Environmental Assessment

Montana Opticom Fiber Optic Line Project

Bozeman Ranger District, Gallatin National Forest Bozeman, Montana

March 2013

Site along U.S. Highway 191 within the Gallatin Canyon

United States Department of Agriculture

Forest Service

March 2013

Environmental Assessment

Gallatin National Forest
Bozeman Ranger District
Bozeman, Montana

March 2013

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Printed on recycled paper – March 2013

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ARRA	American Recovery and Reinvestment Act
BMPs	Best Management Practices
CEQ	(President's) Council on Environmental Quality
CFR	Code of Federal Regulations District
CWA	Clean Water Act
DEQ	Montana Department of Environmental Quality
District	Bozeman Ranger District
DNRC	Department of Natural Resources
DSD	detrimental soil disturbance
EA	environmental assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
Forest	Gallatin National Forest
Forest Plan	Gallatin Forest Plan
FSH	Forest Service Handbook
FSM	Forest Service Manual
FSSS	Forest Service Sensitive Species
GYE	Greater Yellowstone Ecosystem
Highway 64	State Highway 64
Highway 191	U.S. Highway 191
HUC	Hydrologic Unit Code
LAU	lynx analysis unit
MA	Management Area
MAP	mean annual precipitation
MBTA	Migratory Bird Treaty Act
MBSC	Migratory Bird Species of Concern
MCA	Montana Code Annotated
MFWP	Montana Department of Fish, Wildlife and Parks
Montana Opticom	Montana Opticom LLC
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
MFWP	Montana Department of Fish, Wildlife and Parks
MIS	Management Indicator Species
MNHP	Montana Natural Heritage Program
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEDC	Northwest Environmental Defense Center
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest Service
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System (
NRHP	National Register of Historic Places

NRLMD	Northern Rockies Lynx Management Direction
PCE	primary constituent element
PM	particulate matter
ORV	Outstandingly Remarkable Values
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
RUS	Rural Utility Service
SHPO	State Historic Preservation Officer
SMU	Soil Management Unit
SPCC	spill prevention, containment, and countermeasure
SUP	Special Use Permit
SWPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Loads
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
VQO	visual quality objective
WSR	Wild and Scenic River

Summary

This pre-decisional environmental assessment (EA) has been prepared by the U.S. Department of Agriculture (USDA), Forest Service, Gallatin National Forest (Forest), in compliance with the National Environmental Policy Act (NEPA), to publicly disclose the results of an environmental effects analysis. The proposed Forest Service action would allow Montana Opticom to install a fiber optic line within the Gallatin Canyon from Big Sky, Montana north toward the Four Corners area on National Forest Service (NFS) land located on the Bozeman Ranger District (District) (Figure 1).

The purpose of the proposed action is for MT Opticom LLC (Montana Opticom) to install fiber optic line to provide broadband service to the Belgrade, Four Corners and Gallatin Valley area of Montana.

The project area is located along State Highway 64 and U.S. Highway 191 in Gallatin County. The location of the proposed action is shown on Figure 1.

Alternatives evaluated in this EA include the proposed action and no action, the latter of which is required by Council on Environmental Quality (CEQ) regulations at 40 CFR (Code of Federal Regulations) 1502.14.

Using the best available scientific information, Forest resource specialists evaluated the potential for the proposed action to affect the environment. The following discussion reports their findings.

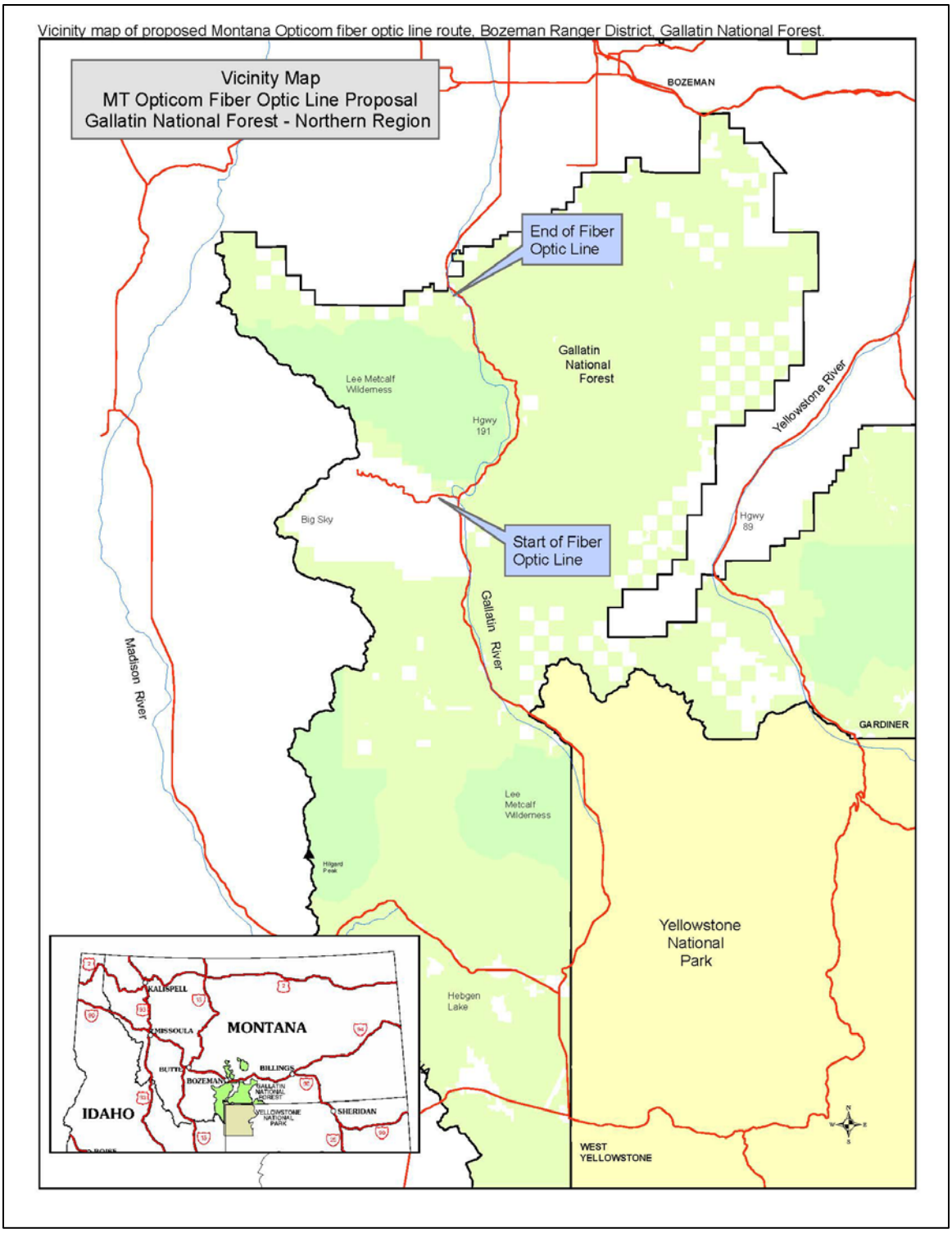

Figure 1. Vicinity map of proposed Montana Opticom fiber optic line route, Bozeman Ranger District, Gallatin National Forest.

Summary of Analysis

Impacts of the proposed action

Soils

Overall soil disturbance would temporarily increase within U.S. Highway 191 (Highway 191) and State Highway 64 (Highway 64) disturbed right-of-ways (ROWs) of this project. Disturbances would be short lived, however, with little or no longer term adverse impacts from the proposed action provided soil and water mitigation measures and Soil Best Management Practices (BMPs) are followed (see Appendix A).

Water Resources

The proposed action would result in minor, temporary impacts to the water resources within the project area. Streams within the project area may receive a minor increase in sedimentation during the initial construction phase, though this amount would be immeasurable. The potential for soil erosion and sediment runoff to West Gallatin and Gallatin River would be minimized by the use of Soil BMPs and Water Resource Mitigation Measures for erosion control (Forest Service Handbook (FSH) 2509.22).

Invasive Plants

The proposed action would result in disturbance to the ground within the disturbed highway ROWs during installation of the fiber optic line. Some temporary impacts to the vegetation within the project area can be expected due to construction activities. Ground disturbance could result in the establishment of invasive plant species but the invasive plant mitigation measures would minimize invasive plants following project implementation.

Sensitive Plants

The proposed action would result in disturbance to the ground within the disturbed highway ROWs during installation of the fiber optic line. No sensitive plants were identified within the project area, therefore; no impacts to sensitive plants are anticipated.

Wildlife

The grizzly bear, Canada lynx, and North American wolverine are the only threatened, endangered, or proposed species known to occur within the vicinity of the project area. The proposed action would have no effect on motorized access or the potential for increasing negative encounters between grizzly bears and humans. It may affect how grizzly bears use the analysis area by temporarily discouraging their use of a given portion, due to increased human presence and noise occurring within that portion. For these reasons, it was determined that the proposed action may affect, but is not likely to adversely affect the grizzly bear (Table 1).

Project activities would be consistent with activities already occurring along the highly impacted travel corridor in the Gallatin Canyon, and noise and disturbance from construction are therefore not expected to produce notable effects to lynx beyond existing conditions. Habitat connectivity would be unaffected, undeveloped areas would remain intact, and preferred lynx habitats would be undisturbed. Primary constituent elements would not be affected. For these reasons, it was

determined that the proposed action may affect, but is not likely to adversely affect the Canada lynx or its Critical Habitat. (Table 1)

The project area does not contain any preferred habitat for wolverines, but they may use the area occasionally for travel between more suitable habitats to the east and west. Project activities may cause wolverines to alter travel routes due to increased noise and/or activities. There would be no increased collision risk due to the slow pace of construction. For these reasons, it was determined that the project may affect, but is not likely to jeopardize the continued existence of wolverine.

Of the Forest Service Sensitive Species that may occupy the project area, the American peregrine falcon, bald eagle, bighorn sheep, black-backed woodpecker, flammulated owl, gray wolf, harlequin duck, Townsend's big-eared bat, and Trumpeter swan may be impacted, but the proposed action would not likely contribute to a trend toward Federal listing or a loss of viability. (Table 1)

The proposed action is not likely to cause a detectable change in population or a loss of habitat for the three individual species of Management Indicator Species (MIS). (Table 1)

The proposed action should not impact the five Migratory Bird Species of Concern located within the project area. (Table 1)

Table 1. Summary of effects determination for special-status species

Federally Listed Threatened and Endangered Species and Designated Critical Habitat	**No Effect**	**May Affect, Not Likely to Adversely Affect**	**May Affect, Likely to Adversely Effect**
Grizzly bear (threatened) *Ursus arctos horribilis*		X	
Canada lynx (threatened) *Lynx canadensis*		X(both species and designated critical habitat)	
North American wolverine *Gulo gulo luscus*			
Forest Service Sensitive Species	**No Impact**	**May Impact, Not Likely to Contribute to a Trend Toward Federal Listing or a Loss of Viability**	**May Impact, Likely to Contribute to a Trend Toward Federal Listing or a Loss of Viability**
American peregrine falcon *Falco peregrinus*		X	
Bald eagle *Haliaeetus leucocephalus*		X	
Bighorn sheep *Ovis canadensis*		X	
Black-backed woodpecker *Picoides arcticus*	X		
Flammulated owl *Otus flammeolus*	X		
Gray wolf *Canis lupus*		X	
Harlequin duck *Histrionicus histrionicus*		X	
Townsend's big-eared bat *Corynorhinus townsendii*	X		
Trumpeter swan *Cygnus buccinator*	X		

Management Indicator Species		Not Likely to Cause a Detectable Change in Population or a Loss of Occupied Habitat	Likely to Cause a Detectable Change in Population or a Loss of Occupied Habitat
Elk *Cervus canadensis*		X	
Northern goshawk *Accipiter gentilis*		X	
Pine marten *Martes martes*		X	
Migratory Bird Species of Concern	**No Impact**	**May Impact, Not Likely to Contribute to a Trend Toward Federal Listing or a Loss of Viability**	**May Impact, Likely to Contribute to a Trend Toward Federal Listing or a Loss of Viability**
Clark's nutcracker *Nucifraga columbiana*	X		
Great gray owl *Strix nebulosa*	X		
Cassin's finch *Haemorhous cassinii*	X		
Great blue heron *Ardea herodias*	X		
Veery *Catharus fuscescens*	X		

Recreation

The proposed construction activities would reduce access to the Forest for recreational users and private land owners, though it would be temporary and short in nature. Montana Department of Transportation (MDT) safety regulations should reduce potential for accidents during the construction phase when traffic delays would be encountered.

