative A. The analysis area for direct and indirect impacts to general wildlife consists of the footprint of the route network and area between routes within the TMA. Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes and number of airstrips
- Density of motorized routes within habitat

Effects of routes on wildlife occur in three ways: direct effects, such as habitat loss and fragmentation; routes use effects, such as traffic causing avoidance or mortality from roadkill; and additional facilitation effects, such as increased recreational pressures, which can increase with road access (discussed in more detail in Big Game below). Anecdotally, this is a relatively low-use TMA so route density impacts may be overestimated. Road density is a useful index of the effect of roads on wildlife populations (Forman et al. 1997). Route density can be used as an indicator of habitat fragmentation and degradation, as well as potential for disturbance. The

effects of route density on wildlife vary by species; however, areas with route density greater than 2.0 mi/mi^2 exceed thresholds for many terrestrial wildlife species (Trombulak and Frissell 2000; Wisdom et al. 2004) and 1.0 mi/mi^2 has been determined to be the maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996).

Routes fragment habitats by changing landscape structure and by directly and indirectly impacting species. Habitat effects of roads on the landscape include dissecting vegetation patches, increasing the edge-affected area and decreasing interior area, and increasing the uniformity of patch characteristics, such as shape and size (Reed et al. 1996). Weed invasions are commonly associated with routes and could alter habitat composition, structure, and function. Routes, ranging from highways to single-track trails, have been identified as significant barriers to animal movement and contribute heavily to habitat fragmentation (Meffe and Carol 1997), reduced population numbers, interruption of life-history events, and cause disturbance from both noise and presence. Road-avoidance behavior is characteristic of large mammals such as elk, bighorn sheep, and bear. Avoidance distances of 328 to 656 feet are common for these species (Lyon 1985). Populations can be fragmented into smaller subpopulations causing increased demographic fluctuation, inbreeding, loss of genetic variability, and local population extinctions of less vagile species, such as small mammals or reptiles.

Adverse effects of motorized recreation on wildlife are numerous and well documented. There is little documentation of direct mortality to wildlife from motorized recreation, although physical impairment and stress does occur from hearing loss caused by high-decibel engine noise, escape responses, reduced reproductive output, and disruptions to foraging and estivation activities (Berry 1980). Routes pose a direct mortality hazard to small, slowly moving, migratory animals, such as amphibians, making them highly vulnerable as they cross even narrow routes (Langton 1989). Populations of amphibians with highly restricted home ranges could be reduced to dangerous sizes by road kills.

Alternative A would have an adverse effect on wildlife species across the TMA, causing disturbance and habitat fragmentation, as all 1,493 miles of currently inventoried routes and 14 airstrips are open to motorized travel. Current route density of 1.18 mi/mi^2, above the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals, but still below that of the 2.0 mi/mi^2 threshold for many individual species. Mode, spatial, temporal, and social variables all determine the degree of impact motorized routes have on a specific species. Impacts on a species could include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others. Wildlife species would continue to experience the adverse effects of motorized recreation throughout the TMA, and some species, such as small mammals, migratory birds, and amphibians, could show population declines over time as levels of use increase.

Fisheries *(Threatened and Endangered Species)*

The analysis area for fisheries consists of the footprint of the route network. Potential impacts to fisheries are specified in terms of the following impact indicators:

- Number of stream crossings in redband trout habitat

- Change in miles of motorized routes within 300 feet of redband trout habitat
- Number of stream crossings in of perennial and intermittent streams
- Change in miles of motorized routes and number of airstrips within 300 feet of perennial and intermittent streams

The Bruneau River and its tributaries provide habitat for both cool-water– and cold-water–adapted fish species, including redband trout, a BLM Special Status Species and an Idaho Species of Special Concern, which are widely distributed and have been documented along approximately 190 miles of streams within the TMA. In addition to redband trout, the TMA also contains habitat for threatened bull trout. Bull trout require cold, clear waters (less than 55°F) and low levels of silt, as well as the ability to migrate throughout river systems for reproduction. The Bruneau River, upstream of the Bruneau and Jarbidge River confluence, provides suitable habitat for spawning, rearing, foraging, migration and overwintering bull trout, but populations have not been verified as occurring, and no inventoried routes occur within bull trout habitats in the TMA. One route facilitates access to bull trout habitat. Impacts from motorized vehicle use of routes to aquatic habitats for redband trout and bull trout are considered to be similar.

Increased fine-sediment composition in stream gravel has been linked to decreased fry emergence, decreased juvenile densities, loss of winter carrying capacity, and increased predation of aquatic species. Increased fine sediment can reduce benthic organism populations and algal production. Increased fine sediment in stream gravel can reduce intragravel water exchange, thereby reducing oxygen concentrations, increasing metabolic waste concentrations, and restricting movements of alevins[4] (Bjornn and Reiser 1991; Coble 1961; Cordone and Kelley 1960). Pools function as resting habitats for migrating adults, rearing habitats for juveniles (Bjornn and Reiser 1991), and refugia from natural disturbances (Sedell et al. 1990). Pools that lose volume from sediment (Jackson and Beschta 1984; Lisle 1982) support fewer fish (Bjornn et al. 1977), and fish that reside in them could suffer higher mortality (Alexander and Hansen 1986).

Increased sediment reduces populations of benthic organisms by reducing interstitial spaces and flow used by many species and by reducing algal production, the primary food source of many invertebrates (Chutter 1969; Hynes 1970). Other impacts of routes on aquatic habitats include barriers to migration, water temperature changes, and alterations to streamflow regimes. Road stream-crossings have been shown to have effects on stream invertebrates. Aquatic invertebrate species assemblages can be related to the number of stream crossings above a site. Total species richness of aquatic insect larvae can be negatively related to the number of stream crossings, and can cause significant differences between macroinvertebrate assemblages above and below road-stream crossings (Newbold et al. 1980), and diversity is negatively correlated with increased road density (McGurk and Fong 1995).

Routes adjacent to stream channels can contribute additional effects. Changes in temperature and light regime from decreases in the riparian canopy can have both beneficial and adverse effects on fish populations. Occasionally, increased food availability can mitigate negative effects of increased summer water temperatures (Bisson et al. 1988). Adverse effects, including elevation of stream temperatures beyond the range of preferred rearing, inhibition of upstream migrations, increased disease susceptibility, reduced metabolic efficiency, and shifts in species assemblages have been documented (Beschta et al.1987; Hicks et al. 1991). Increasing road densities are associated with decreased likelihood of spawning and rearing of non-anadromous salmonids in

the upper Columbia River basin, and populations are negatively correlated with road density (Lee et al. 1997).

Currently, 5 miles of open routes lie within 300 feet of redband trout habitat within the TMA, with no crossings. Routes adjacent to or crossing these streams would continue to contribute sediment and contaminants into waterways and increase turbidity, change water temperature through removal of vegetation, and cause changes to the structure of in-stream habitats such as pools.

Special Status Species

Greater Sage-grouse: The analysis area for direct and indirect impacts to sage-grouse includes the footprint of the current route network, and route density within designated habitat types and buffered occupied leks (0.25 mile).

Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes and number of airstrips in habitat types (including seasonal closures)
- Density of motorized routes in habitat types (including seasonal closures)

The greatest impacts to sage-grouse from motorized use of routes would likely occur during breeding and nesting seasons, when sage-grouse are most vulnerable to disturbance. In addition to disturbance of sage- grouse, motorized routes cause mortality from collisions, fragment sage-grouse habitat, could lead to spread of noxious weeds and other invasive plants, and increase the possibility of wildland fires. These actions have reduced the quality and quantity of sage-grouse habitat in the past and continue to occur. Range-wide population declines of this species are associated with loss of sagebrush habitats (Connelly et al. 2004), and preservation of remaining habitat is important for persistence.

Disturbance during breeding season could cause sage-grouse to disperse from the lek earlier in the day than normal, interrupt display behavior, cause a decline in male lek attendance, interfere or stop mating, and cause hens to disperse further from the lek for nesting (Lyon and Anderson 2003). Hens from leks with human disturbance traveled greater distances, approximately twice as far, to establish a nest than hens from undisturbed leks. Hens from disturbed leks nested an average of 2.5 miles from the lek and were less likely to initiate a nest than hens from undisturbed leks. Most research on sage-grouse has shown that population declines are related to reduced nesting success (Braun 1998; Schroeder 1997; Schroeder et al. 1999). Disturbance caused by use of motorized vehicles in proximity to leks could alter lekking activities and reduce reproductive success. This impact would likely increase with the frequency of motorized disturbance associated with any given lek.

There are 22 miles of existing routes and two airstrips within buffered 2021 occupied leks, at a density of 1.48 mi/mi^2. Lekking habitat consists of low sagebrush flats, openings in vegetation, burned areas and some types of cropland. This alternative would cause adverse effects to sage-grouse from the projected increased use of the area over time, and locations of existing routes near leks and within nesting habitat. Currently, there are no seasonal closures in place for sage-grouse leks or nesting areas and continued motorized use of routes near leks would likely continue to have considerable detrimental effects on reproductive success.

There are 1,136 miles of existing routes within winter habitat at a density of 1.18 mi/mi^2 and five open airstrips, comprising vegetation such as mountain big sagebrush, Wyoming big sagebrush, and/or low sagebrush communities of which portions of the sagebrush extrudes from snow accumulation and provides important forage. Sage-grouse are completely dependent on sagebrush during late fall and winter (Connelly et al. 2000). Fragmentation of this habitat and risk of introduction of non-native plants that have the potential to change the species composition of sagebrush vegetative communities would have lasting adverse impacts to sage-grouse winter survival.

There are 801 miles of existing routes at a density of 1.13 mi/mi^2 and no airstrips within late brood rearing habitat, which is comprised of a mosaic of upland sagebrush vegetation, intermixed with mountain meadows and spring systems, and are another very important component of sage-grouse habitats. Current route density is high and fragmentation of this habitat and risk of introduction of non-native plants have the potential to change the species composition of sagebrush vegetative communities and would adversely impact sage-grouse breeding success.

Motorized route density within key habitat is currently at 1.09 mi/mi^2, along with 11 open airstrips, and sage-grouse would continue to experience disturbance from existing levels of motorized use throughout the year. Motorized route density within Biologically Significant Units (BSUs) is currently 1.16 mi/mi^2, as well as 9 open airstrips, which would continue to fragment high- quality sagebrush habitat and disturb breeding activities, in addition to providing opportunities for non- native vegetation to be introduced into the habitat. BSUs form the geographic basis for calculation of anthropogenic disturbance, as identified in the ARMPA. Table B-24 in Appendix B describes miles and densities of routes in important types of sage-grouse habitat, though there is overlap between habitat types.