Visual Quality

The visual quality objective applicable to Management Area (MA) 5, as specified in the Forest Plan, is "retention" and "partial retention", which means that no obvious changes in visual character are allowed. The installation of the fiber optic line and associated above ground facilities would not change the "retention" status within the project area. Thus, the project would be compatible with the Forest Plan.

Heritage Resources

The Forest Archaeologist determined that there would be “no historic properties affected” by the proposed action and that resources of interest to tribes having traditional ties to the area would not be affected because the project area is a previously disturbed location.

Cumulative Impacts

Past, present, and future uses of the project area include continued use of the highway corridor for utilities and continued snow removal activities, and weed treatments. These types of activities would continue after the project is completed. Implementation of the proposed action would have a limited amount of, short-term, local impacts on soils, water and scenic quality, wildlife, recreation Forest access, and the potential spread of invasive plant species. It is not expected, however, that any of the above effects would persist over an extended period beyond the installation phase of this project. Thus the proposed project, in combination with past, present, and future uses would not result in any long-term adverse cumulative effects on the project area.

Chapter 1 - Introduction

This Environmental Assessment (EA) was prepared by the U.S. Department of Agriculture (USDA), Forest Service, Gallatin National Forest (Forest) to satisfy the requirements of the National Environmental Policy Act (NEPA) (Public Law 91-90). It publicly discloses the results of an analysis of the potential effects of actions proposed to install fiber optic line along approximately 27 acres National Forest System (NFS) land on the Bozeman Ranger District (District) within the Gallatin Canyon from Big Sky, Montana (Section 32, Township 6 South, Range 4 East) north toward the Four Corners area (Section 20, Township 4 South, Range 4 East) (Figure 2).

The objective of the proposed action is for Montana Opticom LLC (Montana Opticom) to install fiber optic line to provide broadband service to the Belgrade and Four Corners area of Montana. The proposed project area would be located in the disturbed right-of-way (ROW) of State Highway 64 (Highway 64) and U.S. Highway 191 (Highway 191) in Gallatin County. The location of the proposed action is shown on Figure 1. This document analyzes the environment effects of the proposed action on NFS land.

The EA is organized into the following sections:

- *Summary.* This stand-alone section defines the proposed action and alternatives, and reports the findings of impacts analyses.
- *Chapter 1. Introduction*. This section discusses the background of the project, explains the purpose of and need for Federal agency action, and describes the action proposed to satisfy the stated purpose and need. Also discussed are the standards and guidelines in the Gallatin Forest Plan (Forest Plan) for actions related to road management and public participation in the NEPA review process.
- *Chapter 2. Proposed Action and Alternatives*. This section provides a detailed description of the proposed action, reasonably foreseeable alternatives to the proposal, and mitigation measures.
- *Chapter 3. Environmental Consequences*. This section provides detailed analyses of the potential environmental impacts of implementing the proposed action and alternatives. The affected environment, which defines baseline conditions against which changes would be measured, is described first, followed by the effects of both the proposed action and alternatives.
- *Chapter 4. Consultation and Coordination.* This section lists those parties consulted during preparation of the EA.
- *Chapter 5. List of Preparers.* This section acknowledges the contributions and affiliations of those who prepared the impacts analysis reported in the EA.
- *Chapter 6. References.* This section contains citations called out in the text of the EA.

The pre-decisional EA and Administrative Record of the NEPA review (also referred to as the Project Record) are available for public review at the Bozeman Ranger District, 3710 Fallon Street, Ste. C, Bozeman, MT 85718. These documents can be reviewed Monday through Friday between the hours of 8:00 a.m. and 4:30 p.m. daily, excluding Federal holidays.

Background

Montana Opticom was awarded an ARRA (American Recovery and Reinvestment Act) grant by Department of Agriculture, Rural Utility Service (RUS) to provide broadband services to the under-served customers in the Belgrade and Four Corners areas. For Montana Opticom to provide broadband services to the Belgrade, Four Corners, and Gallatin Valley areas, Montana Opticom would need to install a fiber optic cable from their service location in Big Sky, MT to the Belgrade, Four Corners, and Gallatin Valley areas. Montana Opticom was issued a permit by RUS with the assumption that the fiber optic line would only be installed within the disturbed ROW for Highway 64 and 191.

Proposed Action

The proposed action on NFS land includes installing a buried fiber optic line from Big Sky north toward the Four Corners and Belgrade areas. The fiber optic line would be installed underground within the disturbed ROW of Highway 64 and 191. The disturbed ROW is defined as 20 feet out from the existing edge of the highway asphalt. The majority of the fiber optic line would be installed within the disturbed highway ROW on the non-river-side of the highways. A more detailed description of the activities is provided in Chapter 2 of this EA.

Consistency with the Forest Plan

The proposed action was designed in conformance with direction given in the Gallatin National Forest Plan of 1987 (Forest Plan). The Forest Plan establishes multiple goals and objectives intended to balance multiple uses of Forest resources. It also establishes standards and guidelines applicable to management of specific Forest resources and is intended to minimize or avoid adverse environmental effects as projects are implemented. This EA is tiered to the Forest Plan and its Final Environmental Impact Statement and Record of Decision, in accordance with 40 CFR 1502.20.

As required by the National Forest Management Act (NFMA), each proposed action governed by the Forest Plan must be examined for consistency[1] with standards and guidelines that apply to specifically designated management area (MA). The proposed action would occur in MA 5, for which standards and guidelines are reported in pages III-14 through III-16 of the Forest Plan. MA 5 is defined as areas of travel corridors that receive heavy recreational use. A review of the proposed action relative to these standards and guidelines concluded that the proposed action is consistent with the Forest Plan and the management emphasis for MA 5 and that no amendments to the Plan are necessary prior to implementation of the action.

Public Involvement

The Forest offered the public an opportunity to comment on the proposed action during scoping in March 2012. A legal notice was published in the Bozeman Chronicle on March 12, 2012, in the Belgrade News on March 16, 2012, and in the Big Sky newspaper, Lone Peak Lookout, on March

[1] If a proposed action or alternative is inconsistent with the Forest Plan, there is a provision at 36 CFR 219.8 that allows for amendment of the Plan to enable such an action to proceed. Proposed amendment of a Forest Plan is required to undergo a concurrent NEPA review before approval of an amendment is granted.

15, 2012. Thirty-nine comments were received by 23 commenters during the scoping period (Project Record, Item 1).

Decision Framework

The Forest Service is obligated to respond to special use proposals on NFS lands. Montana Opticom filed an application (SF-299) (Project Record, Item 2) for a Special Use Permit (SUP) in November 2010, which included the need for the Proposed Action, and after being accepted by the GNF in December of 2011, this EA process was initiated. Given the purpose and need, the deciding official for the Forest reviews the Proposed Project, assesses other alternatives, evaluates environmental consequences, and considers public input in order to make the following decisions:

Whether to issue a SUP for the installation of a fiber optic line on NFS land from Big Sky, Montana (Section 32, Township 6 South, Range 4 East) north toward the Four Corners area (Section 20, Township 4 South, Range 4 East), and if so, what mitigation or design measures must be implemented.

Chapter 2 – Alternatives

No Action Alternative

The No Action Alternative consists of the existing management of the right-of-ways (ROWs) of State Highway 64 (Highway 64) and U.S. Highway 191 (Highway 191). This includes existing and possible future utilities permitted along the corridor, access to private and NFS land, continued snow removal, current and ongoing Montana Department of Transportation (MDT) maintenance and improvement projects, and ongoing spraying of weeds by the MDT and Forest Service. No permit would be authorized to the utility company to bury fiber optic line on National Forest system (NFS) land.

Proposed Action Alternative

Montana Opticom is proposing to install a buried fiber optic line on National Forest System lands from Big Sky, Montana north toward Four Corners, Montana (Figure 2). This project is being designed to meet the growing demand for internet services in the Belgrade and Four Corners areas.

The proposed fiber optic line would follow along and within the disturbed ROW of Highway 64 and Highway 191. For this analysis, the disturbed highway ROW is considered to extend from the edge of the roadway asphalt out 20 feet. Approximately 27 acres of NFS lands would be directly affected (approximately 15 miles long and up to 15 feet wide) by the proposed action. The only exception would be along a Forest Service road running parallel to Highway 191 north of Deer Creek (Section 23 Township 6 South Range 4 East) for approximately 180 feet to avoid a wetland located in Highway 191's disturbed ROW. Installation on this section of roadway would be on the east side of this road.

The proposed fiber line would be located on the opposite side of the roadways than the West Fork of the Gallatin and Gallatin River. There would only be one exception where installation on NFS land would be on the Gallatin River side of Highway 191 (Section 15 Township 5 South Range 4 East) within highway pullout near the Lava Lake Trailhead for a distance of approximately 180 feet. The installation in that section would be over 60 feet east of the Gallatin River and would not be located within any mapped wetlands or floodplains.

Construction of the new line would consist of burying fiber optic cable by plowing, trenching, or boring to a minimum depth of 42 inches below grade (MDT standards) and would be encased in an orange plastic conduit throughout the route. Plowing would utilize a tracked, Caterpillar®-type vehicle that contains a friction-type plow tooth/blade on the back that knifes the conduit into the ground. Direct soil disturbance associated with the plowing would be approximately 46 inches deep and six inches wide. The width of the installation vehicle would be approximately 15 feet wide. Additional soil disturbance along some portions of the fiber optic line corridor would likely be due to tracked vehicle use. This method would be used along approximately 65 percent of the entire project.

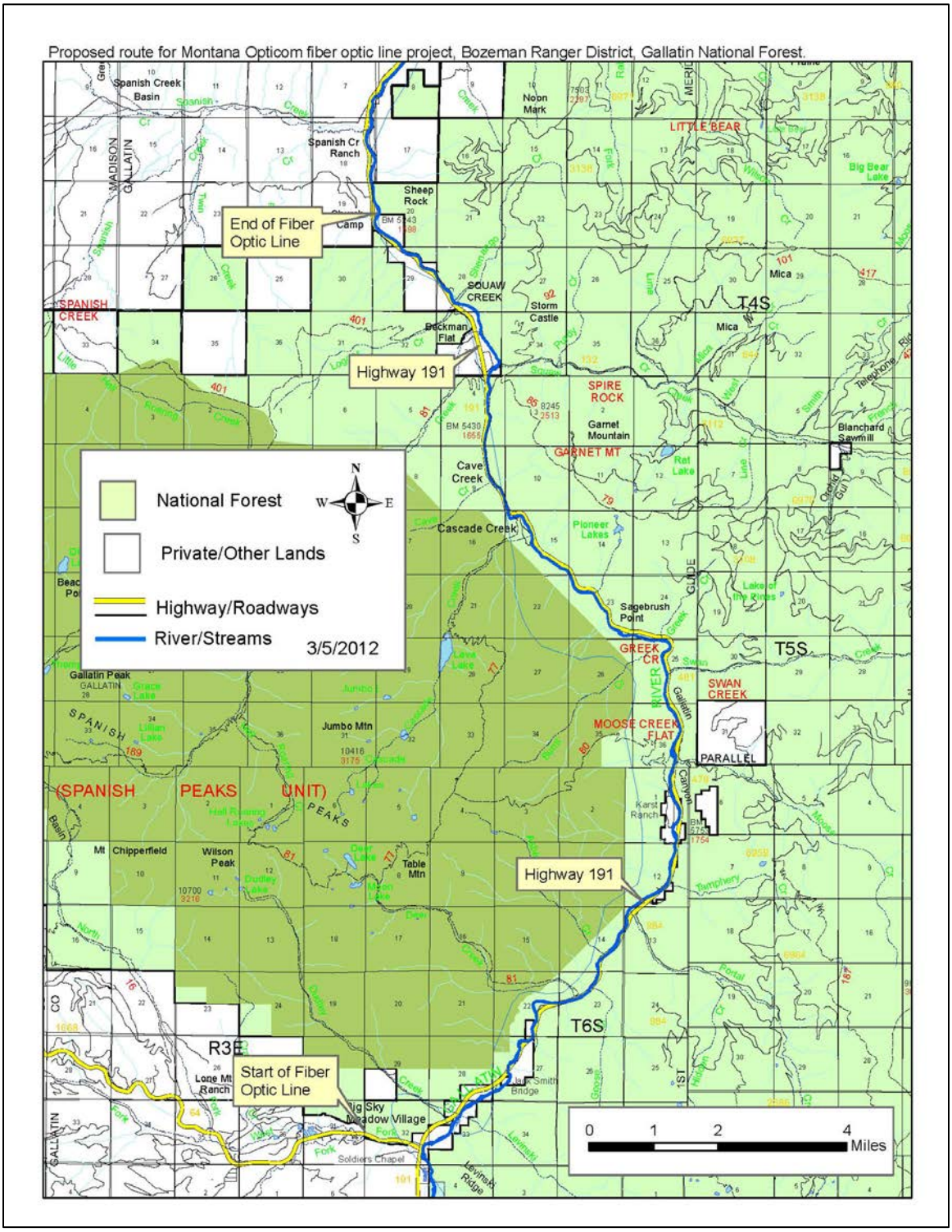

Figure 2. Proposed route for Montana Opticom fiber optic line project, Bozeman Ranger District, Gallatin National Forest.