Overall, the current motorized route system does not provide seasonal protection for Greater sage-grouse during critical life stages and would continue to have adverse impacts on breeding success and winter survival. Additionally, crucial habitat would continue to be impacted by the current route system and existing levels of fragmentation would continue to exist, which creates potential for invasion of non- native species that could alter species composition and increase the risk of wildfire.

Pygmy Rabbit: The analysis area for direct impacts to pygmy rabbits includes the footprint of the current route network. Motorized route densities within modeled habitat of this species quantifies indirect impacts.

Potential impacts to pygmy rabbit are specified in terms of the following impact indicators:

- Change in miles of motorized routes and number of airstrips in modeled habitat
- Density of motorized routes in modeled habitat

Potential effects from motorized recreation on pygmy rabbits would include habitat fragmentation and degradation, collision mortality, collapsed burrows, disturbance, and habitat degradation. These types of disturbances could lead to diminished body mass, hearing impairment, reduced productivity, and/or poor survival. Pygmy rabbits have been shown to depend on hearing for predator detection (Bradfield 1974), and this suggest that noise from motorized vehicles could increase vulnerability to predation. This secretive species is likely sensitive to motorized recreation and high levels of use likely leading to local extirpations.

Currently, 207 miles of motorized routes and 1 airstrip occur within this ecological system at a density of 1.21 mi/mi^2. This alternative would continue to have adverse effects to pygmy rabbits because there would be no reduction in route density or levels of habitat fragmentation. Motorized recreation would continue throughout the TMA and reduce the availability of areas of refuge, and as motorized traffic increases over time, there would be less available habitat for this species, which could result in lower reproductive success and a decline in population.

Golden Eagle: The analysis area for impacts to golden eagles includes the footprint of the current route network. Golden eagles generally nest on cliffs or in large trees with unobstructed views, and forage in nearby open habitats. They preferentially prey on jackrabbits and other lagomorphs in North America, and reproductive success of this species is closely tied with availability of this prey species (Murphy 1975). Golden eagles have been shown to be very sensitive to disturbance, including motorized recreation, especially during the incubation period (Snow 1973). Habitat for raptor prey species can be degraded from loss and changes in vegetation and is due to habitat fragmentation by routes (Ouren et al. 2007), and there would be increased disturbance and less prey base over time. The No Action Alternative would continue existing adverse effects to raptor species and prey, and these effects would increase as motorized use of routes and airstrips increases over time in the TMA. There are no recorded nests within the TMA, but no systematic surveys have occurred. Therefore, motorized use of routes and airstrips could cause continued disturbances to this species if they are present, but these effects cannot be quantified. Given that impacts to golden eagles could occur, effects are assumed to be commensurate with that of general wildlife and will be described in that section for all action alternatives.

Ferruginous Hawk: The analysis area for impacts to ferruginous hawks includes the footprint of the current route network. Ferruginous hawks will nest in isolated trees, buttes, cliffs, or grasslands, and feed primarily on jackrabbits and ground squirrels, though they often have a larger prey base than other raptors (DeGraaf et al. 1991). The ferruginous hawk is very sensitive to human disturbance during the nesting season and may even abandon a nest during the pre-egg laying or incubation period due to a single disturbance (Clark et al. 1989). Habitat for raptor prey species can be degraded from loss and changes in vegetation and is attributable to habitat fragmentation by routes (Ouren et al. 2007), and there would be increased disturbance and less prey base over time. The No Action Alternative would continue existing adverse effects to raptor species and prey, and these effects would increase as motorized use of routes and airstrips increases over time in the TMA. There are no recorded nests within the TMA, but no systematic surveys have occurred. Therefore, motorized use of routes and airstrips could cause continued disturbances to this species if they are present, but these effects cannot be quantified. Given that impacts to ferruginous hawks could occur, effects are assumed to be commensurate with that of general wildlife and therefore will be described in that section for all action alternatives.

Sagebrush Sparrow: Impacts to this species are discussed in the Migratory Birds section for all alternatives.

Brewer's Sparrow: Impacts to this species are discussed in the Migratory Birds section for all alternatives.

Colombia Spotted Frog: The analysis area for direct impacts to Columbia spotted frogs includes the footprint of the current route network, including stream crossings and mileages of routes within 300 feet of recorded occurrences within the TMA. Potential impacts to Columbia spotted frogs are specified in terms of the following impact indicators:

- Change in miles of motorized routes and airstrips in proximity to habitat
- Number of stream crossings of motorized routes in proximity to habitat

Columbia spotted frogs are not widely distributed across the TMA, therefore only streams and crossings adjacent to or within areas where frogs have been observed were considered for potential impacts.

Currently, there is 1 mile of routes within 300 feet of recorded occurrences of this species, in addition to two crossings of Category 4a and 5-listed intermittent streams. No airstrips occur within 300 feet of recorded occurrences of this species. Direct and indirect impacts to Columbia spotted frog habitat, such as riparian vegetation and stream channels, would increase as projected increases in motorized use continues in the TMA. Impacts from these motorized routes include physical disturbance of riparian vegetation, direct mortality from vehicles, and increased suspended sediment loads from erosion. Additionally, increased sediment loads contribute to destabilizing of stream channels and scouring of riparian vegetation during high stream flows (Furniss et al. 2000). Chemicals from emissions and spills associated with vehicles could be transported into aquatic systems and lower water quality (Ouren et al. 2007). When water quality decreases, habitat quality for amphibians also decreases.

Migratory Birds

Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes and number of airstrips
- Density of motorized routes within vegetative communities

Routes fragment habitat, and create habitat edge effects, modifying the habitat in favor of species that use edges. In some locations, increased water runoff from routes produces lush vegetation "edge effects," which attracts birds for breeding, nesting, or foraging activities (Clark and Karr 1979). The attraction of bird species to these edge habitats can lead to greater risk of mortality by collisions with vehicles (Mumme et al. 2000). Surveys of songbirds in two National Forests of northern Minnesota found 24 species of birds more abundant along roads than away from them (Hanowski and Niemi 1995). Close to half these species were associated with edges, including birds like crows and blue jays that use roads as corridors to find food. Increasing edge diversity of birds could negatively affect interior species abundance (Anderson et al. 1977). Vehicular traffic is also a source of noise that has the potential for disturbing wildlife along any type of road or trail (Bowles 1995). Traffic noise has been documented to lead to significant reductions in breeding bird densities (Reijnen et al. 1995).

Disturbance and soil compaction along routes, along with seed dispersal by vehicles, increase the potential for establishment of invasive, non-native, and other early successional plants (Adams et al. 1982; Prose et al. 1987). Weed proliferation decreases the quality of migratory bird habitat by reducing native vegetative cover. Refer to Table B-10 in Appendix B, Alternative A Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats, used by a variety of migratory bird species.

Sagebrush shrubland habitat, such as big sagebrush, low sagebrush, mountain big sagebrush and big sagebrush mix general vegetative cover types are important habitats for a multitude of sagebrush-obligate songbirds, such as sagebrush sparrow, Brewer's sparrow, and Greater sage-grouse (discussed below). A study of sagebrush-obligate passerines in Wyoming indicates a

39%–40% reduction in sagebrush obligates within 100 meters of dirt roads with low traffic volumes (7–10 vehicles per day) (Ingelfinger and Anderson 2004), which could result in changes in species composition and decreased fitness. Average route density across these communities within the TMA is currently 1.07 mi/mi^2.

Currently, 1,493 miles of inventoried routes occur at a density of 1.18 mi/mi^2 across the TMA and 14 airstrips occur within the TMA. The No Action Alternative does not improve current conditions, as habitat would remain fragmented, and disturbance via motorized recreation is expected to increase over time. Areas of refuge would remain the same with this alternative, and there would continue to be net adverse effects to breeding, nesting, and successful fledging. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

The analysis area for big-game species consists of the footprint of the route network. Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes and airstrips in habitat types
- Density of motorized routes in habitat types

Routes disturb big-game species with noise from human motorized recreation, fragment habitat, create barriers to movement, and allow easier access for hunters. High road densities are associated with a variety of negative human effects on several wildlife species (Brocke et al. 1988). Increases in illegal hunting pressure, facilitated by roads, also negatively affects populations. Moose, wolves, caribou, pronghorn, mountain goat, and bighorn sheep have been shown to be particularly vulnerable to this kind of predation (Lyon 1985; Wisdom et al. 2000). The evidence is strong that human predation, either legally in game management programs or illegally, is greatly facilitated by roads and airstrips, and can significantly affect populations of animals (Cole et al. 1997). Ungulates have been shown to alter their patterns of foraging and spatial use of habitat and have had diminished reproductive output as a result of disturbance from motorized recreation (Yarmoloy et al. 1988), and this disturbance can be directly related to volume of traffic on routes. Noise and human presence can disturb and displace wintering big-game animals, leading to increased physiological stress during a time when ungulates are often already stressed from low temperatures, deep snow, or food shortages (Canfield et al. 1999). The increased stress can lead to death and reproductive loss. A route density threshold of 1.0 mi/mi^2 has been determined to be the maximum for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996).

Pronghorn: Pronghorn are generally found in shrub steppe and grassland habitats, and of particular importance to populations is the presence of succulent forbs, an essential component of the vegetative community for lactating does. For winter survival, high-quality browse that protrudes above the snow level is crucial (Yoakum 2004). Human motorized recreation in pronghorn habitat adversely impacts habitats and causes disturbance. Approximately 1,193 miles of routes and 12 airstrips are currently open to public motorized vehicle use across general pronghorn habitat within the TMA at a density of 1.18 mi/mi2. Of the routes, 316 miles occur in

winter habitat areas at a density of 1.29 mi/mi2. Three of the 12 airstrips also occur within winter habitat. Route densities in both these habitat types are over the 1.0 mi/mi2 threshold. Additionally, approximately 110 miles of routes and one airstrip are currently open to public motorized use within migration corridors at a density of 0.88 mi/mi2. This could result in continued avoidance of the few higher volume routes resulting in lowered winter survival due to disturbance within winter habitats where routes remain accessible during the wintering period. Additionally, motorized routes and airstrips within habitat subject pronghorn to pressures from hunting, both legal and illegal. Populations of pronghorn would continue to be adversely impacted by motorized routes and human disturbance facilitated by access via motorized routes.

California Bighorn Sheep: In the southwestern portion of Idaho, bighorn sheep habitat is narrowly defined, consisting of steep, rocky canyons and flat plateaus adjacent to these canyons. One of the major threats to bighorn populations is the recent increase in human recreation in habitat areas, leading to increased levels of disturbance, though specific research into motorized recreation and its effects on bighorn sheep is lacking. Because bighorn sheep generally respond negatively to any type of human disturbance, restrictions on motorized recreation in habitat areas is warranted (IDFG 2010). Currently, 221 miles of routes, occurring at a density of 1.42 mi/mi^2, are available for public motorized vehicle use within bighorn sheep habitat in the TMA. Two airstrips also occur within bighorn sheep habitat. Of those routes, 8 miles occur within lambing habitat identified by Idaho Fish and Game biologists, though additional lambing habitat may exist within the TMA. No airstrips occur within identified lambing habitat. Route density in general habitat is well over the 1.0 mi/mi^2 threshold. This could result in continued avoidance of the routes and restricted movement through general habitat resulting in lowered reproductive potential and high levels of human-caused disturbance. Additionally, motorized routes and airstrips within habitat subject bighorn sheep to pressures from hunting, both legal and illegal.

3.4.2.2 Impacts of Alternative B

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-25 in Appendix B for Alternative B. The closure of 613 mile of motorized routes and nine airstrips under Alternative B would provide long-term benefits to wildlife species found within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 0.69 mi/mi^2, well below the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an overall reduction in route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would benefit raptor species and other predators inhabiting the area.

Fisheries *(Threatened and Endangered Species)*

Under Alternative B, less than 4 miles of routes, consisting of both open to public motorized use and authorized use only, are within 300 feet of redband trout habitat, with no crossings. The one route that facilitates access to bull trout habitat would be designated open to public motorized use

subject to seasonal closures, not related to fisheries. Designations under Alternative B would result in greater diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Redband trout habitat would no longer be impacted by existing stream crossings, which would facilitate improvements in fish movement, gene flow, and invertebrate assemblage. Closed routes would no longer contribute sediment and contaminants into waterways and therefore turbidity in impacted waterways would be lessened, water temperature would regulate through regrowth of vegetation, and no longer cause continuing changes to the structure of in-stream habitats, such as pools. Alternative B would reduce fine sediment loads and would lead to improved fish reproduction, growth, and a decrease in mortality for both redband trout and potential populations of bull trout.

Special Status Species

Greater Sage-grouse: The permanent route closures would eliminate 613 miles of existing motorized routes and nine airstrips and would benefit sage-grouse by creating more contiguous habitats and reducing the potential for human disturbance via routes. The permanent closure of these routes would also reduce the chance for human-caused wildfires, as well as the potential for nonnative invasive plants and noxious weed spread, which would lower threats to existing wildlife habitat. Table B-25 in Appendix B describes mileages and route densities of routes in important types of sage-grouse habitat, though there is overlap between habitat types, in addition to route densities that would occur during times of seasonal closure.

Under Alternative B, there would be 11 miles of motorized routes and no airstrips within buffered 2021 occupied leks, at a density of 0.76 mi/mi^2, and seasonal closures of routes would reduce this to 3 miles of motorized routes at a density of 0.19 mi/mi^2. The seasonal closures would have a temporal component consistent with the breeding season and time of lekking behavior, and would be in place from March 25 to May 15 when routes would be closed to public motorized use from 5 a.m. to 9 a.m. As disturbance caused by proximity to motorized routes can cause reductions in sage-grouse populations from both loss of habitat, as well as lek abandonment, the elimination of routes and the seasonal reduction in disturbance would have a beneficial effect on sage-grouse, by reducing disturbance during important breeding and brood-rearing periods, and potentially improve reproductive success. Use of retained motorized routes near leks would likely continue to cause human disturbance of lekking behavior.

Under Alternative B, there would be 663 miles of motorized routes and one airstrip within winter habitat, at a density of 0.69 mi/mi^2, and seasonal closures of routes would reduce this to 515 miles of motorized routes at a density of 0.54 mi/mi^2. Permanent closures of routes in winter habitat would have a beneficial effect on sage-grouse populations by conserving critical habitats on which the species is entirely dependent on through portions of the year. Reductions in fragmentation of this habitat and risk of introduction of non-native plants that have the potential to change the species composition of sagebrush vegetative communities would have long-term beneficial impacts to sage-grouse winter survival.

Under Alternative B, there would be 474 miles of motorized routes within late brood rearing habitat, at a density of 0.67 mi/mi^2, and seasonal closures of routes would reduce this to 372 miles at a density of 0.52 mi/mi^2. Reduction in route density from current conditions would be beneficial to sage-grouse reproductive success by reducing habitat fragmentation and potential for human disturbance.

Motorized route density within key habitat under Alternative B would occur at 0.65 mi/mi^2. Six airstrips would be closed, leaving five open airstrips within key habitat. Human disturbance facilitated by motorized routes would be greatly reduced across the TMA. Motorized route density within BSUs would occur at 0.67 mi/mi^2. Six airstrips would be closed, leaving three open airstrips within BSU. The closures and reduction in motorized route density would reduce impacts to high-quality sagebrush habitat from fragmentation and reduce opportunities for non-native vegetation to be introduced into the habitat.

Overall, Alternative B provides seasonal protection for Greater sage-grouse during critical life stages and would reduce current adverse impacts on breeding success and habitats necessary for winter survival. Additionally, fragmentation of crucial habitat would be reduced, along with potential for invasion of non- native species that may alter species composition and increase the risk of wildfire. These impacts would result in an increase in sage-grouse habitat quality, and in turn have beneficial effects on breeding success and population size.

Pygmy Rabbit: Under Alternative B, 140 miles of motorized routes would be designated in modeled pygmy rabbit habitat within the TMA, occurring at a density of 0.82 mi/mi^2. The one airstrip that occurs within modeled habitat would be closed under this alternative. This alternative would have beneficial effects to pygmy rabbits, as a reduction in route density indicates a reduction of habitat fragmentation. There would be tracts of continuous habitat providing buffers from noise and disturbance associated with motorized recreation. Additionally, direct impacts from mortality and burrow collapse would be reduced commensurate with routes designated as closed. Areas of refuge would increase, which could result in greater reproductive success and an increase in population numbers. These larger patches of habitat without routes under this alternative would improve the chances of persistence of the species within the TMA.

Colombia Spotted Frog: Under Alternative B, there would be approximately 0.25 mile of routes retained within 300 feet of recorded occurrences of this species, in addition to one crossing of a Category 4a or 5-listed intermittent stream. Direct and indirect impacts to Columbia spotted frog habitat, such as riparian vegetation and stream channels, would decrease with a reduction of opportunities for chemical pollutants to enter aquatic habitats. Additionally, direct mortality associated with vehicles would be lessened with a reduction in motorized routes. Physical disturbance of riparian vegetation and increased suspended sediment loads from erosion would decrease. When water quality improves, habitat quality for amphibians also improves. Alternative B would improve water quality in spotted frog habitat, beneficially affecting aquatic habitats within the TMA and increasing the chances of persistence.

Migratory Birds

This alternative would provide long-term benefits to migratory birds by closing 613 miles of existing inventoried routes and nine airstrips, reducing the density of designated motorized routes to 0.69 mi/mi^2 across the TMA (refer to Table B-12 in Appendix B, Alternative B Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density across sagebrush shrubland habitat within the TMA would be reduced to 0.62 mi/mi^2, directly benefiting sagebrush obligate songbird species by reducing edge effects within their habitat. This would result in a decrease in habitat fragmentation and levels of disturbance would decrease from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available land. This would increase areas of refuge, and net

beneficial effects to breeding, nesting, and fledging would occur. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure.

The remaining 880 miles of routes and five airstrips that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Under Alternative B, there would be the greatest reduction in miles of motorized routes that have the potential to disturb big-game species with noise, fragment habitat, create barriers to movement, and allow easier access for hunting. The reduction in disturbance and increase in contiguous areas of habitat would have a long-term beneficial impact on big-game species' winter survival and reproductive success, leading to increased population numbers and resiliency.

Pronghorn: Under Alternative B, approximately 431 miles of routes, would be designated as open to public motorized vehicle use within pronghorn habitat, at a density of 0.43 mi/mi2. Five airstrips would remain open, two of which would occur within winter habitat, and seven airstrips would be designated closed, one of which would occur within winter habitat. Of the open routes, 104 miles would occur within winter habitat areas, at a density of 0.43 mi/mi2. Route densities in both these habitat types are well below the 1.0 mi/mi2 threshold, most importantly within winter habitat. Access to this habitat would be reduced by 67% under this alternative and impacts to breeding and foraging behavior from human disturbance and habitat fragmentation would be reduced from current levels, allowing for greater reproductive success and winter survival. Additionally, approximately 64 miles of open routes and no open airstrips would occur within migration corridors at a density of 0.51 mi/mi2. Access to the corridors would be reduced by 42% under this alternative and impacts to pronghorn as they move from summer/fall to wintering seasonal use areas would be greatly reduced, allowing for greater winter survival. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans. Routes, particularly higher volume routes, could continue to act as movement barriers and contribute to habitat fragmentation.

California Bighorn Sheep: Under Alternative B, 106 miles of routes designated as open to public motorized vehicle use would occur in bighorn sheep habitat within the TMA, occurring at a density of 0.68 mi/mi^2. Two airstrips would be designated closed, which would result in no airstrips occurring within bighorn sheep habitat under this alternative. This alternative would provide a reduction of 52% of existing routes and would greatly reduce habitat fragmentation and barriers to movement. Forty-seven of the 106 miles would be subject to seasonal closures. Most routes subject to season closure in bighorn habitat are in place to reduce disturbance to Greater sage-grouse and would be in place from March 25 to May 15, and these routes would be closed to public motorized use from 5am to 9am. Two routes would be subject to seasonal closure during bighorn sheep lambing, which would be in place from April 15 to June 15 and does not have time of day restrictions. Of the open routes, 1 mile would occur within identified lambing habitat. Route densities in general habitat is well below the 1.0 mi/mi^2 threshold. Access to this

habitat would be reduced by 73% during seasonal closures under this alternative and impacts to breeding and foraging behavior would be greatly reduced from current levels, allowing for greater reproductive success and potential for population increases. In a few instances, higher volume routes in the TMA, could continue to act as movement barriers, causing habitat fragmentation and genetic bottlenecking between populations.

3.4.2.3 Impact of Alternative C

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-26 in Appendix B for Alternative C. The closure of 318 miles of motorized routes and seven airstrips under Alternative C would provide moderate, long-term benefits to wildlife species found within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 0.92 mi/mi^2, below the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an overall reduction of route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would benefit raptor species and other predators inhabiting the area.

Fisheries *(Threatened and Endangered Species)*

Under Alternative C, 5 miles of routes, consisting of both open to public motorized use and authorized use only are within 300 feet of redband trout habitat, with no crossings. The one airstrip that occurs within 300 feet of perennial and intermittent streams would be designated as closed under this alternative. The one route that facilitates access to bull trout habitat would be designated as open to public motorized use but subject to seasonal closures, not related to fisheries.