The trenching method would encompass approximately 30 percent of the installation and would typically utilize a standard backhoe. Direct soil disturbance would be approximately 46 inches deep and 36 to 48 inches wide. The backhoe disturbance would be approximately 15 feet wide. Secondary disturbances include temporary piling of soil along the installation route and trafficking by the backhoe. The backhoe could also use rock-saw and jack-hammers for tough rock areas.

The boring method would be used along approximately five percent of the total fiber line installation corridor. Boring would be used to cross under all culverts for streams and roadways. It utilizes a bore machine that burrows a hole underneath the ground with minimal surface impact. The soil disturbance would typically be a six by six foot area at the beginning and end of the bore, while the installation equipment impact would affect approximately a 10-foot-wide corridor.

Above grade facilities located on National Forest system land would include warning signs, handholes for pulling cable, and pedestals for splicing boxes. Warning signs would be located every 500 feet along the fiber installation route. Approximately 48 warning signs would be located on NFS land and would consist of an orange sign approximately three inches wide and four inches tall. These would be located on posts approximately 48 inches high.

Locations for both pedestals and handholes are based on needed splice points, access points for future locating purposes, pull points for cable installation, and future capability of moving the fiber facilities if needed due to road construction or other unknown issues. Some additional, temporary disturbance will occur during installation of these structures.

Handholes are metal covers encasing holes in the ground to allow for fiber line access points for pulling cable. Approximately 36 handholes would be installed. Each handhold would be approximately 36 inches by 36 inches and would be placed so the top would be flush with the existing grade and light beige in color.

Pedestals, located above grade, would provide access to fiber splice locations and would be light green in color. Pedestals are metal boxes approximately 36 inches wide, 24 inches tall and eight inches deep. Approximately 22 pedestals would be installed on NFS land.

The timing of the project would occur during the non-winter months and installation would occur over approximately 45 to 60 days. The average rate of installation would be approximately 1500 feet per day.

MDT standards and guidelines for installation and safety precautions would be applied. Construction would be limited to one lane of highway traffic for three to five miles at one time and traffic delays would be limited to ten to twenty minutes at one time.

Construction staging areas on NFS land would be located along the proposed route. The final locations would be determined by the Forest Engineer prior to installation to accommodate all construction activities within the project area.

Upon completion of the project the new fiber optic line would be operated and maintained in accordance with all applicable laws and regulations.

Mitigation Measures and Monitoring Requirements

Soil Resources

Mitigation Measures

- The top one foot of soil should be salvaged separately (subject to stoniness and/or noxious weed constraints) in all areas where any one of the following conditions occur: 1) areas where trenching would be used for cable installation, 2) handhold or pedestal installation sites, and/or 3) areas where the fiber optic line would run through mature stands of conifers or deciduous trees, i.e. sites obviously not disturbed previously.
- The topsoil lift should be replaced as the surface mineral soil layer during backfilling.
- Any waste rock, excess subsoil, or excess substrate material that remains after backfilling would be removed from the site. However, large boulders excavated during construction should be stockpiled at a location to be determined by the Forest Service.
- Backfilled sites should be mounded slightly at the completion of backfilling to accommodate for future settling.
- All disturbed sites would be seeded by the permittee after backfilling with a suitable native grassland mix. This seed mixture would be designated by the Forest Service and would be certified Noxious Weed Free Seed.
- Any detrimentally compacted or rutted in areas outside the borrow ditch due to activities associated with fiber optic line installation would be ripped to depth of six to eight inches upon completion of ground disturbing actions. Detrimentally compacted or rutted areas are primarily of concern in Soil Management Units 1D, 4B, and 6E (see Figure 3 and Table 3 in Chapter 3); however, this provision would apply to all areas, including any temporary storage sites, where activities associated with fiber optic line installation occur on Gallatin National Forest lands.
- Off-road vehicle use should be limited during wet soil conditions, especially in soil management units 1D, 4B, and 6E.

Water Resources

Mitigation Measures

- All State of Montana Department of Environmental Quality (DEQ) water quality standards for beneficial uses would be met and all required permits would be obtained and associated requirements met.
- The handling, storage, application, or disposal of hazardous or toxic materials would be in a manner that prevents pollution to streams, lakes or wetlands or that may cause damage or injury to humans, land, animals or plants. Hazardous materials would not be drained onto the ground or into streams or drainage areas.
- A spill prevention, containment, and countermeasure (SPCC) plan would be prepared. This plan would detail the measures required of all construction, operation, and maintenance personnel for transport, storage, use, spill response/containment, and disposal of hazardous materials, waste, and debris.
- Spill containment/cleanup kits of appropriate type and capacity, for all types and volumes of hazardous materials used or stored on site, would be maintained on the work site at all times.
- Field personnel would be trained in spill prevention, control, and countermeasure procedures.

- The permittee shall install required and/or applicable DEQ permit BMPs, Soil BMPs, and project mitigation measures prior to beginning construction activities in the affected area.
- Erosion and storm water controls would be inspected and maintained as necessary to ensure proper and effective functioning.
- Excavated areas would be backfilled to the approximate final surface grade (mounded slightly) and condition as soon as possible.
- Backfilled areas and the plow rip path would be partially compacted during backfilling to minimize any future settling.
- To capture and retain sediment, a series of at least three check dams made of certified weed-free straw wattles would be installed wherever roadside ditches connect to cross-drain culverts or natural channels. Check dams would be installed per manufacturer's recommendations, spaced a minimum of five feet apart, and set in locations and in a manner that does not significantly impair the conveyance capacity of the ditch
- Backfilling, compaction, and straw wattle installation must be complete in all areas within 50 yards of road drainage culverts or natural channels before crews leave the job site for an extended period (weekend, holiday, etc.).
- To the extent possible the conduit would be plowed in with a plow method.
- Adjacent hillslopes would not be destabilized by undercutting or other means.
- All construction and maintenance activities would be conducted in a manner that would minimize disturbance to drainage channels, and stream banks. Appropriate Federal, State and local permits would be secured for locations where disturbance to stream bed or banks is unavoidable, and in any other situations for which permits are required.
- Water would not be pumped into or out of streams.
- There would be no in-stream crossing of stream channels.
- Work would be halted when wet conditions would lead to excessive damage to soils and vegetation in work areas.
- Temporary stockpiling of excavated materials would be managed in the following manner:
    - Stockpile on non-vegetated surfaces whenever possible
    - Minimize "footprint" area of material piles
    - Stockpile on road side of trench whenever possible
    - Avoid driving on stockpiled materials
- As part of the site restoration/cleanup, all disturbed ground surface would be seeded per Forest Service Direction using Forest Service - approved seed mixture.
- Montana Opticom shall be responsible for any cleanup resulting from spills or accidents involving hazardous, toxic or industrial wastes. Cleanup shall be conducted in accordance with all applicable federal and state laws.

Monitoring Requirements

- A Forest Service representative should inspect and ensure that all cleanup/rehab requirements have been met. Establish monitoring sites to document effectiveness of Soil Best Management Practices (BMPs) (see Appendix A) and long term recovery.

Invasive Plants

Mitigation Measures

- All off-road equipment would be cleaned (remove all mud, dirt and plant parts) before moving into the project area to reduce new invasive plant infestations. Cleaning must occur off NFS land.
- To reduce further existing infestations, all equipment would be washed immediately after working within a project area that contains leafy spurge, St. Johnswort, orange hawkweed and yellow toadflax. There are three known sites within the project area (see maps in the Invasive Weeds Report) but newly discovered sites would require the same mitigation. The equipment washing would occur on site and does not have to be self-contained. However, the equipment must be inspected by Forest Service staff before moving out of a known site. All known, existing weeds should be effectively treated prior to fiber installation to reduce the amount of live weeds in the project area.
- Revegetation would begin as soon as excavated sites have been backfilled or for other disturbed sites, the surface has been re-graded. See Soil Mitigation Measures listed previously, re: topsoil salvaging and use of existing plant propagules in the soil to speed up re-vegetation. All disturbed sites will be seeded after backfilling with a suitable native grassland as specified by the Forest Service. Seeds need to be certified Noxious Weed Free seeds.
- Any project areas of activity related bare soil where suitable plant propagules are not present in the existing topsoil would be reseeded as soon as possible after disturbance with a weed free, native grass seed mix approved by the Forest Service. In addition, any sites where vegetation has not been successfully established within two years as determined by the Forest Service, would be re-seeded with native grass seed and the seed incorporated into the soil by Montana Opticom. This operation or some variation thereof would be repeated until the site has been re-vegetated with desirable vegetation, and the weeds are eliminated.

Monitoring Requirements

- The Forest Service Weed Specialist would monitor the project area to ensure that weed treatment and re-vegetation treatments are implemented and effective. The monitoring would occur annually until the site has recovered.

Wildlife

General

- Project activities would be located within the existing disturbed ROW along Highway 64 and 191 to minimize the potential for disturbance to pristine wildlife habitats on either side of the project area.

Mitigation Measures

Grizzly Bears

- To minimize the risk of negative encounters between grizzly bears and humans, the Gallatin National Forest Food Storage Order would be implemented and enforced during the life of the project.

- Land disturbed during construction would be reclaimed with an approved Forest Service seed mix (see Invasive Plants Mitigation Measures) that would not use palatable species that could be an attractant to grizzly bears in areas of higher human use (e.g., trailheads, campgrounds, and residences).

Canada lynx

- No forested habitat would be altered, and no project activities would take place within snowshoe hare winter habitat.

Harlequin ducks

- To reduce impacts on harlequin duck behavior and their habitat, project activities would occur on the opposite side of the highways as the Gallatin River (with one exception for a distance of 180 feet), thus maximizing the distance between activities and the areas where harlequin ducks would occur.

Recreation Resources

Mitigation Measures

- The permittee should provide news releases and radio announcements about delays and construction activities.
- Construction activities should not delay or close access to NFS land access points during weekends or holidays.
- Construction activities should not cause a temporary delay or closure at more than one high use Forest Service System Road or dispersed recreation site at a time.
- The permittee would coordinate with Forest Service to update recreation residence permit holders regarding anticipated delays on associated driveways and roads.

Visual Resources

Monitoring Requirements

- Monitor trenches over a three year period for settling and possible cracks showing evidence of disturbance from proposed activities.
- Monitor project area over the life of special use permit for evidence of resurfacing orange conduit.
- Monitor project area over a year period to ensure reseeding does not appear unnatural, linear in nature, or as a single species.

Chapter 3 – Environmental Consequences

This chapter describes the characteristics of natural and human resources in the area potentially affected by the proposed action, and it discloses the impacts that would result from implementation of each of the alternatives. Following the description of the affected environment, the potential for direct, indirect, and cumulative impacts to each affected resource is discussed.

The potential exists for the elements of the proposed action to affect air, soils, water resources; aquatic and terrestrial biota, including special-status species; recreation; visual resources; and heritage resources. Therefore, the discussion that follows focuses on these resources. Forest Service resource specialists prepared the following impact analyses using the most recent and best-available scientific information.

Finally, the impacts of the proposed action are considered in combination with the known or potential impacts of other past, present, and future actions in the area of potential effect to determine the likelihood of cumulative adverse impacts. Actions whose impacts were considered additively with the proposed action include those identified in Table 2.

Table 2. Past, present, and reasonably foreseeable actions in the Highway 64 and 191 disturbed ROWs that may have additive effects with the proposed action.

Activity or occurrence	Period of time
MDT Safety Improvement Projects along Highway 191 at Greek and Moose Creek	2013
NorthWestern Energy LLC, installation of utility lines along Highway 64 and 191 ROWs	2013
MDT Maintenance on and along Highway 64 and 191 ROWs	Ongoing
Forest Service permitted recreation residence access	Ongoing
Access to NFS land for fishing, boating, parking, trailhead use and other recreation use such as camping, hiking and hunting	Ongoing
Weed spraying along Highway 64 and 191 ROWs	Ongoing
Private land development	Ongoing
Fire suppression and prescribed burning within the Gallatin River Canyon	Ongoing

Soil Resources

The following text is derived from a soil specialist's report filed in the Project Record as Item 3.

Regulatory Framework

Forest Service Manual (FSM) Chapter 2550, Soil Management (WO Amendment 2500-2009-1): This amendment to the Forest Service Manual states, "Responsible soil stewardship promotes and sustains biological and hydrologic function on National Forest System lands. Soils are essential for storing carbon and water. Soil inventories, soil quality assessments, monitoring and evaluation are required program elements for soil conservation and protection" (FSM 2550) This directive establishes the management framework for sustaining soil quality and hydrologic function while providing goods and services outlined in forest and grassland land management plans.

FSM 2500-99-1 to FSM 2500 Soil Management, R-1 Supplement – Watershed and Air Management (Effective 11/12/1999) provides guidance for Region One on how NFS lands should be managed "without permanent impairment of land productivity and to maintain or improve soil quality." Soil quality is defined in the R-1 Supplement, as well as the Region-wide standard for not creating "detrimental soil conditions" on more than 15 percent of an activity area. General guidelines for determining detrimental soil disturbance (DSD) were also provided in the R-1 Supplement.

Gallatin National Forest Plan (1987), Forest-Wide Standard 9 – Air Quality: The forest will cooperate with the requirements of the Montana Air Quality Bureau in the State Implementation Plan. The requirements of the State Implementation Plan and the Montana Smoke Management Plan will be met.

Spatial and Temporal Context for Effects Analysis

The spatial boundary for the majority of direct and indirect soil effects associated with the proposed fiber optic line installation would be the fiber optic line corridor, defined as 20 feet either side of the centerline along the entire length that the line passes through NFS lands. Added within the spatial boundary would be areas of associated impacts outside this corridor that are related to the installation plus a 20 foot buffer zone around each such disturbance. Soil effects related to site productivity are generally assumed to be spatially static, provided no offsite erosion or deposition occurs as a result of the management activities. DSD within the intensively developed utility line (FSM 2550) is not a concern so long as soil impacts do not extend outside the corridor and soil productivity is maintained. The appropriate spatial limit for direct and indirect soil affects is the activity area as defined above.

The temporal boundary used for this analysis spans a time period from 20 years in the past to 10 years in the future. Much of the area to be disturbed would be located within the existing disturbed ROWs of Highway 191 through Gallatin Canyon and Highway 64 to Big Sky. Existing, long term soil and vegetation disturbance exists within the disturbed ROWs of these highways. This makes additional disturbances associated with fiber optic line installation less obtrusive inside the disturbed ROW than outside the disturbed ROW. Regardless of the above, the stability of disturbed soils with respect to soil erosion continues to be a concern both inside and outside the disturbed ROW continues to be of concern. Management actions over the past 20 years that have contributed to soil disturbance and potential instability of soils within the project area need to be considered in the cumulative effects analysis. Ten years should be sufficient for

any soil disturbances associated with this action to be completely remediated and re-vegetated by suitable vegetation.

It is expected that the level of activity-related disturbance from installation of the fiber optic line would be greatest immediately after the completion of the project. That level of disturbance would gradually decrease for up to 10 years until any transitory detrimental effects on soil resources would have been largely erased. This assumes that adequate weed control is maintained and that mitigation measures used to reduce soil impacts have been adequately implemented. Recovery of disturbed sites during this period would be the result of the combined influence of initial remediation efforts and natural recovery.

Affected Environment

Predominant landforms within the project area include terraces, alluvial fans, footslopes and/or mountain base areas, and steep, bedrock controlled, mountain flanks. In nearly all areas of Gallatin Canyon soils have abundant, rock fragments, especially in subsoil and substrate layers. Depth to rocky soil materials ranges from at the soil surface to approximately to two feet below the surface.

Mean annual precipitation (MAP) in the project area ranges from approximately 15 to 24 inches.

Figure 3 depicts the Soil Management Units (SMUs) in the project area, while Table 3 describes the features of each SMU. SMUs range from highly productive, loess capped, meadows in the north part of Gallatin Canyon to extremely steep, mountain flanks, to bedrock controlled, south facing, sedimentary mountain slopes north of Highway 64 to Big Sky. The proposed fiber optic line, a linear project, bisects approximately 15 miles of the District. This corridor traverses a number of distinctly different landtype-soil associations as indicated in Table 3.

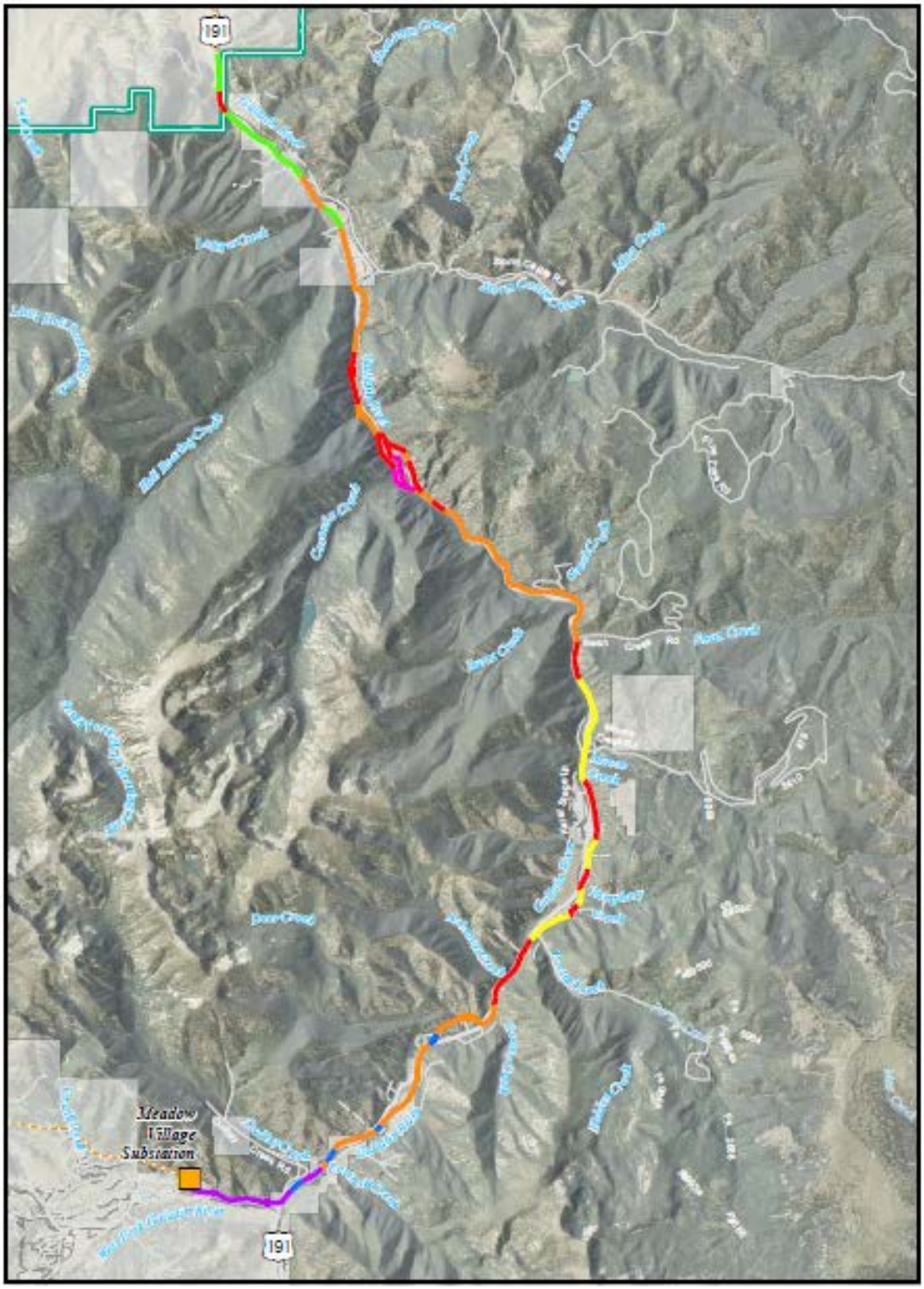

Figure 3. Soil management units along Mt Opticom's proposed fiber optic line route, Bozeman Ranger District, Gallatin National Forest.

*SMUs are indicated by the following corresponding colors: Unit 1D: green, Unit 2E: orange, Unit 3E: yellow, Unit 4B: blue, Unit 6E: purple, Unit 8E: pink, and Unit 9G: red.

Table 3. Soil management units located within the Mt Opticom project area (Keck and Cunha 2012).

Map Symbol	Soil Management Unit	Slope Range	Vegetation Type
1D	Loess capped soils in upland meadows at the north end of Gallatin Canyon	2-15%	Grasslands
2E	Coarse textured forest and woodland soils in moderately steep mountain base areas	4-35%	Coniferous forests and open woodlands
3E	Heavier textured soils in mountain base areas along middle portions of the Canyon	4-35%	Open conifer woodlands
4B	Grassland soils on terraces that are primarily well drained but may include areas of transitional wetlands	0-8%	Grasslands - some riparian
6E	Mixed sedimentary parent materials on south facing, mountain slopes - near Big Sky	4 to 45%	Open grown Douglas-fir
8E	Glacial till from metamorphic gneiss in the Cascade Creek area	8-30%	Coniferous forest
9G	Steep to extremely steep mountain flanks; scree slopes common	35-70%	Conifer forest, open woodland, scree

The majority of soils to be disturbed within the project area will be located immediately adjacent to the highway. These soils are already highly disturbed from past activities to the extent that they have certain properties inherent to highway related disturbances. Sandy soils are prevalent throughout much of Gallatin Canyon, primarily due to the prevalence of metamorphic gneiss parent materials. Even in areas with finer textured soils, however, surface soil textures are still likely to be sandy due to repeated inputs of road sediment. Disturbance due to proximity to the roadway has also caused certain surface or near surface diagnostic horizons have often been lost or altered.

Soil depths adjacent to the highway have also been altered due to road placement since cut and fill operations most often result in very deep (greater than 80 inches) soils. Vegetation within the project area has been previously altered as well.

Subsoil materials, however, would still reflect more natural soil conditions. As a result, primary soil attributes of interest that can be obtained from the soil management unit within the highway disturbed ROW relate primarily to particle size and the amount, size, and type of rock fragments present in subsoil and substrate materials.

SMU 1D, 4B, and 6E all tend to have loam (or clay loam) surface soil textures. This makes them susceptible to soil compaction and rutting. Other management units along the corridor have

predominantly coarse soil surface textures and/or abundant rock fragments on or near the soil surface.

Coarse soil textures and abundant rock fragments limit the potential for soil compaction. Soils on mountain slopes throughout Gallatin Canyon are primarily coarse textured due to the presence of metamorphic gneiss parent materials (Units 2E and 9G). Heavier soil textures were found, however, in central portions of the Canyon which appear to correlate with the proximity of the Absaroka Volcanic Formation coming in from the east. Soil disturbances on hot and dry, south facing slopes above Highway 64 to Big Sky (Unit 6E) would have the greatest likelihood of causing noxious weed infestations or expanding existing infestations. Soils in Unit 6E would be most likely to pose the greatest reclamation difficulties after disturbance.

Alternative 1 – No Action

Direct and Indirect Effects

The No Action Alternative would cause no change in current, existing conditions along the proposed fiber optic route through NFS land. There would be no increase in the level of soil disturbance, detrimental or otherwise, from current conditions. Similarly, there would be no dramatic decrease in soil disturbance either.

Cumulative Effects

Alternative 1 would not add to the existing level of soil disturbance. Therefore, it would not contribute directly to any cumulative impacts on soil quality or soil productivity that would be caused by other projects.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Installation of the proposed fiber optic line would likely have limited adverse effects on soil resources within the project area. Soil and vegetation disturbance caused by the fiber optic installation methods (plowing, trenching and boring) and from the equipment used to install the fiber line (i.e. Caterpillar®-type tracked vehicle) would be limited to the adjacent disturbed highway ROW. These areas have already been highly disturbed from past road construction and continued additions of sediment at the surface from traffic and snow removal activities. Seeded, aggressive, rhizomatous, grass species currently dominate the disturbed portion of the highway ROW on NFS land. Following soil mitigation measures and soil BMPs (see Appendix A) would help avoid sediment transport off site from concentrated flows and would help recontour the area.