Designations under Alternative C would result in a moderate improvement in diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Redband trout habitat would continue to be impacted by one stream crossing, which would facilitate moderate improvements in fish movement, gene flow, and invertebrate assemblage. Closed routes would no longer contribute sediment and contaminants into waterways and therefore turbidity in impacted waterways would be lessened, water temperature would regulate through regrowth of vegetation, and no longer cause continuing changes to the structure of in-stream habitats, such as pools. Alternative C would reduce fine sediment loads and would lead to improved fish reproduction, growth, and a decrease in mortality for both redband trout and potential populations of bull trout.

Special Status Species

Greater Sage-grouse: The permanent route closures would eliminate 314 miles of existing motorized routes and seven airstrips and would moderately benefit sage-grouse by creating more contiguous habitats and reducing the potential for human disturbance via routes. The permanent closure of these routes would also reduce the chance for human-caused wildfires, as well as the potential for nonnative invasive plants and noxious weed spread, which would lower threats to existing wildlife habitat. Table B-26 in Appendix B describes miles and densities of routes in

important types of sage-grouse habitat, though there is overlap between habitat types, in addition to route densities that would occur during seasonal closures. Under Alternative C, there would be 17 miles of motorized routes within buffered 2021 occupied leks, at a density of 1.20 mi/mi^2, and seasonal closures of routes would reduce this to 5 miles of motorized routes at a density of 0.31 mi/mi^2. Within 2021 occupied leks buffers, one airstrip would be closed, and one airstrip would be open to public use but subject to seasonal closure during lekking. The seasonal closures would have a temporal component consistent with the breeding season and time of lekking behavior. As disturbance caused by proximity to motorized routes can cause reductions in sage-grouse populations from both loss of habitat, as well as lek abandonment, the elimination of routes and the seasonal reduction in disturbance would have a beneficial effect on sage-grouse by reducing disturbance during important breeding and brood-rearing periods, and potentially improve reproductive success. Use of retained motorized routes near leks would likely continue to cause human disturbance of lekking behavior.

Under Alternative C, there would be 895 miles of motorized routes within winter habitat, at a density of 0.93 mi/mi^2. Within winter habitat, two airstrips would be closed, three would remain open to year-round use. Seasonal closures of motorized routes would reduce total mileage within winter habitat to 701 miles of motorized routes at a density of 0.73 mi/mi^2. Permanent closures of routes and airstrips in winter habitat would have a moderate beneficial effect on sage-grouse populations by conserving critical habitats on which the species is entirely dependent through portions of the year. Reductions in habitat fragmentation and risk of introduction of non-native plants that have the potential to change the species composition of sagebrush communities would have long-term beneficial impacts to sage-grouse winter survival.

Under Alternative C, there would be 659 miles of motorized routes within late brood rearing habitat, at a density of 0.93 mi/mi^2, and seasonal closures of routes would reduce this to 519 miles of motorized routes at a density of 0.73 mi/mi^2. Reduction in route density from current conditions would be beneficial to sage-grouse reproductive success by reducing habitat fragmentation and potential for human disturbance.

Motorized route density within key habitat under Alternative C would occur at 0.88 mi/mi^2. Four airstrips would be closed, leaving seven open airstrips. Human disturbance facilitated by motorized routes would be moderately reduced within key habitat across the TMA. Motorized route density within BSUs would occur at 0.92 mi/mi^2. Five airstrips would be closed and four would remain open to public use. Impacts to high-quality sagebrush habitat from fragmentation and opportunities for non-native vegetation to be introduced into the habitat would be reduced.

Overall, Alternative C provides seasonal protection for Greater sage-grouse during critical life stages and would reduce current adverse impacts on breeding success and habitats necessary for winter survival. Additionally, fragmentation of crucial habitat would be reduced, along with potential for invasion of non- native species that could alter species composition and increase the risk of wildfire. These impacts would result in a moderate increase in sage-grouse habitat quality, and in turn have beneficial effects on breeding success and population size.

Pygmy Rabbit: Under Alternative C, 172 miles of motorized routes would be designated in modeled pygmy rabbit habitat within the TMA, occurring at a density of 1.0 mi/mi^2. The one airstrip that occurs within modeled habitat would be closed under this alternative. This alternative would have moderate beneficial effects to pygmy rabbits, as a reduction in route density indicates a reduction of habitat fragmentation. There would be tracts of continuous

habitat providing buffers from noise and disturbance associated with motorized recreation. Additionally, direct impacts from mortality and burrow collapse would be reduced commensurate with routes designated as closed. Areas of refuge would increase, which could result in greater reproductive success and increased population numbers. These larger patches of habitat without routes under this alternative would improve the chances of persistence of the species within the TMA.

Colombia Spotted Frog: Under Alternative C, there would be 0.37 mile of routes retained within 300 feet of recorded occurrences of this species, in addition to one crossing of a Category 4a or 5-listed intermittent stream. Direct and indirect impacts to Columbia spotted frog habitat, such as riparian vegetation and stream channels, would decrease with a reduction of opportunities for chemical pollutants to enter aquatic habitats. Additionally, direct mortality associated with vehicles would be lessened with a reduction in motorized routes. Physical disturbance of riparian vegetation and increased suspended sediment loads from erosion would decrease. When water quality improves, habitat quality for amphibians also improves. Alternative C would improve water quality in spotted frog habitat, beneficially affecting aquatic habitats within the TMA and increasing the chances of persistence.

Migratory Birds

This alternative would provide moderate, long-term benefits to migratory birds by closing 318 miles of existing inventoried routes and seven airstrips, reducing the density of designated motorized routes to 0.92 mi/mi^2 across the TMA (refer to Table B-14 in Appendix B, Alternative C Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density across sagebrush shrubland habitat within the TMA would be reduced to 0.83 mi/mi^2, directly benefiting sagebrush obligate songbird species by reducing edge effects within their habitat. This would result in a decrease in habitat fragmentation and levels of disturbance would decrease from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available land. This would increase areas of refuge, and net beneficial effects to breeding, nesting, and fledging would occur. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure.

The 1,175 miles of routes and seven airstrips that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Under Alternative C, there would be a moderate reduction in miles of retained motorized routes that have the potential to disturb big-game species with noise, fragment habitat, create barriers to movement, and allow easier access for hunters. The reduction in disturbance and increase in contiguous areas of habitat would have a substantial, long-term beneficial impact on big-game species winter survival and reproductive success, leading to increased population numbers and resiliency.

Pronghorn: Under Alternative C, approximately 729 miles of routes would be designated as open to public motorized vehicle use within pronghorn habitat, at a density of 0.72 mi/mi2. Seven airstrips would remain open, three of which would occur within winter habitat, and five airstrips would be designated closed, none of which would occur within winter habitat. Of the open routes, 212 miles would occur within winter habitat areas, at a density of 0.87 mi/mi2. Route densities in both these habitat types are below the 1.0 mi/mi2 threshold, most importantly within winter habitat. Access to this habitat would be reduced by 33% under this alternative and impacts to breeding and foraging behavior from human disturbance and habitat fragmentation would be substantially reduced from current levels, allowing for greater reproductive success and winter survival. Additionally, approximately 78 miles of open routes and no open airstrips would occur within migration corridors at a density of 0.62 mi/mi2. Access to the corridors would be reduced by 29% under this alternative and impacts to pronghorn as they move from summer/fall to wintering seasonal use areas would be substantially reduced, allowing for greater winter survival. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans. Routes, particularly higher volume routes, may also continue to act as movement barriers and contribute to habitat fragmentation.

California Bighorn Sheep: Under Alternative C, 156 miles of routes designated as open to public motorized vehicle use would occur in bighorn sheep habitat within the TMA, occurring at a density of 1.0 mi/mi^2. One airstrip would be designated closed, and one airstrip would be designated open. This alternative would provide a reduction of 29% of existing routes and would reduce habitat fragmentation and barriers to movement. Fifty-eight of the 156 miles would be subject to seasonal closures. Of the open routes, 2 miles would occur within identified lambing habitat. Route densities in general habitat is below the 1.0 mi/mi^2 threshold, which would improve habitat from current conditions and would reduce route density to that of a naturally functioning landscape containing sustained populations of large mammals. Access to this habitat would be reduced by 56% during seasonal closures under this alternative and impacts to breeding and foraging behavior would be substantially reduced from current levels, allowing for greater reproductive success and potential for population increases.

3.4.2.4 Impacts of Alternative D

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-27 in Appendix B for Alternative D. The closure of 212 miles of motorized routes and four airstrips under Alternative D would provide minor, long-term benefits to wildlife species within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 1.01 mi/mi^2, which is roughly at the maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an overall minor reduction of route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would provide benefits to raptor species and other predators inhabiting the area.

Fisheries *(Threatened and Endangered Species)*

Under Alternative D, 5 miles of routes, consisting of both open to public motorized use and authorized use only, are within 300 feet of redband trout habitat, with no crossings. The one airstrip that occurs within 300 feet of perennial and intermittent streams would be designated as closed under this alternative. The one route that facilitates access to bull trout habitat would be designated open to public motorized use. Alternative D would moderately reduce sedimentation and improve water quality, improving fish habitat within the TMA.

Designations under Alternative D would result in a minor improvement in diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Redband trout habitat would continue to be impacted by one stream crossing, which would facilitate moderate improvements in fish movement, gene flow, and invertebrate assemblage. Closed routes would no longer contribute sediment and contaminants into waterways and therefore turbidity in impacted waterways would be lessened, water temperature would regulate through regrowth of vegetation, and no longer cause continuing changes to the structure of in-stream habitats, such as pools. Alternative D would reduce fine sediment loads and would lead to improved fish reproduction, growth, and a decrease in mortality for both redband trout and potential populations of bull trout.

Special Status Species

Greater Sage-grouse: The permanent route closures would eliminate 212 miles of existing motorized routes and four airstrips and would benefit sage-grouse by creating more contiguous habitats and reducing the potential for human disturbance via routes. The permanent closure of these routes would also reduce the chance for human-caused wildfires, as well as the potential for nonnative invasive plants and noxious weed spread, which would lower threats to existing wildlife habitat. Table B-27 in Appendix B describes route miles and densities in important types of sage-grouse habitat, though there is overlap between habitat types, in addition to route densities that would occur during seasonal closure. Under Alternative D, there would be 18 miles of motorized routes within buffered 2021 occupied leks, at a density of 0.74 mi/mi^2, and seasonal closures of routes would reduce this to 11 miles of motorized routes at a density of 0.74 mi/mi^2. Within 2021 occupied leks buffers, one airstrip would be closed, and one airstrip would be open to public use. The seasonal closures would have a temporal component consistent with the breeding season and time of lekking behavior. As disturbance caused by proximity to motorized routes can cause reductions in sage-grouse populations from both loss of habitat, as well as lek abandonment, the elimination of routes and the seasonal reduction in disturbance would have a beneficial effect on sage-grouse by reducing disturbance during important breeding and brood-rearing periods, and potentially improve reproductive success. Use of retained motorized routes near leks would likely continue to cause human disturbance of lekking behavior.

Under Alternative D, there would be 973 miles of motorized routes within winter habitat, at a density of 1.01 mi/mi^2, and seasonal closures of routes would reduce this to 916 miles at a density of 0.95 mi/mi^2. Within winter habitat, one airstrip would be closed, four would remain open to year-round use. Permanent closures of routes in winter habitat would have a minor beneficial effect on sage-grouse populations by conserving critical habitats on which the species is entirely dependent through portions of the year. Reductions in habitat fragmentation and risk of introduction of non-native plants that have the potential to change the species composition of

sagebrush vegetative communities would have long-term beneficial impacts to sage-grouse winter survival.

Under Alternative D, there would be 704 miles of motorized routes within late brood rearing habitat, at a density of 0.99 mi/mi^2 and seasonal closures of routes would reduce this to 647 miles at a density of 0.91 mi/ mi^2. This reduction in route density from current conditions would be somewhat beneficial to sage-grouse reproductive success by reducing habitat fragmentation and potential for human disturbance.

Motorized route density within key habitat under Alternative D would be 0.94 mi/mi^2. Two airstrips would be closed, leaving nine open airstrips. Human disturbance facilitated by motorized routes would be substantially reduced within key habitat across the TMA. Motorized route density within BSUs would be 0.99 mi/mi^2. Three airstrips would be closed and six would remain open to public use. This would result in a minor reduction in impacts to high-quality sagebrush habitat from fragmentation and reduce opportunities for non-native vegetation to be introduced into the habitat.

Overall, Alternative D provides seasonal protection for Greater sage-grouse during critical life stages, and would provide minor reductions in current adverse impacts on breeding success and habitats necessary for winter survival. Additionally, fragmentation of crucial habitat would be reduced, along with potential for invasion of non-native species that could alter species composition and increase the risk of wildfire. These impacts would result in a minor increase in sage-grouse habitat quality, and in turn have beneficial effects on breeding success and population size.

Pygmy Rabbit (Brachylagus idahoensis): Under Alternative D, 181 miles of motorized routes would be designated in modeled pygmy rabbit habitat within the TMA, occurring at a density of 1.06 mi/mi^2. The one airstrip that occurs within modeled habitat would be closed under this alternative. This alternative would have minor beneficial effects to pygmy rabbits, as a reduction in route density indicates a reduction of habitat fragmentation. There would be tracts of continuous habitat providing buffers from noise and disturbance associated with motorized recreation. Additionally, direct impacts from mortality and burrow collapse would be reduced commensurate with routes designated as closed. Areas of refuge would increase, which could result in greater reproductive success and an increase in population numbers. These larger patches of habitat without routes under this alternative would improve the chances of persistence of the species within the TMA.

Colombia Spotted Frog (Rana luteiventris): Under Alternative D, there would be 0.59 mile of routes retained as open to public motorized use within 300 feet of recorded occurrences of this species, in addition to one crossing of a Category 4a or 5-listed intermittent stream. Direct and indirect impacts to Columbia spotted frog habitat, such as riparian vegetation and stream channels, would decrease with a reduction of opportunities for chemical pollutants to enter aquatic habitats. Additionally, direct mortality associated with vehicles would be lessened with a reduction in motorized routes. Physical disturbance of riparian vegetation and suspended sediment loads from erosion would decrease. When water quality improves, habitat quality for amphibians also improves. Alternative D would provide minor improvements to water quality in spotted frog habitat.

Migratory Birds

This alternative would provide minor, long-term benefits to migratory birds by closing 212 miles of existing inventoried routes and four airstrips, reducing the density of designated motorized routes to 1.01 mi/mi^2 across the TMA (refer to Table B-16 in Appendix B, Alternative D Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density across sagebrush shrubland habitat within the TMA would be reduced to 0.90 mi/mi2, directly benefiting sagebrush obligate songbird species by reducing edge effects within their habitat. This would result in a minor decrease in habitat fragmentation and levels of disturbance from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available land. This would increase areas of refuge, with resulting net beneficial effects to breeding, nesting, and fledging. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure.

The 1,281 miles of routes and 5 airstrips that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Under Alternative D, there would be a moderate reduction in miles of retained motorized routes that have the potential to disturb big-game species with noise, fragment habitat, create barriers to movement, and allow easier access for hunters. The reduction in disturbance and increase in contiguous areas of habitat would have long-term beneficial impact on big-game species' winter survival and reproductive success, leading to increased population numbers and resiliency.

Pronghorn: Under Alternative D, approximately 969 miles of routes would be designated as open to public motorized vehicle use within pronghorn habitat, at a density of 0.96 mi/mi2. Seven airstrips would remain open, three of which would occur within winter habitat, and five airstrips would be designated closed, none of which would occur within winter habitat. Of the open routes, 258 miles would occur within winter habitat areas, at a density of 1.06 mi/mi2. Route density in this habitat type would be just above the 1.0 mi/mi2 threshold, which would improve habitat from current conditions but would not reduce route density to that of a naturally functioning landscape containing sustained populations of large mammals. Access to this habitat would be reduced by 18% under this alternative and impacts to breeding and foraging behavior from human disturbance and habitat fragmentation would be somewhat reduced from current levels, allowing for greater reproductive success and winter survival. Additionally, approximately 94 miles of open routes and no open airstrips would occur within migration corridors at a density of 0.75 mi/mi2. Access to the corridors would be reduced by 15% under this alternative and impacts to pronghorn as they move from summer/fall to wintering seasonal use areas would be somewhat reduced from current levels, allowing for greater winter survival. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans.

California Bighorn Sheep: Under Alternative D, 199 miles of routes designated as open to public motorized vehicle use would occur in bighorn sheep habitat within the TMA, occurring at a

density of 1.28 mi/mi2. One airstrip would be designated closed, and one airstrip would be designated open. This alternative would provide a 9% reduction of existing routes and would provide minor reductions in habitat fragmentation and barriers to movement. Thirteen of the 199 miles would be subject to seasonal closures. Of the open routes, 6 miles would occur within identified lambing habitat. Route density in general habitat is above the 1.0 mi/mi2 threshold, which would improve habitat from current conditions but would not reduce route density to that of a naturally functioning landscape containing sustained populations of large mammals. Access to this habitat would be reduced by 16% under this alternative and impacts to breeding and foraging behavior would be reduced from current levels, allowing for greater reproductive success and potential for population growth.

3.5 Issue 5: Cultural Resources- How would the designated travel route network impact cultural resources in the TMA?

3.5.1 Affected Environment

Cultural resources are defined as specific locations of human activity, occupation, or traditional use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, and architectural sites and structures, as well as places with traditional cultural or religious importance within a social or cultural group. Relevant laws, ordinances, EOs, policies, regulations and agreements other than NEPA include the American Antiquities Act of 1906 (16 USC 431–433); National Historic Preservation Act (NHPA) as amended of 1966 (16 USC 470 et seq.); EO 11593 Protection and Enhancement of the Cultural Environment (May 13, 1971); American Indian Religious Freedom Act of 1978 (92 Stat. 469: 42 USC 1996); Archaeological Resources Protection Act of 1979 (16 USC 470aa–470mm); Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001–3013); and EO 13007 Indian Sacred Sites (May 24, 1996) and the Federal Land Policy and Management Act of 1976 (FLPMA) (90 Stat. 2743; 43 USC 1701).

The most relevant direction in terms of considering the effects of the proposed project on cultural resources is the National Historic Preservation Act (NHPA) as amended of 1966 (16 USC 470 et seq.) The NHPA, among other things, requires federal agencies to consider the effects of an undertaking on historic properties, and established the National Register of Historic Places (NRHP). The implementing regulations (36 CFR 800) of the NHPA define historic properties as "…any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places." The term "historic properties" also includes properties of traditional religious or cultural importance to Native Americans.

For a resource to be considered eligible for the NRHP, it must be at least 50 years old, possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one of four criteria. Historic properties are those:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguished entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

The Canyonlands East TMA analysis area, as identified in this document, is a landscape that has been associated with humans for thousands of years. Occupation in the area began in the Paleoindian Tradition (13,500 to 8,000 B.P.) of the Late Pleistocene and Early Holocene as small groups of highly mobile hunter-gatherers made their way through the landscape (Plew 2016). Paleoindian occupations are generally recognized by the presence of large lanceolate projectile points and/or extinct megafauna, although they did also exploit other faunal and floral resources. People of the Archaic Tradition (8,000 to 250 B.P) hunted both large and small game and exploited more plant resources. Artifact assemblages contain smaller stemmed and notched project points, ground stone, bone tools, and sometimes ceramics. Occupations found in caves, rockshelters, and open-air sites are indicative of mobile populations following resources as they become available (Plew 2016). Euro-Americans began arriving in the nineteenth century after Idaho was acquired in the Louisiana Purchase and encountered Northern Shoshone, Shoshone Bannock, Northern Paiute, and Nez Perce peoples who were eventually moved to reservations. Mining, farming, and ranching all became important economic drivers of settlement of Idaho; today, agriculture and ranching remain prominent occupations (Schwantes 1991).

This TMA contains approximately 796,052 surface acres. In 2015 and 2016, class III cultural resource surveys of targeted areas were conducted for cultural resources on 80 miles of current travel routes in the TMA, as well as approximately 188 acres in 5-acre block surveys around known sites (Burillo and Hansen 2016). This survey identified an additional 38 sites: seven eligible and 31 not eligible. Class III cultural resource surveys through 2021 have inventoried an estimated 60,661 acres (8%) for cultural resources.

These surveys, although representing a small percentage of the total land base contained within the TMA analysis area, have identified approximately 821 cultural resources (archaeological sites and historic structures) located within the TMA analysis area. Of these 821 resources, one is listed on the NRHP (site number 10OE3043), 84 are eligible for the NRHP, 311 are not eligible for the NRHP, and 425 are unevaluated or of unknown NRHP-status (see Table B-28 in Appendix B). There are no known historic trails or NRHP-listed archaeological districts are found in the TMA analysis area.