Installation activities may fall outside of the apparent disturbed portion of the highway ROW, up to approximately 20 feet from the edge of the highway asphalt. Initial highway construction previously disturbed soil in this area, which has now revegetated and may appear unaltered to the casual observer. Proposed construction activities would require more aggressive restoration of excavations in this area, including topsoil salvaging to rapidly re-establish native plant species. Specific details, outlined in the soil mitigation measures, would help reduce erosion and would help to quickly reestablish native vegetation.

Cumulative Effects

The proposed action would create some additional, temporary soil disturbance along the existing disturbed ROW. Salvaging topsoil and replacing it at the soil surface at all major excavation sites (backhoe trenches and installation sites for handholds and pedestals) would ensure rapid revegetation of these disturbed areas by abundant, existing grass rhizomes in the topsoil. In this manner, any long term direct or cumulative effects associated with fiber optic line installation would be greatly reduced. Overall cumulative effects to soil resources would be minimal.

Water Resources

The following text is derived from a hydrologist's report filed in the Project Record as Item 4.

Regulatory Framework

Executive Order 11988 – Floodplain Management The requirements for all regulatory actions specified in E.O. 11988 are summarized in Section 1 from the order: "Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities."

Gallatin County Floodplain Regulation Gallatin County has a floodplain ordinance that requires a permit for construction of buried or suspended utility lines in a mapped 100-year floodplain (Federal Emergency Management Agency (FEMA) must approve any floodplain maps for the floodplain to be regulated, which triggers permit requirements). Utility lines may be constructed in a regulatory floodplain subject to the issuance of a permit by the Floodplain Administrator if the cumulative effect of such uses combined with allowable Floodway Fringe encroachments does not result in any increase (greater than or equal to one one-hundredth of one foot) to the unobstructed elevation of the Base Flood.

Federal and state laws regulate the quality of surface waters in Montana, including the Federal CWA and Montana Code Annotated (MCA) Title 75, Environmental Protection. The Montana DEQ is responsible for enforcing compliance with water quality laws on all lands in Montana, excluding Tribal lands. The Forest Service has a Memorandum of Understanding (MOU) with the State that allows the Forest Service and Montana DEQ to work collaboratively to address water quality issues on NFS lands.

Stormwater discharge (8/23/2010 Court opinion) In an 8/23/2010 opinion for suit filed by the Northwest Environmental Defense Center (NEDC) against state regulators and timber companies in Oregon, the NEDC asserted the defendants failed to provide or obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for stormwater runoff that flows from forest roads associated with logging into systems of ditches, culverts and channels, and which is then discharged into forest streams. Previously, operators of logging activities, which include the construction and maintenance of access roads, were not required to obtain NPDES permit coverage for stormwater discharges, except in very specific and limited instances. This was based on 40 CFR 122.27 (the "silviculture rule") which exempted, among other things, log "harvesting operations" and "road construction and maintenance from which there is natural runoff" from

NPDES permit requirements, because these activities were defined to be non-point sources. The 1990 Stormwater "Phase I" regulations require NPDES permits for stormwater discharges "associated with industrial activity," but industrial activity does not include the non-point sources defined in 40 CFR 122.27. NEDC contended that channelized stormwater runoff from these roads is a point source discharge subject to NPDES permitting. In a decision filed on 8/17/2010, the Court stated that Environmental Protection Agency's (EPA) silviculture rule, 40 CFR 122.27, only exempts natural runoff from silviculture activities until the runoff is conveyed in some way through a "discernible, confined and discrete conveyance" and discharged into waters of the U.S. The Court concluded that channelized runoff from logging roads is a point source stormwater discharge "associated with industrial activity" under the 1987 Clean Water Act (CWA) stormwater amendments and implementing regulations, and is therefore subject to Phase I stormwater NPDES permitting requirements. The court directed that the Silviculture Rule could be construed as consistent with the CWA so long as the "natural runoff" remains natural. The exemption ceases to exist as soon as the natural runoff is channeled and controlled in some systematic way through a "discernible, confined and discrete conveyance" and discharged into the waters of the United States.

The ruling is subject to further appeal and no injunction associated with the decision directly currently affects the Forest Service or the proposed project. In temporary guidance on 9/22/10, the EPA issued Multi-Sector General Permit (MSGP) guidance for states which are not covered by a state NPDES program. In states authorized to administer their own stormwater program, such as Montana, the EPA directs use of the appropriate state-issued permit. If a general permit similar to that currently in place for smaller construction and industrial sites is made available, it could require the filing of an electronic or paper "Notice of Intent" (NOI) for road construction, maintenance, or transport operations, together with a "Stormwater Pollution Prevention Plan" (SWPPP) that must be prepared and implemented. The State of Montana currently does not have a specific forest operations or road discharge stormwater permitting process. The closest currently existing permitting process is the industrial stormwater permit which is described on the Montana DEQ web site at http://www.deq.mt.gov/wqinfo/MPDES/StormwaterIndustrial.mcpx.

The EPA MSGP 9/22/12 guidance directs that, for newly planned forest road projects, operators must submit a NOI at least 30 days prior to commencing construction. The stormwater permitting process is administered in Montana by the Montana DEQ Water Protection Bureau in the Permitting and Compliance Division. The DEQ Water Protection Bureau staff indicates that if the industrial stormwater form and process is used for forest road NPDES permits the NOI, application form, and SWPPP should be filed at least 90 day in advance of logging operations.

The NEDC vs. Brown (pg. 12008) ruled that the decision applies to "navigable waters of the United States" which the Montana Department of Environmental Quality (DEQ) Water Protection Bureau further considers to be "State waters" as defined in Montana Code 75.5.101 (33) (a) as "a body of water, irrigation system, or drainage system, either surface or underground."

The Forest Service consulted with DEQ regarding the necessity of, and appropriate procedure for, applying for and obtaining a NPDES permit for the proposed project. The DEQ has determined that a NPDES permit is not required (EPA 2012 and P. Skubinna, email communication, 12/03/12).

Clean Water Act Section 404 Waters of the United States (Waters of the US), including wetlands, are subject to the United States Army Corps of Engineers (USACE) jurisdiction under Section 404 of the CWA. A Section 404 permit is required for the discharge of dredged or fill material into Waters of the US. The regulatory definition of Section 404 CWA jurisdictional

wetlands according to the EPA and USACE are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions.” The Helena Office of the Omaha District of the USACE would provide regulatory review and permitting services for this project.

Clean Water Act Section 401 Pursuant to Section 401 of the CWA and the DEQ, provide water quality certification to determine if a proposed project would violate applicable state water quality standards. Water quality certification is mandatory for all projects requiring a Section 404 permit.

Nondegradation The Montana Water Quality Act requires the DEQ to protect high quality waters from degradation. The current nondegradation rules were adopted in 1994 in response to amendments to Montana’s nondegradation statute in 1993 and apply to any activity resulting from a new or increased source that may degrade a high quality water. The proposed project would have to comply with the current nondegradation rules because of its location next to high quality waters.

Total Maximum Daily Loads Section 303(d) of the federal CWA requires states to assess the condition of state waters to determine where water quality is impaired (does not fully support uses identified in the stream classification or does not meet all water quality standards) or threatened (is likely to become impaired in the near future). The result of this review is the compilation of a 303(d) list, which states must submit to the EPA biannually.

Natural Streambed and Land Preservation Act (310 Permit) This permit is required for any private, non-governmental person or entity that proposes to work in or near a perennial stream on public or private land. The permit is necessary for any activity that physically alters or modifies the bed or immediate banks of a perennially flowing stream. Permits are issued by the Montana Association of Conservation Districts of the Montana Department of Natural Resources and Conservation (DNRC).

Short-term Turbidity Standard (318 Permit) This permit is required for any person, agency, or entity, either public or private, initiating a short-term activity that may cause unavoidable short-term violations of state surface water quality standards. The major application of this law is related to sediments and turbidity caused by construction or other activities. Permits are issued by the Water Protection Bureau of the DEQ.

Spatial and Temporal Context for Effects Analysis

The area of analysis for water resources includes the proposed area of disturbance, approximately a 15 foot-wide corridor along the proposed fiber optic line route and all areas into which this disturbed area may potentially drain. These roadside drainage networks include segments of the Gallatin and West Gallatin Rivers and associated floodplains paralleled by the proposed fiber optic line route, and the tributary streams and associated floodplains which intersect the corridor impacted by the proposed activities (from the point of intersection to the confluence with the Gallatin River).

The temporal scale includes from project implementation through five years post-project since recovery from pre-project conditions is expected to take between three to five years.

Affected Environment

The West Gallatin River and Gallatin River are located adjacent to the project area, paralleling Highway 64 and 191 respectively. The West Gallatin River, the West Fork of the Gallatin River, begins at the confluence with main stem Gallatin River near Big Sky and extends approximately 5000 feet upstream to the Forest boundary. The main stem of the Gallatin River begins at the confluence with West Fork Gallatin River near Big Sky and extends downstream to the Gallatin National Forest boundary, which lies approximately 1.5 miles north of the confluence with Spanish Creek. This river segment is approximately 20 miles long.

The West Fork Gallatin River Watershed Total Maximum Daily Loads (TMDLs) and Framework Watershed Water Quality Improvement Plan (DEQ 2010) presents assessments performed within the Upper Gallatin TMDL Planning Area, which includes the Gallatin River and the South, Middle, and Main Forks of the West Fork Gallatin River. The assessments addressed sediment, nutrients, and e. coli pollutants.

The Gallatin River is found to be fully supportive of all beneficial uses (non- impaired) (DEQ 2010), while the West Fork Gallatin River is impaired under sediment and nutrient pollutant categories and was placed on the 303(d) List. The 303(d) List, as outlined by the CWA, describes waters for which the water quality standard has not been met and includes probable causes of impairment and suspected sources of the pollutant.

Increased sediment associated with residential and resort development and increased soluble nitrogen due to resident and recreational introductions of non-natural sources of soluble nitrogen contributed to the West Fork Gallatin River 303(d) listing. Recommended actions to reduce sediment and non-natural sources of nitrogen inputs included applying appropriate BMPs (DEQ 2010).

Hillside seeps, bottomlands associated with the Gallatin River and its tributaries, small ponds, and seeps present a patchwork of wetlands within the Gallatin River watershed. Wetland inventory maps obtained from the Montana Natural Heritage Program (MNHP), which are based on 2005 aerial photography and follow the U.S. Fish and Wildlife Service NWI protocol, indicate no wetland areas within the proposed fiber optic line route (MNHP 2012).

The extent of the Gallatin River floodplain is dependent on soil type, topography, and water flow characteristics. Within the proposed area, the Gallatin River floodplain is restricted by steep canyon walls and Highway 191’s road embankment. This embankment may restrict the floodplain and may have eliminated it in some areas. The Gallatin River tributaries may have small floodplains where the topography flattens out before the tributary enters the river.

One type of floodplain was identified in the Project Area by the FEMA: 100-year floodplains (Zone A). Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. Data is available for approximately 4.6 miles of the Gallatin River within the project area (FEMA 2011). The remaining portions of the River are unmapped by FEMA and therefore unregulated.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no direct or indirect effects on existing water resource conditions since there would be no project-related changes.

Cumulative Effects

Water resources are not expected to change under the No Action Alternative, so no cumulative water quality or sediment effects with ongoing activities and natural sediment yields in the Gallatin River watershed is expected.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Water Quality

The proposed action includes installing a fiber optic cable along the non-river side of Highway 64 and 191. This work would include ground disturbing activities including the installation of fiber optic cable below ground at a minimum depth of 42 inches. The proposed fiber optic line would be located within the existing disturbed highway ROW. These areas have previously been disturbed through road construction, maintenance, and other utility installations.

The proposed installation methods would include plowing, boring, and trenching techniques depending on the land-type encountered, although an estimated 65 percent of the installation would utilize the plowing method followed by trenching (30 percent) and boring (5 percent).

Once installation of the facilities are complete, the ground would be compacted, excess dirt and rocks would be removed, and revegetated with a review on clean-up efforts one year after installation to repair any settling.

Based on monitoring of a past fiber optic line installation on Forest (USFS 2009), the proposed action would result in minor, temporary impacts. A three-year post construction assessment reveals no evidence of elevated levels of surface soil erosion or transport at any of the sites examined (White 2012). Monitoring also reveals the reestablishment of vegetative to be fully recovered with native plants.