3.5.2 Environmental Impacts

3.5.2.1 Impacts of Alternative A

The analysis area for impacts to cultural resources consists of the motorized route network and airstrips within the TMA. Potential impacts to cultural resources are specified in terms of the following impact indicators:

- Number of sites intersected by routes or airstrips open to public motorized use
- Number of sites within 0.25 mile of routes or airstrips open to public motorized use

Under the No Action Alternative, there would be no changes to management of the routes within the TMA. OHV use has been identified as a major source of damage to archaeological sites and

historic properties (Lyneis et al. 1980; Schneider 2005). The 1979 study (Lyneis et al. 1980) noted that damage to archaeological sites by vehicles occurred most frequently when a site was close to a road or campground. Linear and non-linear archaeological sites that are currently being impacted by travel on 1,493 miles of open routes and 14 airstrips would continue to be impacted. Continued impacts from the No Action Alternative are considered in terms of direct impacts (known archaeological sites that are intersected by the route network) and indirect impacts (sites within a 0.25-mile buffer of the routes).

Seventeen known NRHP-eligible non-linear sites are intersected by routes and airstrips open for public motorized use and would continue to be directly impacted.

Of the five existing linear sites, four sites (all historic roads, trails, or highways) are currently being impacted at multiple locations by routes or airstrips open for public motorized use. One of these linear sites is eligible for the NRHP; the other three sites are unevaluated for NRHP eligibility.

Indirect impacts considered for sites within a 0.25-mile buffer would result if individuals leave the designated routes or airstrips and indirectly impact known sites; impacts could be unintentional or intentional disturbance to a site. A 0.25-mile buffer was selected as a reasonable distance that people may walk off the designated route or airstrip. There are approximately 580 known archaeological sites, including those discussed for direct impacts, found within 0.25 mile of the open and limited-use routes and airstrips. These sites may be adversely impacted if individuals leave the designated routes. Of the 580 known archaeological sites, 398 are listed in or eligible to be listed in the NRHP, or their NRHP status is unevaluated or unknown.

In summary, linear and non-linear archaeological sites would continue to be directly and indirectly impacted by continued vehicular use of the 1,493 miles of open routes and 14 airstrips. Specifically, 398 (eligible or unevaluated/unknown) sites would continue to be adversely impacted by the current management.

3.5.2.2 Impacts of Alternative B

Alternative B would result in a moderate reduction in impacts to cultural resources from the current conditions. In terms of direct impacts, 12 non-linear NRHP-eligible sites (see Table B-29 in Appendix B) would be impacted by open or limited use routes under Alternative B.

Additionally, there would be fewer indirect impacts from Alternative B than the No Action Alternative; 292 of the 580 known archaeological sites within 0.25 mile of the route network and one airstrip would be along closed routes and airstrips and would be less likely to be indirectly impacted by OHV use. Of those 292 known archaeological sites, 197 are listed in or eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown.

In summary, access to areas within the TMA where 292 known archaeological sites are located would be limited by the closure of 613 miles of routes and nine airstrips. Thus, Alternative B would provide beneficial impacts to cultural resources.

3.5.2.3 Impact of Alternative C

Alternative C would result in a minor reduction in impacts to cultural resources compared to the current conditions. In terms of direct impacts, 21 non- linear NRHP-eligible sites (see Table B-30 in Appendix B) would be impacted by open or limited use routes under Alternative C. Indirect impacts under Alternative C would also be reduced compared to the No Action

Alternative; 179 of the 580 known archaeological sites within the 0.25-mile buffer would be along closed routes or airstrips and would be less likely to be indirectly impacted by vehicular use of the route network. Of the 179 sites within the buffer, 118 are listed in or eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown.

In summary, access to areas within the TMA where 179 known archaeological sites are located would be limited by the closure of 318 miles of routes. Thus, Alternative C would provide minor beneficial impacts to cultural resources. In comparison to Alternative B, Alternative C would result in more adverse impacts as fewer routes would be closed and more archaeological sites would be indirectly impacted.

3.5.2.4 Impacts of Alternative D

Like Alternative C, Alternative D would result in a minor reduction in impacts to cultural resources compared to the current conditions. In terms of direct impacts, 22 non- linear, NRHP-eligible sites (See Table B-31 in Appendix B).

Indirect impacts under Alternative D would also be reduced compared to the No Action Alternative; 128 of the 580 known archaeological sites within 0.25 mile of the route network would be along closed routes and airstrips and would be less likely to be indirectly impacted by OHV use. Ninety-one of the 128 sites are listed in or eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown.

In summary, access to areas within the TMA where 128 known archaeological sites are located would be limited by the closure of 212 miles of routes and four airstrips. Thus, Alternative D would provide minor beneficial impacts to cultural resources. In comparison to Alternatives B and C, Alternative D would result in more adverse impacts as fewer routes would be closed and more archaeological sites would be indirectly impacted.

3.6 Issue 6: Recreation- How would the designated travel route network impact recreation opportunities, experiences, and access?

3.6.1 Affected Environment

Recreation opportunities within the TMA are primarily dispersed in nature, meaning the activities are resource dependent and visitor services and recreational developments are minimal. There are two designated recreation sites within the TMA analysis area: Parker Trailhead and Roberson Trailhead West. Parker Trailhead provides access into the Big Jacks Creek Wilderness. Roberson Trailhead West provides access into the Bruneau-Jarbidge River Wilderness. Recreational use is generally low and primarily revolves around hunting, trapping, and access to float boating opportunities. There are few improved and maintained vehicle roads, hiking trails, directional signs, informational kiosks, or other facilities in the TMA. The existing route network provides access to numerous recreation opportunities in areas adjacent to the TMA, such as Big Jacks Creek, Bruneau-Jarbidge Rivers, Little Jacks Creek, and Owyhee River Wilderness areas (see Figure A-9, Appendix A for a map of designated wilderness areas and wild and scenic rivers within and adjacent to the TMA). Access throughout most of the project area requires a high-clearance four-wheel drive vehicle. The TMA also contains “cherry stems” that allow motorized access to wilderness areas, and routes that follow the boundaries of these wilderness areas. All routes within the wilderness areas (except for cherry stem and boundary routes) are limited to non-motorized and non-mechanized use.

Activities common in the TMA include hunting, OHV use, hiking, primitive camping, backpacking, fishing, non-motorized boating, horseback riding, off-road driving for pleasure, sightseeing, backcountry aviation, and vehicle-dependent camping. The BLM manages a commercial and competitive special recreation permitting program for commercial activities, including but not limited to guided backpacking, outfitted hunting, and river rafting. Hunting and trapping are permitted in the TMA, as it includes portions of Game Management Units 40 and 41 (IDFG 2016), and opportunities are widespread. Most recreational use occurs from mid-May to early November, with the majority of fall uses associated with hunting. OHV use, hunting, fishing, trapping, hiking, and camping are interrelated in the TMA; visitors and recreationists often use OHVs to access remote areas as access throughout most of the TMA requires a high-clearance four-wheel-drive vehicle. River visitor data suggest use may have declined or stabilized for this area over the last 20 years, even with a nearby growing population in Ada and Canyon counties.

Hunting and trapping in the TMA are considered an exceptional recreation opportunity because of the abundant high-quality habitat for wildlife, in combination with the large quantity of available public lands and has historically occurred throughout the TMA. Trapping is widespread and has historically occurred throughout the TMA, and includes wildlife such as beaver, badger, bobcat, fox, marten, mink, muskrat, and otter. The hunting season for most big game, including California bighorn sheep, is August through October. Several hundred pronghorn antelope tags are issued each year in the project area, with the majority issued for mid-August through mid-September hunts. Trapping season can vary by species, but for most species consists of either year-round opportunity or November to March.

The TMA contains 1,493 miles of routes. These routes are currently utilized by motorized vehicles and/or non-motorized uses. Of these 1,493 miles, 231 miles were identified as roads (for use by low-clearance two-wheel drive), 1,178 miles identified as primitive roads (for high-clearance two-wheel drive), and 84 miles identified as trails (for use by human-powered, stock, or OHV forms of transportation) (see the Route Types section in Appendix F for standard definitions).

There are 14 primitive airstrips located on BLM-managed land within the TMA. Backcountry recreational aviation is a popular form of recreation, particularly in the inter-mountain western region of the United States. An important part of backcountry aviation is primitive airstrips, which are generally undeveloped landing areas without facilities in remote areas. These airstrips allow recreational pilots to land aircraft and continue recreating on foot or facilitate access for hunting into areas not accessible by overland vehicle travel.

3.6.2 Environmental Impacts

3.6.2.1 Impacts of Alternative A

The analysis area for impacts to recreation is the network of motorized routes and airstrips that are open to public use, which for the purpose of this analysis does not include highway miles (70 miles within the TMA).

Potential impacts to recreation and social values are specified in terms of the following impact indicators:

- Changes in miles of routes and airstrips available for recreational public use (e.g., rockhounding, spiritual visitor, vehicle exploring, sightseeing, hunting, and trapping)

Under the No Action Alternative, there would be no change to the existing route system or access, therefore there would be no impacts to recreational uses, such as hiking and trapping. Recreational motorized and non-motorized use (e.g., via OHVs, hiking, horseback riding, or cycling) would continue on the 1,493 miles of routes and 14 airstrips. Of these 1,493 miles of routes, 70 miles consist of Highway 51. User conflicts may continue to be experienced by non-motorized users as they perceive motorized use to be un-managed and disruptive to their recreational experience (Jackson and Wong 1982). Existing routes within the TMA provide access to three wilderness areas designated in 2009, via cherry-stem routes, which occur in direct proximity to the TMA (the Owyhee River Wilderness, Big Jacks Creek Wilderness, and Bruneau-Jarbidge Rivers Wilderness) and provide opportunities for non-motorized recreation. It is anticipated that recreational use would likely continue increasing over time as populations in surrounding communities grow.

3.6.2.2 Impacts of Alternative B

Under Alternative B, approximately 594 of the 1,493 miles of routes and 9 of the14 airstrips would be designated as closed, 297 miles of routes would be designated as limited to authorized use only, and 19 miles would be designated as limited to non-motorized use (910 total miles of routes no longer available for public motorized use). This would be a 61% reduction in the miles of routes, and a 64% reduction in airstrips available for public motorized use. Approximately 123 of the 581 miles of routes open to public motorized use would be closed seasonally, which would occasionally reduce the total miles available for motorized recreation. This alternative would close motorized loop opportunities to some recreation destinations, which would remain accessible via a one-way, with a return using the same route. Mountain bikers, hikers, and horseback riders could continue to use designated motorized routes (581 miles). An increase in non-motorized and non-mechanized routes would be beneficial to those types of uses and would be adverse for motorized uses.