The location of the proposed fiber optic line installation activities within the drainage network along with past project monitoring, Soil BMPs and mitigation measures, the current project should yield no major impacts to water quality within the Gallatin River Watershed. The anticipated project effects would be temporary (less than three years) with only a minor increase in sediment delivery to the Gallatin River, West Fork Gallatin River, and short terminal segments of their tributaries within the project area. Based on past fiber optic line installation on Forest (USFS 2009), it is not anticipated that the impacts from the proposed activities to these water bodies would be measureable.

Floodplains

The installation of fiber line below grade and the proposed above grade facilities would be negligible. They would not change flooding patterns or flood flows, the base flood elevation would not increase, and floodplain functions would remain intact.

Wetlands

Bottomlands associated with the Gallatin River, creeks, small ponds, and seeps present a patchwork of wetlands that could potentially be affected by the proposed action.

MNHP (2012) wetland maps and a 2012 field inspection indicate that the proposed activities would not occur in any mapped or suspected wetland areas. Soil BMPs would prevent the deposition of soil or other materials into nearby wetland areas. No measurable impacts are expected on wetlands as a result from the proposed action.

Cumulative Effects

Since no measurable impacts are expected on water quality, floodplains, or wetlands as a result of implementing the proposed action, there are no expected contributions to cumulative effects on these resources in the Gallatin River watershed.

Invasive Plants

The following text is derived from a plant biologist's report filed in the Project Record as Item 5.

Regulatory Framework

Montana Local County Weed Act (MSC 7-22, 80-5, and 80-7; annotated 2011) This act provides for designation of noxious weeds within the State and directs control efforts. The enforcement responsibility for the control of noxious weeds within Montana is delegated to County Commissioners through Weed Management District Boards. The act states that it is unlawful for any person to allow noxious weeds to propagate or go to seed on their land unless they have an approved weed management plan.

Executive Order 13112 – Invasive Species, February 3, 1999. This order directs Federal Agencies whose actions may affect the status of invasive species to (i) prevent the introduction of invasive species and (ii) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner as appropriation allow.

Gallatin National Forest Plan (1987) standard, page II-28, "Funding for weed control on disturbed sites will be provided by the resource which causes the disturbance."

Gallatin National Forest Noxious and Invasive Weed Treatment Project Final Environmental Impact Statement and Record of Decision (ROD) (2005). The 2005 ROD expands the current weed program to treat up to 13,260 acres of weeds with herbicides, mechanical cultural and biological control methods. The Forest controls less than 8,000 acres of weeds annually because of limited resources. The effects of weed treatment (for example, the effects of herbicide of the environment and human health) were addressed in that environmental analysis and this project tiers to that analysis.

Forest Service Manual (FSM) 2081.2 Prevention and Control Measures, 9. Lands and Special Uses – has the following required actions pertinent to this project:

- Include a weed risk assessment in the environmental analysis for projects with ground disturbing actions. (see Invasive Weed Report)
- Re-establish vegetation on bare ground due to construction or deconstruction activity to minimize weed spread.
- Include Clause R1-D4, (or subsequent approved direction), in all new and reissued recreation special use permits, authorizations, or other grants involving ground-disturbing activities. Include this provision in existing ground-disturbing authorizations, which are being amended for other reasons.
- Clean all equipment prior to leaving the project site, if operating in areas infested with new invaders (as determined by the Forest Weed Specialist).
- Remove all mud, dirt, and plant parts from all off road equipment before moving into project area. Cleaning must occur off NFS lands. (This does not apply to service vehicles that would stay on the roadway, traveling frequently in and out of the project area.)

Spatial and Temporal Context for Effects Analysis

The spatial context for this analysis focuses on the proposed project area within the Forest Service boundary, which would have ground disturbance. Private land in the project area and within the Forest Service boundary may be directly impacted by the project because the trenching and plowing equipment may move seeds and soil along the cable route. Areas adjacent to the project were not included because follow-up weed treatments will reduce the risk of weeds spreading to adjacent areas.

As for the temporal context, this area has been disturbed many times over the last few decades, and weeds have been established in this area for many years. The analysis focuses on the weed inventory from 2009 to the present because this is the only inventory data available. The analysis tries to project five years into the future because this is the estimated time needed for vegetation to recover the site.

Affected Environment

MDT is the primary agency responsible for weed treatment for Highway 191 and 64 ROWs. Although these ROWs have been sprayed repeatedly in the past, the weeds are a perpetual issue that requires continual maintenance.

Common weeds found in the project area included spotted knapweed, hounds tongue, nodding thistle, hoary alyssum, oxeye daisy and common mullein. These species spread mostly from seeds and are relatively easy to control with herbicides. Another common weed found throughout the project area is Canada thistle, which spread by rhizomes and wind-blown seed. While these species area easy to control they are very difficult to eradicate because the area is disturbed frequently and the seeds are abundant. A 2009 and 2012 inventory within the Gallatin Canyon confirmed all of these species within the project area.

A few of the weed species are still rare in the Gallatin Canyon along Highway 64 and 191 thus are considered new invaders; such as leafy spurge, St. Johnswort, orange hawkweed and yellow toadflax. Since these species are new invaders and are difficult to control even with herbicides (they spread by both rhizomatous roots and seeds), they require special mitigation measures to reduce the spread of their root system while burying cable (see Chapter 2 for all proposed action mitigation measures). The intent of this mitigation measure is to prevent root fragments from being spread all along the corridor.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no direct effect because there would be no ground disturbance and the existing weeds wound not be disturbed.

Also, there are no indirect effects; MDT would continue to treat the weeds within the disturbed highway ROW, and the Forest Service would treat the weeds in the Goose Creek area, which is outside of the ROW.

Cumulative Effects

Since there are no direct or indirect effects under the No Action Alternative, it would not contribute to the invasive plant cumulative effects.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The proposed action would increase the existing weeds in the project area by disturbing the existing vegetation, by moving soil that has dormant weed seeds, and by cutting rhizomatous roots into fragments. A 2009 and 2012 inventory confirms there are currently numerous patches of invasive weeds within the project area. These weeds are known to be very aggressive, meaning they would out-compete native plant species, and would grow rapidly in disturbed soils. (Sheley and Petroff 1999) The invasive plant mitigation measures should help reduce the severity of the impacts.

If the invasive plant mitigation measures are implemented then the new invaders would be confined to their existing location. Washing of equipment prior to moving along the route would greatly reduce the risk of spreading root fragments along the proposed installation route. Likewise, the risk of accidently introducing new weeds into the area would be greatly reduced because equipment would be cleaned prior to entering NFS land. Follow up weed treatment and re-vegetation of the disturbed area would help reduce weed population within the project area. The combined effect of these mitigation measures during project construction should result in no measurable impact on the invasive weeds issue.

Cumulative Effects

In combination with the mitigation measures, this project would have no direct or indirect effect on invasive weeds, and thus no cumulative effects. Other activities in the area (such as highway construction project, powerline construction projects and road access to adjacent land) all contribute to the invasive weed problem. The proposed action may help to reduce the weeds cause from these other activities by increasing the weed control effort in this area.

Sensitive Plants

The following text is derived from a plant biologist’s report filed in the Project Record as Item 6.

Regulatory Framework

Forest Service Sensitive Species (FSSS) are those that are listed by the Regional Forester as "sensitive" in Region 1 because there is concern for population viability across their range, and all occurrences contribute significantly to the conservation of the species. FSM 2670.32 directs that a biological evaluation be prepared to determine potential effects on species designated as "sensitive" by the Regional Forester. United States Department of Agriculture Regulation 9500-4 directs the Forest Service to avoid actions that may cause a sensitive species to become threatened or endangered (FSM 2670.12). Populations of all FSSS wildlife, fish, and plants must be maintained at viable levels in habitats distributed throughout their geographic range on National Forest System lands (FSM 2670.22). The viability of populations of FSS species becomes a concern when downward trends in population numbers or habitat capability are predicted. When the Forest Service undertakes or approves an activity on NFS land, the agency seeks to avoid or minimize impacts to FSSS.

Spatial and Temporal Context for Effects Analysis

The spatial context for this analysis focuses on the proposed area with Forest Service boundary, which would have ground disturbance. Areas adjacent to the project were not included because this project would not disturb those areas.

As for the temporal context, this was limited to the summer of 2012, because this is the survey year. No known previous surveys or data were available for this analysis.

Affected Environment

The following table displays a list of sensitive plant species that may potentially occur on the Gallatin National Forest. Table 4 displays a list of the sensitive plant species that may potentially occur on the Gallatin National Forest. It summarizes the suitable habitat, elevation and the potential that the plant may occur within the project area. Although some species habitat could be located within the project area, none were discovered in a 2012 inventory.

Table 4. Regional Forester's sensitive plant species potentially occurring on the Gallatin National Forest

Plant	Habitat	Elevation (feet)	Potential habitat available in the project area? - Species present within the project area?
Musk root *Adoxa moschatellina*	Forest, moist mossy slopes, rock crevices	4,400-5,400	No – Project area is dry and above this elevation
Small flowered columbine *Aquilegia brevistyla*	Open woods and streambanks, limestone sites, northern aspect	5,000-6,000	Yes – Surveyed on July 31, 2012 but plant not found
Large leafed balsamroot *Balsamorhiza macrophylla*	Open hills, bunch grass	7,000-8,500	No – Project is below this elevation
Small yellow lady's slipper *Cyoripedium calceolus ver. Parviflorum*	Bogs, damp mossy woods, seeps, moist forest meadow ecotones	3,000-6,200	Yes – Surveyed on July 31, 2012 but plant not found

Plant	Habitat	Elevation (feet)	Potential habitat available in the project area? - Species present within the project area?
Giant hellborine *Epipactis gigantea*	Thermal or Perennial springs, boggy organ fens	2,000-5,750	Yes – Surveyed on July 31, 2012 but plant not found
English sundew *Drosera anglica*	Bogs	3,000-9,000	No - Requisite habitat features not in project area
Beaked spikerush *(Eleocharis rostellata)*	Bogs	2,700-6,100	No - Requisite habitat features not in project area
Slender cottongrass *Eriophorum gracile*	Peatland (fen) species	3,000-7,600	No - Requisite habitat features not in project area
Hiker's gentian *Gentianopsis simplex*	Mountain bogs, meadows, seeps	4,400-8,400	No - Requisite habitat features not in project area
N. rattlesnake plantain *Goodyera repens*	Open mossy forests, mountains on north slopes, limestone, shale	5,700-6,800	Yes – Surveyed for this species on July 31, 2012 but was not found
Discoid goldenweed *Haplopappus macronema*	Rocky, open or sparsely wooded slopes, talus, above timberline	7,640 +	No – Project area is well below this elevationl range
Hall's rush *Juncus hallii*	Moist to dry meadows and slopes, montane	6,900-8,400	No – Project area is well below this elevational range
Dwarf purple monkeyflower *Mimulus nanus*	Dry gravelly or sandy areas with sparse grass or sagebrush; prefers minimal competition	6,565 (Horse Butte along sandy bluff is preferred location)	No – Project area is well below this elevational range
Austin's knotweed *Polygonum douglasii*	Open, gravelly, shale soils with eroding slopes and banks in montane	5,800-6,600	No - Requisite habitat features not in project area
Whitebark Pine *Pinus albicaulis*	Forested	6,600-11,000	No – Project area is well below this elevational range
Barratt willow *Salix barrattiana*	Cold, moist soil near or above timberline	6,800-10,500	No – Project area is well below this elevational range
Shoshonea *Shoshonea pulvinata*	Open, windswept limestone outcrops, ridgetops	6,800-9,000	No – Project area is well below this elevational range
Alpine meadowrue *Thalictrum alpinum*	On hummocks w/shrubs in moist, alkaline meadows in montane, subalpine	6,500-7,000	No – Project area is well below this elevational range

Plant	Habitat	Elevation (feet)	Potential habitat available in the project area? - Species present within the project area?
Calif. False hellborine *Veratrum californicum*	Wet meadows and streambanks in montane and subalpine, alpine. Meadows, spruce, Doug fir	5,000-8,500	Yes – Surveyed for this species on July 31, 2012 but was not found, site too dry

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no direct or indirect effect because there would be no ground disturbance. Therefore, the existing plants would not be disturbed.

Cumulative Effects

Since there are no direct or indirect effects, the No Action Alternative would not contribute to the cumulative effects.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The proposed action would not contribute any direct or indirect effects because no sensitive plants were found within the project area.