In response to the 910 miles of routes no longer available to public motorized use, some users may shift their modes of transportation when compared to the No Action Alternative in order to continue their chosen public use. Route closures would result in site-specific impacts to recreational access and may result in adverse, moderate to major, long-term impacts since users may be required to travel longer distances or alter their mode of transportation to gain public access. A consequence of the increase in intensity of use could be the displacement of some users to other locations within the TMA or adjacent TMAs if the higher levels of use detracted from their experience (i.e., social value) and/or resulted in a sense of overcrowding. Access for public use activities such as rockhounding, vehicle exploring, sightseeing, and hunting and trapping in site-specific locations may result in adverse, moderate to major impacts due to the 61% reduction in total routes open to public motorized use but would not eliminate any of these public use activities and opportunities within the TMA.

The adverse impacts caused by limiting routes and concentrating use to motorized recreation under Alternative B would be the highest of all action alternatives. Alternative B would designate the fewest routes compared to the No Action Alternative. As this alternative provides the greatest reduction of available route miles, it can be anticipated that the intensity and level of public use of the route network would increase, as the same number of users would be concentrated on a reduced number of miles of routes. This would result in site-specific, moderate impacts to recreation from closing or limiting the most miles of routes for motorized recreation, and changes to the quality of their recreational experience would more likely be adversely

affected. The beneficial impacts to non-motorized dispersed recreation would be the highest of all action alternatives.

3.6.2.3 Impact of Alternative C

Under Alternative C, approximately 303 miles of the 1,493 miles of routes and seven of the 14 airstrips would be designated as closed, 236 miles of routes would be designated as limited to authorized use only, and 15 miles would be designated as limited to non-motorized use (554 total miles of routes no longer available for public motorized use). This would be a 37% reduction in the miles of routes, and 50% reduction in airstrips available for public motorized use. Approximately 171 miles of the 938 miles of routes open to public motorized use would be closed seasonally. This alternative would close motorized loop opportunities to some recreation destinations, which would remain accessible via one route. Of the 938 miles of routes that would be retained as open to public motorized use, 16 miles of routes would be specifically designated for single track use. Mountain bikers, hikers, and horseback riders could continue to use designated motorized routes (938 miles). This alternative would have a moderate adverse impact to general motorized recreation, and a major beneficial impact to dispersed, non-motorized recreational activities when compared with current conditions.

3.6.2.4 Impacts of Alternative D

Under Alternative D, approximately 206 miles of routes and four airstrips would be closed to all motorized uses, 55 miles of routes that would be designated as limited to authorized use only, and 6 miles that would be designated as limited to non-motorized or non-mechanized use (261 total miles of routes no longer available for public motorized use). This would be a 17% reduction in the miles of routes available for public use. Of the 1,085 miles of routes open to all users, 70 miles would be closed seasonally. This would be a 16% reduction in the miles of routes available for public motorized use. Alternative D also retains motorized loop opportunities to some recreation destinations. Of the 1,224 miles that would be retained as open to public motorized use, 6 miles would be designated specifically for ATV/UTV use, and 47 miles would be designated specifically for single track use. Mountain bikers, hikers, and horseback riders could continue to use designated motorized and non-mechanized routes (1,224 miles). This alternative would have a minor adverse impact to general motorized recreation, and a minor beneficial impact to dispersed, non-motorized recreational activities when compared with current conditions.

CHAPTER 4. CUMULATIVE EFFECTS

4.1 Analysis Parameters

This EA considers potential cumulative effects within the Canyonlands East TMA, as well as TMAs in Idaho that are directly adjacent, such as Canyonlands West (see Figure A-10, Appendix A). This geographic area forms the core cumulative effects analysis area (CEAA) for most resources. The adjacent TMAs were used for the CEAA because some routes transcend the Canyonlands East TMA and connect into systems in adjacent TMAs. Ensuring contiguous network access when moving from one TMA to another is important in maintaining viable travel across a larger area that makes sense for public use management. Additionally, route access and/or density can impact some resources (e.g., some wildlife), especially when that resource is in the outer periphery of the Canyonlands Easts TMA where conditions in an adjacent TMA

might contribute to those impacts. Most resources do not recognize the artificial TMA boundaries as an impediment to their movements or effects, but most resources would experience negligible effects from conditions outside of the TMAs immediately adjacent to the Canyonlands East TMA. In terms of time frame, the cumulative effects analysis is considered over a 30-year time period. There is a high likelihood that within 30 years some level of change would occur related to travel management planning in Owyhee County that would require additional NEPA analysis, such as the development of an updated resource management plan for Bruneau and/or Owyhee County. For the purpose of this analysis, "reasonably foreseeable" actions are considered where there is an existing decision (i.e., record of decision or issued permit) and the action has not been implemented, a commitment of resources or funding, a formal proposal (i.e., a permit request) or actions that are highly probable based on known opportunities or trends. Speculative future developments are not considered.

The following analysis considers the potential effects of route designation at a landscape level, considering the existing 8,044 miles of designated or open routes in the CEAA (approximate; includes total route mileage for adjacent in-progress BLM Canyonlands West and Grand View TMPs [2,666 miles], existing routes in the Jarbidge Field Office [3,885], and the Canyonlands East TMA [1,493]). Additionally, because impacts are largely considered in terms of route closure and the range of miles that would be closed under the action alternatives (594 to 206 miles) is very small when considered with the total miles of existing routes in the core CEAA (8,044 miles), the cumulative effects of the action alternatives are discussed together and those of the No Action discussed separately under each resource.

Past, present, and reasonably foreseeable future projects that may have a cumulative impact when considered with the travel management plan are considered in this section (see Figure A-8 in Appendix A for CEAA map). Ongoing and reasonably foreseeable projects or actions have been identified that when combined with the proposed project may result in cumulative impacts (see Table B-32 in Appendix B). These projects span the entire extent of the TMA and nearby region, and they range in proximity; some of these projects are not considered for all CEAAs, as they do not fall within the geographic extent of the CEAA for each resource.

4.2 Cumulative Effects by Resource

4.2.1 Soils

The CEAA for soils consists of the Canyonlands East TMA and adjacent TMAs in Idaho because the designation of routes would only directly impact soils in proximity to routes and indirectly effect levels of disturbance within the core CEAA. Past and present disturbances associated with road construction and maintenance of the existing routes in the CEAA, ranching, agriculture, grazing, wildfire, utilities, development of fuel breaks, and mineral development would continue to impact fragile and sensitive soils, contributing to erosion.

The No Action Alternative would have adverse minor cumulative impacts to soils since there would be the maximum mileage of existing inventoried routes available for motorized use within the Canyonlands West TMA, and other existing routes in adjacent TMAs. Motorized use of existing routes in fragile soils would contribute to continued mechanical disturbance. With the existing route network remaining open under the No Action Alternative there would be an overall minor adverse cumulative impact to soils, even where restoration measures occur.

Under all action alternatives, route closures within the CEAA would benefit soils by reducing motorized vehicle use-related mechanical disturbance of soils, complementing other actions that

would also contribute to soil stabilization such as restoration activities, road and trail maintenance, and sage-grouse habitat projects. Route designation, special recreation permits, and road and trail maintenance provide for maintained, managed motorized recreation that helps alleviate pressure on fragile soils. Other future actions, such as development, would result in minor adverse impacts to soils as a result of disturbance.

4.2.2 Vegetation

The CEAA for vegetation consists of the Canyonlands East TMA and adjacent TMAs in Idaho, as the designation of motorized routes and airstrips could result in impacts to levels of disturbance to vegetative communities across the landscape. Past and present disturbances associated with road construction and maintenance of the existing routes in the CEAA, ranching, agriculture, grazing, wildfire, utilities, development of fuel breaks, and mineral development would continue to reduce vegetative cover and could create opportunities for invasive weed establishment and spread. Future actions, such as development, utilities, and projected increases in recreational motorized use would continue to disturb vegetation across the CEAA, impact habitats for special status species, and provide opportunities for invasive plants and noxious weeds to spread.

The No Action Alternative when combined with ongoing and future road and trail maintenance, other routes in adjacent TMS and the potential for continued route proliferation and expansion into areas that were previously untraveled would result in a slight increase in habitat fragmentation, slight increase in the spread of noxious and invasive plant spread. With the existing route network remaining open under the No Action Alternative, in consideration of burned area rehabilitation projects, grazing permit renewals, and other habitat improvement projects, there would be a minor adverse change in vegetation condition though further route proliferation.

The route designation process as described in the action alternatives in the Canyonlands East TMA as well as other BLM Idaho travel management planning, sage-grouse conservation actions, burned area rehabilitations, and on-going grazing permit renewals and restoration activities when combined would benefit the plant communities of the CEAA by controlling habitat fragmentation, improving existing vegetation, limiting disturbance, reducing the chance of spreading of noxious and invasive plants. Controlled motorized use through route designation, special recreation permits, and road and trail maintenance will help alleviate pressure on special status plant populations, and when combined with conservation actions such as the Bruneau-Owyhee Sage Grouse Habitat Project Environmental Impact Statement (EIS), would improve habitat conditions for these species. BLM route closures within the CEAA would benefit the weed inventory and control programs of federal, state, and county agencies by reducing public motorized access through noxious weed sites as well as dispersal from motorized vehicles however this change would likely be slow.

4.2.3 Hydrology

The CEAA for hydrology consists of the Canyonlands East TMA and adjacent TMAs because designation of motorized routes could result in impacts to the hydrology of the watershed. The adjacent TMAs are largely contained within the same watersheds (cataloging unit [HUC 8]); therefore, the core CEAA is an appropriate analysis area. When current motorized use is combined with other reasonably foreseeable actions such as water pipelines, fencing, mining, trail maintenance, and special recreation permits, motorized use of routes in the Canyonlands

East TMP would continue to increase and create a growing long-term, ecosystem-wide adverse impact to watershed health. Reasonably foreseeable future actions that include restoration activities, sage-grouse habitat projects, and road maintenance, along with the designation of routes in adjacent TMAs which would likely include closures of routes near water bodies, would reduce the potential for adverse impacts to watersheds.

Under the No Action Alternative, continued use of routes would result in cumulatively greater impacts to riparian areas compared to the action alternatives. Water quality, watershed-wide, could diminish due to sediment infiltration of waterways from motorized vehicle use in proximity to waterways. Streams that have not been assessed or are currently meeting water quality standards could degrade due to sediment issues, and streams that have not attained their beneficial uses would remain listed as Category 4a and/or 5 waters. With the existing route network remaining open under the No Action Alternative, there would be an overall minor adverse cumulative impact to hydrologic resources of the CEAA, even where restoration measures occur.

Under the action alternatives, designating motorized routes in the CEAA would cumulatively result in fewer impacts to riparian areas, since the overall number of stream crossings and routes in proximity to perennial and intermittent streams would be reduced in the CEAA. Current and future actions, such as development, would not likely contribute to sedimentation, as action-related disturbances would be subject to appropriate mitigations and permitting requirements that would not result in measurable adverse effects to water quality. Closure of routes would reduce stream crossings, reducing the hydroconnectivity of the trail system to the drainage systems and reducing overall potential for sedimentation of streams. When combined with other reasonably foreseeable actions, the action alternatives would have beneficial cumulative impacts, improving water quality in the long term.