Cumulative Effects

Other activities in the area (such as highway construction project, powerline construction projects and road access to adjacent land) all contribute to disturbance of vegetation in the area. The proposed action would not likely contribute to the impacts to sensitive plants because there are no known populations within the project area.

Wildlife

The following text is based on a wildlife biologist's report filed in the Project Record as Item 7.

Regulatory Framework

Federally-listed species are those that are either listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA). The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. Section 7 of the ESA imposes an affirmative duty on federal agencies to ensure that their actions are not likely to jeopardize the continued existence of species listed as threatened or endangered or result in the destruction or adverse modification of designated critical habitat.

Forest Service Sensitive Species (FSSS) are those that are listed by the Regional Forester as "sensitive" in Region 1 because there is concern for population viability as evidenced by significant current or predicted downward trends in population numbers, population density, or habitat capability that would reduce a species' existing distribution (FSM 2670.5). When the Forest Service undertakes or approves an activity on NFS land, the agency seeks to avoid or minimize impacts to FSSS.

The National Forest Management Act (NFMA) requires the Forest Service to "provide for Management Indicator Species (MIS) diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives" 16 U.S.C. 1604(g)(3)(B). On the Forest, compliance with this requirement is monitored through the use of MIS. MIS are species identified in the Forest Plan that are representative of habitats or larger groups of species and that are to be monitored to estimate the effects of planned management activities on those habitats and groups of species (USDA Forest Service 1987, p. VI-14). The 1982 NFMA implementing regulations required selection of management indicator species to estimate the effects of forest management on fish and wildlife populations. Species were selected because their population changes were believed to indicate the effects of management activities. This requirement has since been removed from the current implementing regulations, but the Forest Plan still mandates that they be used to ensure compliance with the NFMA diversity requirement. The Forest Plan requires that MIS be monitored at five year intervals to determine their population trends and relationships to habitat changes. The expected precision and reliability of this monitoring are both considered "moderate". Terrestrial MIS for the Forest include grizzly bear, bald eagle, elk, goshawk, and pine marten.

The most recent MIS monitoring assessment was completed in 2011 (Canfield 2011). The purpose of the 2011 assessment was to use the best available information to update population and habitat trends for Forest MIS at the planning unit level (Forest) or other scales, if biologically appropriate, to provide context for the assessment of project level effects analyses of these species.

The assessment concluded that, at the planning unit scale (i.e., within the boundaries of the Forest), population trends of terrestrial wildlife MIS are currently stable to increasing.

A Forest-wide Special Order (#07-11-00-01) regulates the storage of food and other attractants on NFS land within the entire Forest boundary, for the purpose of minimizing adverse interactions between humans, bears, and other wildlife. All project activities would be subject to this order.

The U.S. Fish and Wildlife Service (USFWS) has issued two Biological Opinions, each with terms and conditions that apply to Forest management actions outside the grizzly bear recovery zone. These opinions were issued in response to Biological Assessments prepared by the Forest for effects of the Forest Plan on grizzly bears that occur outside the Greater Yellowstone Area Recovery Zone (USFWS 2004) and the Gallatin National Forest Travel Management Plan FEIS (USFWS 2006). Terms and Conditions listed in both of these Biological Opinions are not applicable to the proposed activities.

Canada Lynx Management Direction Both alternatives would be in compliance with the NRLMD amendment (USFWS2007) to the Forest Plan (USFS 1987), as outlined below:

- Objective ALL O1: Maintain or restore lynx habitat connectivity between lynx analysis units (LAUs) and in linkage areas. Because the proposed activities would take place within the existing ROW of Highway 191 and 64 or along an existing Forest Service access road, no additional fragmentation would be introduced into the LAUs and any existing habitat connectivity would be maintained.
- Standard ALL S1: New or expanded permanent developments and vegetation management projects must maintain habitat connectivity in an LAU and/or linkage area. See discussion under Objective ALL 01 above.
- HU O3: Concentrate activities in existing developed areas, rather than developing new areas in lynx habitat. The proposed activities would take place in existing developed areas along Highway 191 and Highway 64 or along a Forest Service access road. No new areas would be developed.
- HU O5: Manage human activities, such as special uses, mineral and oil and gas exploration and development, and placement of utility transmission corridors, to reduce impacts on lynx and lynx habitat. The proposed activities would take place at elevations lower than those preferred by lynx and in the most highly developed area of the two affected LAUs. No lynx habitat would be altered.

The Biological Opinion (USFWS 2007) on the effects of the NRLMD on Canada lynx included Terms and Conditions that the FS must implement, but none of these Terms and Conditions are relevant to this project.

Migratory Bird Species of Concern (MBSC) Executive Order 13186 requires agencies to ensure that environmental analyses evaluate the effects of federal actions and agency plans on migratory birds, with emphasis on species of concern.

Bald and Golden Eagle Protection Act Under the Bald and Golden Eagle Protection Act, it is unlawful to take, kill, or possess any bald or golden eagle, except as regulated by authorized programs. The Forest Service has a responsibility to ensure that environmental analyses evaluate the effects of federal actions and agency plans on bald eagles. The effects analysis shows that the project would have no impact on bald eagles.

Greater Yellowstone Bald Eagle Management Plan (GYBEMP) Management direction from the GYBEMP would be implemented as follows:

Zone I: No mitigation needed, as all activities would occur outside this zone.

Zone II: Habitat alterations should be carefully designed and regulated to insure preferred nesting and foraging habitat are not degraded. All project activities would take place within the already disturbed area within the rights-of-way of Highway 191 and 64 or along a Forest Service access road. Preferred nesting and foraging habitat, which are not located in these areas, would thus be unaltered.

Zone III: Habitat alterations should insure important components are maintained (i.e. per trees and snags, visual screening from existing or anticipated areas of human activity, and potential habitat. Bald eagle foraging and nesting habitat would not be altered as a result of the proposed activities. There would be no impact on trees and snags. The nest is already visually screened from project activities, for the most part, and this screening would not be altered. Potential bald

FEDERALLY-LISTED SPECIES

Grizzly bear

Indicators for this analysis included the following:

- Effects on motorized access, as measured by changes in road density and the amount of secure habitat within the grizzly bear analysis area.
- Effects on the potential for increasing negative human/grizzly encounters within the analysis area, as measured qualitatively by the likelihood that bears may become food-conditioned as a result of the proposed activities.
- Effects on grizzly bear use of the analysis area, as measured qualitatively by changes in ambient noise and amount of human activities in the analysis area.

Spatial and Temporal Context for Effects Analysis

Spatial Context: For the purposes of this analysis, it will be presumed that effects of the proposed action would be similar to those that a road would have on grizzly bears. Waller and Servheen (2005) found that grizzly bears strongly avoided the area within 1,640 feet of roads. It was therefore presumed that effects of the alternatives on grizzly bears would extend to the area within 1,640 feet of the project area, and this area therefore constitutes the grizzly bear analysis area.

Temporal Context: Effects on grizzly would result from activities occurring during implementation or re-establishment of vegetation. The timeframe for this analysis therefore included the period during which implementation would occur (approximately 45 to 60 days during non-winter months) and an additional two to five years, which is the time it would take for vegetation to re-establish.

Affected Environment

The analysis area is located outside the Greater Yellowstone Ecosystem (GYE) Grizzly Bear Recovery Zone (USFWS 1993), but both sides of the Gallatin Canyon are occupied by grizzly bears, with use diminishing in a northerly direction between Big Sky and the mouth of the canyon (K. Frey, personal communications, August 15, 2012). Grizzly bears tend to avoid using areas in proximity of roads (Waller and Servheen 2005, Mattson 1993), and use of the analysis area by grizzly bears is therefore likely to be very limited. Radio collar data show a minimal number of grizzly bear highway crossings along the portion of the highway that parallels the project area (K. Frey, personal communications, August 15, 2012). There has been one recorded motor vehicle

collision with a grizzly bear along the portion of the highway that parallels the project area, and that incident occurred in the mid-1980s (K. Frey, personal communications, August 15, 2012). Grizzly bears are rarely observed along the highway corridor.

In the absence of Highway 191, the riparian area along the Gallatin River would provide high quality foraging habitat for grizzly bears, especially in the spring and summer. Use of the river corridor by grizzly bears is currently limited, however, most likely due to the traffic volume and noise associated with the highway, as evidenced by the information provided above.

Animal collisions along Highway 191 could provide a valuable foraging opportunity for grizzly bears. Big game carcasses are available throughout the grizzly bear foraging season (spring, summer, and fall) due to frequent collisions with motor vehicles. Despite this abundance of protein sources, grizzly bears are rarely seen along the highway, and radio collar data do not show that this is an exploited food source for grizzly bears within the analysis area.

The analysis area, which extends beyond the highway ROW up into the forested valley walls along the Gallatin River Canyon, contains thermal/hiding cover for grizzly bears. Waller and Servheen (2005) found that grizzly bears strongly avoid the area within 1,640 feet of a road, and, therefore, despite the presence of cover within the analysis area, the proximity of the route to the highway and residences is likely to prevent it from being used any more than for transient movements between more suitable and remote habitats to the east and west. Any use of the analysis area by grizzly bears is most likely to increase towards the margins, where forested areas provide the most thermal/hiding cover and distance from human activities increases.

Condition of Analysis Area Specific to Analysis Indicators

The entire analysis area is within 1,640 feet of an existing road. The analysis area therefore does not contain any secure habitat, which is defined as any area more than 1,640 feet from an open or restricted motorized access route and greater than 10 acres in size.

The analysis area currently presents opportunities for human/grizzly encounters, as it is immediately adjacent to a highly-used recreational corridor along the Gallatin River, with hikers, campers, fishermen, and whitewater rafters present in high numbers throughout the non-winter months. The analysis area perpendicularly crosses several access roads to trailheads and includes portions of two campgrounds along its route. In addition, commercial and private whitewater rafting trips take place along the Gallatin River, with fishermen accessing the river all along the corridor, and a variety of other recreationists using the river corridor for a range of pursuits. Residences and commercial businesses are also present along the corridor. The Forest Food Storage Order is currently in place at all locations on Forest Service system lands to minimize the risk of attracting grizzly bears.

Proximity of the analysis area to Highway 191 and 64 reduce the habitat quality of the analysis area for grizzly bears. Both highways are characterized by high traffic volumes (5,140 average daily traffic volume along Highway 191 [MDT 2005]). As described above, recreational use of the Gallatin River is high. Grizzly bears have been shown to avoid roads (Waller and Servheen 2005, Mattson 1993), and the current understanding of grizzly bear movements in the Gallatin Canyon suggests that use of the analysis area by grizzly bears is rare (K. Frey, personal communications, August 15, 2012). One motor vehicle collision with a grizzly bear has been documented, and that collision occurred in the 1980s.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no changes to the existing conditions or changes to habitat for grizzly bears.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on wildlife habitat.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The Proposed Action Alternative would have no effect on motorized access or the potential for increasing negative encounters. It may affect how grizzly bears use the analysis area by temporarily discouraging their use of a given portion, due to increased human presence and noise. Effects would be short in duration, low in intensity, and limited in extent.

Because no roads would be constructed in the proposed action, motorized access would not change within the analysis area. There would be no changes in road density, and the amount of secure habitat would not change.

The proposed action could increase the likelihood of negative human/grizzly encounters within the analysis area both in the short term and in the long term. In the short term, during implementation, personnel would be entering and leaving construction equipment throughout the day and congregating at rendezvous points, staging areas, and parking areas. Increased human presence would heighten the likelihood that substances attractive to grizzly bears would be introduced into the project area. This could result in elevating the number of interactions between humans and grizzly bears. To mitigate the potential for increased human/grizzly interactions, the Forest-wide Expanded Food Storage Order (#07-11-00-01) would be in effect and enforced throughout implementation of the proposed work.

In order to reduce the potential for conflict in the longer term, land disturbed during construction would be reclaimed with an approved Forest Service seed mix that would not use palatable species that could be an attractant to grizzly bears in areas of higher human use (e.g., trailheads, campgrounds, and residences).

The Proposed Action Alternative would result in increased human presence and noise associated with construction activities in the analysis area, both of which have the potential to disturb grizzly bears. Potential effects from noise and activities would be mitigated by corridoring the route within the disturbed ROW along Highway 191 and 64 and along a Forest Service access road. The amount of noise associated with construction would be similar to ambient noise within the analysis area, which includes noise from high traffic volumes along Highway 191 and Highway 64. Intensity of project activities would therefore be negligible, given that current activities already include high traffic volumes and high human presence associated with recreational activities, and project activities are consistent with current uses. Grizzly bears already avoid the analysis area as evidenced by current patterns of use. Project activities would be moving along the highway and changing location throughout the duration of the project, which would minimize

the duration of activities in any one location. The extent of activities would be limited to a small portion of the project area at any given time. Due to the limited intensity, duration, and extent of project activities, the Proposed Action Alternative may result in minor, temporary alterations in grizzly bear travel routes through the analysis area.