4.2.4 Wildlife

The CEAA for wildlife consists of the Canyonlands East TMA and adjacent TMAs in Idaho, the BLM Jarbidge Field Office on the East, and lands south into Nevada, as some wildlife species have the ability to move long distances (such as big game) or change areas of activity over time (such as migratory birds). This cumulative effect analysis also includes general wildlife and other species with more limited movement ability (such as pygmy rabbit) that occur within the TMA. Greater sage-grouse are discussed in greater detail below. Past actions such as road maintenance and construction, ranching and agriculture development, improper grazing, mineral development, wildfire and suppression, and utilities construction have degraded habitat, resulting in adverse, long-term cumulative impacts to wildlife habitat. Future actions that have the potential to fragment and degrade wildlife habitat include development, such as construction of transmission lines (Idaho Power 500-kV transmission lines) and mineral development (ten sand and gravel pits and four rock quarries).

The direct and indirect impacts from the No Action Alternative would result in minor adverse impacts to wildlife species, especially if use along the roughly 1,493 miles of routes increases over time. However, the 1.18 mi/mi^2 density is only slightly more than recommended for a naturally functioning landscape. Combined with the upcoming designation and likely reduction of other existing routes in adjacent TMAs, even the likely implementation of future transmission lines and mineral development would not cumulatively impact wildlife species in an adverse

manner where the population of any species across the CEAA would exhibit a measurable decrease in viability.

Under the action alternatives, the designation of a motorized route system in the TMA would result in fewer miles than with the No Action alternative. When any of the action alternatives are combined with the designation of routes in adjacent TMAs, grazing permit renewals, other habitat improvement projects (Bruneau-Owyhee Sage-grouse Habitat Project), and road and trail maintenance, there would be a reduction in the existing levels of human disturbance and habitat fragmentation compared with the No Action alternative by closing or limiting use of routes. Additionally, there would be the rehabilitation of areas of existing disturbance or degradation (e.g., grazing permit renewals designed to meet rangeland health standards) and an increase in the quality and availability of contiguous tracts of habitat throughout the CEAA. Seasonal closures of routes would benefit wildlife species (such as bighorn sheep) by reducing motorized recreation-related disturbance during critical life stages. The closure of any number of motorized routes near waterways would reduce impacts to riparian habitat and monitoring associated with route designation would document undesirable effects to wildlife and lead to changes in management with the intention of improving conditions for wildlife. Overall, the combination of any of the action alternatives, when combined with other projects in the CEAA, would cumulatively be less than the negative impacts incurred with implementation of the No Action alternative, and not contribute toward a decrease in viability of any wildlife species. As characterized in the direct and indirect effects analyses, any negative cumulative impacts would occur in lessening degrees as one moves from Alternative D, C, and finally B.

Fisheries *(Threatened and Endangered Species)*

The CEAA for fisheries consists of the Canyonlands West TMA and adjacent TMAs because designation of motorized routes within the TMA could result in impacts to the watershed, and watershed health can determine aquatic habitat quality. The adjacent TMAs are largely contained within the same watersheds (cataloging unit [HUC 8]); therefore, the core CEAA is an appropriate analysis area. Many of the cumulative impacts to fisheries at the CEAA scale would be similar to those described for hydrology; impacts not discussed in hydrology are discussed here.

Under the No Action Alternative, continued use of routes would result in cumulatively greater impacts to aquatic habitats from an increase in overall riparian disturbances and contribution of sediment loads into the surface drainages (and eventually streams and rivers) of the CEAA. The No Action Alternative would have adverse cumulative impacts in these areas, negating the intention of those reasonably foreseeable actions.

Under the action alternatives, the route designation and transportation planning designating motorized routes in the CEAA, restoration activities, and fuels projects would cumulatively result in fewer impacts to fisheries in the CEAA, since the overall number of stream crossings and routes in proximity to aquatic habitats would be reduced, and stabilization of soils would occur in disturbed areas, reducing the potential for sediment input. Closure of routes would reduce overall sedimentation of streams and contribute to temperature regulation where riparian vegetation may reestablish. When combined with other reasonably foreseeable actions, the action alternatives would have beneficial cumulative impacts, improving aquatic habitats in the long term.

Greater Sage-grouse:

The CEAA for sage-grouse expands beyond the CEAA used for most resources analyzed in this EA; the greater sage-grouse CEAA was defined by the scope of the fine-scale polygon (Owyhee Canyonlands) that overlaps the Canyonlands East TMA (USDI BLM 2023). The polygon includes seasonal habitats within home ranges of a group of birds using an area (Stiver et al., 2015). Therefore, activities occurring within the fine-scale area, when combined with the impacts associated with the TMP designations, could affect individual birds overlapping the Canyonlands East TMA use area as well as the population in which they reside. (see Figure A-11, Appendix A). Past actions such as maintained road construction, ranching and agriculture development, improper grazing, mineral development, wildfire and suppression, and utilities construction (such as Idaho Power 500-kV transmission lines, ten sand and gravel pits, and four rock quarries) have degraded rangeland health standards, resulting in major, adverse, long-term cumulative impacts to sage-grouse. Future BLM and Idaho livestock grazing management, trailing, and range improvements on the allotments in the CEAA would continue to be designed to allow progress toward meeting rangeland health standards by either enhancing areas for sage-grouse that are in poor condition or maintaining those areas that currently exist in good condition. Monitoring associated with motorized route designation, as required by 43 CFR 8342.3, would document undesirable effects to greater sage-grouse and contribute information to ongoing conservation efforts. Fuels-reductions projects would also have a beneficial impact to sage-grouse since they are designed to prevent large wildfires from degrading sage-grouse habitat, and other actions such as the Bruneau-Owyhee Sage-grouse Habitat Project are concentrating efforts to improve habitat.

The direct and indirect impacts from the No Action Alternative A would result in adverse impacts to sage-grouse, especially since there are no seasonal restrictions on routes near leks. The roughly 1.48 mi/mi^2 density is nearly 1.5 times the recommended density for a naturally functioning landscape, and grouse would continue to incur the same impacts to lekking and nesting activities. However, when combined with the upcoming designation and likely reduction of other existing routes in adjacent TMAs and habitat-enhancing projects (e.g., fuel reduction), even the likely implementation of future transmission lines and mineral development would not cumulatively impact sage-grouse enough to where the population using the CEAA would exhibit a measurable decrease in viability.

Under the action alternatives, the designation of a motorized route system in the TMA would result in fewer miles than with the No Action alternative. Closures and seasonal restrictions occur disproportionately higher near sage-grouse leks since reduction to impacts to the species was emphasized during route designations. When any of the action alternatives are combined with the designation of routes in adjacent TMAs, grazing permit renewals, other habitat improvement projects, and road and trail maintenance, there would be a reduction in the existing levels of human disturbance to leks, nesting habitat, and overall habitat fragmentation compared with the No Action alternative by closing or limiting use of routes. Additionally, there would be the rehabilitation of areas of existing disturbance or degradation (e.g., grazing permit renewals designed to meet rangeland health standards) and an increase in the quality and availability of contiguous tracts of habitat throughout the CEAA. Seasonal closures of routes would benefit sage-grouse by reducing motorized-related disturbance during lekking activities. The closure of any number of motorized routes near waterways would reduce impacts to riparian habitat, which are important late brood-rearing areas. Overall, the combination of any of the action alternatives,

when combined with other projects in the CEAA, would cumulatively be less than the negative impacts incurred with implementation of the No Action alternative, and not contribute towards a decrease in viability of sage-grouse populations overlapping the Canyonlands East TMA. As characterized in the direct and indirect effects analyses, any negative cumulative impacts would occur in lessening degrees as one moves from Alternative D, C, and finally B.

4.2.5 Cultural Resources

The CEAA for cultural resources consists of the Canyonlands East TMA and adjacent TMAs in Idaho, as cultural resources are generally located in static areas across the landscape, the designation of routes would only impact cultural resources in proximity (0.25 mile) to routes and indirectly within the planning area. Past, present, and future use of the Canyonlands East TMA for recreation, ranching, agriculture, hunting, and vegetation management and wildfire suppression may have had/would have a minor impact on cultural resources within the Canyonlands East TMA. Future actions on BLM-administered lands would be mitigated through BLM compliance with federal laws and regulations regarding cultural resources. Projected increases in retained route use resulting from the route closures of other travel management plans in the CEAA, in combination with those anticipated increases resulting from closing existing routes and airstrips under the action alternatives, could further contribute to the degradation of irreplaceable cultural and historic resources in proximity to retained routes, but route designation across the Canyonlands East TMA would also protect sensitive resources along routes that would be closed or otherwise restricted.

The No Action Alternative would contribute to cumulative impacts resulting in an adverse effect to cultural resources in the Canyonlands East TMA. Route designation and control through closures, limiting access, and enforcement from implementing any action alternative could reduce current and future destruction to fragile cultural and historic resources; therefore, the action alternatives would limit contributions to cumulative impacts from reductions in routes open to public motorized access.

4.2.6 Recreation

There would be both beneficial and adverse cumulative effects from designation of routes under the action alternatives for the Canyonlands East TMA, in combination with route designation in adjoining TMAs, as described below. Reasonably foreseeable future actions like special recreation permits, travel management, and land use planning would further enhance the recreation setting and opportunities by providing focused recreation management and public access for various recreation experiences. Designation of a motorized route system would reduce or alleviate impacts from higher anticipated recreation use resulting from projected population growth in the region. However, future actions such as travel management planning, mining, grazing permit renewals, and sage-grouse habitat improvement projects, when combined with the closure and limitation of routes as proposed under the action alternatives, may also adversely, cumulatively impact recreation resources. These impacts would be similar to those described under direct and indirect impacts. Thus, there would be a minor cumulative effect to recreation from surface disturbance, area and route closures, or limitation to motorized recreation, resulting in subsequent minor to moderate changes to site-specific recreation experiences. Other actions such as restoration projects (Bruneau-Owyhee Sage-grouse Habitat Project) and grazing permit renewal projects with restoration objectives may have an additive, beneficial cumulative impact to recreation and public access.

Cumulative impacts to recreation from the No Action Alternative would be beneficial and additive to motorized recreation and public access since there would be no additional route closures or limitations on 1,493 miles out of the approximately 8,044 total miles of the CEAA. However, there would also be adverse, additive cumulative impact to dispersed recreation since incompatible recreation opportunity and experience conflicts would continue and type of use would not be provided for on 1,493 miles of the existing route network within the CEAA.