Cumulative Effects

When added to the reasonably foreseeable future actions listed earlier in this document, the Proposed Action Alternative would result in a net increase in the suite of potential disturbance factors that would likely inhibit use of the analysis area by grizzly bears. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations would all increase human presence and noise that would discourage use of the analysis area by grizzly bears. The effect of Proposed Action Alternative would incrementally add to these activities and further discourage grizzly bears from utilizing the analysis area.

For these reasons, it was determined that the Proposed Action Alternative ***may affect, but is not likely to adversely affect, the grizzly bear***.

Canada lynx

Indicators for this analysis incorporate the relevant guidance from the Northern Rockies Lynx Management Direction (NRLMD) Forest Plan Amendment. The following indicators were developed to address the standards and objectives from the NRLMD relevant to this project:

- Effects on habitat connectivity as measured qualitatively by considering locations of the proposed actions (addresses ALL O1, ALL S1)
- Effects on undeveloped areas as measured qualitatively by considering actions associated the proposed alternative (addresses HU O3)
- Effects of human activities and placement of the utility transmission corridor on lynx and lynx habitat as measured qualitatively by considering location, duration, and nature of activities in relation to current conditions and alterations of lynx habitat (addresses HU O5)

Spatial and Temporal Context for Effects Analysis

Spatial Context: According to the Northern Rockies Lynx Management Direction (NRLMD) ROD (USFWS 2007, Attachment 1, pg. 12), the LAU is the spatial unit for which the effects of a project should be analyzed. The project intersects the West Gallatin and North Madison LAUs, and the spatial extent of the lynx analysis therefore consists of these two LAUs.

Temporal Context: Effects from the proposed action have the potential to affect lynx during implementation and during the time it takes for vegetation to re-establish. The timeframe for this analysis includes the period during which implementation would occur, plus two years, which would be the amount of time required for vegetation to recover along the disturbance corridor.

Affected Environment

The main prey source of the lynx is the snowshoe hare. In years of high density, snowshoe hare may comprise upwards of 97 percent of lynx diets (Koehler and Aubry 1994). As such, the primary foraging habitat of the lynx consists of areas supporting substantial populations of snowshoe hare. This includes dense boreal forests of conifers and shrub understories that provide forage and escape cover for hares and protection during extreme weather (Wolfe et al. 1982). In a

study focusing on Yellowstone National Park, Murphy et al. (2006) documented occurrences in mature lodgepole pine or Engelmann spruce forests with an understory dominated by saplings. This study considered prime lynx habitat to be conifer and deciduous forests with closed canopies, typically 40 to 300 years of age, that were dominated by lodgepole pine, Engelmann spruce, subalpine fir, or quaking aspen. While the lynx typically inhabits dense forests, it hunts along edges within these habitats to increase the ease of locating and capturing prey (Mowat et al. 2000).

Canada lynx are secretive creatures whose occurrence is often difficult to detect. The Montana Natural Heritage Program (MNHP) Tracker Database (MNHP 2012a) has records of 17 lynx occurrences within Gallatin County, all of which occurred between 1963 and 2006. Lynx have not been observed within the project area, and the closest observation of a lynx was five miles to the southeast of the southernmost portion of the project area. On the Forest, lynx habitat is generally defined by Engelmann spruce, subalpine fir, or moist Douglas fir habitat types between 6,000 and 8,000 feet that produce boreal forest conditions and persistent deep fluffy snow in winter. According to this definition, GIS modeling indicates that abundant lynx habitat is present in the North Madison and West Gallatin LAUs. Within the North Madison LAU, 102,275 acres of 173,111 acres have been mapped as lynx habitat. Within the West Gallatin LAU, 79,380 acres of 131,362 acres have been mapped as lynx habitat. The Millie Fire of 2012 burned approximately 8,081 acres within the West Gallatin LAU. Given the limited recent history of human activity and lack of any other large fires in these LAUs, the lynx habitat outside of the Millie Fire perimeter is largely in a condition that is currently suitable for snowshoe hare and Canada lynx.

Results of studies on the effects of roads and highways on lynx travel and dispersal are mixed. Apps (2000) observed two dispersing juvenile lynx traveling parallel to the Trans-Canada Highway. However, these individuals never crossed the highway, suggesting it limited lynx dispersal. A number of studies cited in Aubry et al. (2000) observed lynx crossing two or four lane highways or major rivers. Mowat et al. (2000) stated that lynx readily crossed highways, were regularly sighted along roadsides, and established home ranges adjacent to roads in the Northwest Territories of Canada. Squires and Laurion (2000) observed one male cross a two lane highway and the Blackfoot River in Montana. McKelvey et al. (2000) found that road densities in the analysis area did not have a significant effect on habitat selection, and lynx crossed roads at frequencies that did not differ from random expectation; however, roads in this analysis area were primarily narrow unpaved Forest Service roads. The Recovery Outline for Canada lynx published by the USFWS (2000) states that lynx movements may be negatively influenced by high traffic volume on roads which bisect suitable habitat. Koehler and Brittell (1990) found that lynx readily travelled along roads with less than a 50-foot ROW where cover is present on both sides. Highway 191 and 64 and the associated ROWs are much wider than 50 feet. Given the high traffic volume along Highway 64 and 191, there is likely some impediment to lynx movement and dispersal across the highways.

The project area lies along the western margin of designated Canada lynx Critical Habitat (USFWS 2009), overlapping it for 11.6 miles. Using a corridor width of 15 feet for the entire length of the project, the project area overlaps approximately 21 acres of Critical Habitat on NFS land. Primary constituent elements (PCEs) are those physical and biological features that are essential to the conservation of the species, and that may require special management considerations or protections. PCEs for lynx identified in the Final Rule for Critical Habitat designation include boreal forest landscapes supporting a mosaic of differing successional stages and containing snowshoe hares and their preferred habitat conditions to provide foraging opportunities for lynx, winter snow conditions that are generally deep and fluffy for extended

periods of time, sites for denning that contain abundant coarse woody debris such as downed trees and root wads, and matrix habitat types that do not support snowshoe hares, but occur between patches of boreal forest such that lynx are likely to travel through such habitat to access patches of boreal forest within a home range.

The project area does not contain preferred habitat conditions for lynx nor does it contain PCEs identified in the Critical Habitat designation. The project area is located entirely within the already disturbed ROW of Highway 191 and 64 or, for a 1,000 foot stretch, borders a Forest Service access road that lies within 200 feet of U.S. Highway 191. The length of the project area lies within a heavily impacted travel and recreation corridor that lacks contiguous forest and occurs in the open valley floor of the Gallatin River corridor. The project area does not contain any boreal forest types that provide lynx foraging habitat. Lynx also avoid large openings when foraging, preferring to use contiguous forested areas on higher terrain such as saddles and ridgetops ((Koehler 1990, Staples 1995) as cited in USFWS (2007)), and the project area consists entirely of open areas, with the exception of the 1,000 foot stretch that deviates from Highway 191 and travels through more closed-canopy conditions. Deep suspended deadfall and upturned stumps with overhead cover are not present, and the project area therefore does not contain any suitable denning habitat. Some potential denning habitat may exist within the surrounding analysis area, but existing disturbance factors are likely to discourage use of these proximate areas by lynx for denning (Koehler and Brittell 1990). The project would occur at elevations less than 6,000 feet, which is below the range characterizing lynx habitat on the Forest. It is also likely that Highway 191 and 64 present an impediment to movement and dispersal. Finally, because the project area is in a highly impacted travel and recreation corridor that contains numerous recreation sites, trailheads, campgrounds, and the Gallatin River, it is not characterized by deep, fluffy, persistent snow conditions that are preferred by lynx.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist within both LAUs would be unaltered as a result of selecting this alternative. Habitat connectivity would be unaffected. No new development would occur, and there would be no change in the amount, nature, or intensity of human activities in the analysis area. There would be no effect on lynx critical habitat from placement of the fiber optic corridor, as the utility would not be installed. The No Action Alternative would have no direct or indirect effects on Canada lynx or their critical habitat.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on Canada lynx or its designated Critical Habitat.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The Proposed Action Alternative would maintain habitat connectivity between LAUs by confining all activities to the already disturbed highway ROWs. Location of project activities within existing road corridors would ensure that no additional fragmentation of lynx habitat would occur. Existing travel corridors that may be used by lynx and existing habitat connectivity between and within LAUs would therefore be preserved.

The proposed location would ensure that all activities would take place within permanently developed areas, outside of habitats preferred by lynx within the LAUs. No activities are proposed within undeveloped areas.

Additional snow compaction would not be an issue, because activities would not occur during the winter months. Because the project area does not provide conditions preferred by lynx or their primary prey and because it is located entirely within permanently developed areas, project activities would result in no alteration and have no effect on habitat that is currently suitable for supporting lynx.

If lynx were present in the vicinity of the project area during implementation, they could be disturbed by noise associated with construction equipment. Human activities and placement of the utility transmission corridor would occur along the highway corridor where disturbance in the LAUs is already concentrated. Activities would be moving along the proposed project route throughout the life of the project, at an average travel rate of approximately 1,500 feet per day. This constant movement would ensure that project activities would not be concentrated in one location at any particular time, thus minimizing the extent and duration of potential effects at any location throughout implementation. Lynx could return to normal activities immediately after construction in any given area is completed. Project activities would be consistent with activities already occurring along the highly impacted travel corridor, thus limiting their intensity in relation to current conditions. Construction would coincide with the busiest time of the year for the Gallatin River Canyon, when the area experiences its highest traffic volumes, highest occupancy of campgrounds and private residences, and highest level recreational activities along the river. Noise and disturbance from construction are not expected to produce notable effects to lynx beyond existing conditions.

A maximum of 21 acres of critical habitat would be temporarily disturbed during implementation. This area would be expected to return to its vegetated condition within two years. The project area does not provide any of the PCEs described for lynx critical habitat, and it occurs within permanently developed areas. For these reasons, although 21 acres of critical habitat would be impacted by the proposed action, the action would not result in any loss of function for Canada lynx.

Cumulative Effects

Because the Proposed Action Alternative would have no effects on habitat connectivity, undeveloped areas, or on preferred lynx habitat, it would have no cumulative effect on these indicators.

The existing conditions described above reflect the net effects of past and present actions in the analysis area. When added to the reasonably foreseeable future actions listed earlier in this document, the proposed action would result in a net increase in the suite of potential disturbance factors that would likely inhibit use of the project area by Canada lynx. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations would all increase human presence and noise that would discourage use of the analysis area by Canada lynx. The effects of the proposed action would incrementally add to these activities and further discourage lynx from utilizing the analysis area.

For these reasons, it was determined that the project ***may affect, but is not likely to adversely affect,*** the Canada lynx or its designated Critical Habitat.

North American wolverine

Potential effects on wolverines as a result of the proposed action would consist of disruption in travel behavior or increased collision risk. Indicators selected to measure effects of the alternatives therefore included the following:

- Effects on travel behavior as measured by considering the intensity, duration, and extent of proposed project activities.
- Effects on collision risk as measured by the pace of proposed activities.

Spatial and Temporal Context for Effects Analysis

Spatial Context: The project area does not contain high quality for wolverines, and wolverine presence is therefore restricted to transitory movements across the project area. The area within 2 miles of the analysis area was selected to capture potential effects of noise on wolverines moving in the vicinity of the project area.

Temporal Context: Effects on wolverines from this project could result from disturbance or increased collision risk. The timeframe for this analysis therefore includes the period during which implementation would occur plus two years, which is the time it would take for vegetation to re-establish back into disturbed areas.

Affected Environment

The wolverine inhabits vast areas of undisturbed, remote, high-elevation areas consisting of mature forest and associated open, rocky, and alpine habitats (Hornocker and Hash 1981; Rowland et al. 2003; Banci 1994; Carroll, Noss and Paquet 2001). Wolverines have been reported to cross through human developments and high human use areas during long-range movements, and, therefore, may use the project area on an infrequent basis. Wolverines range widely and occurrences have been reported in the higher elevations on both sides of the project area (MNHP Tracker Database [MNHP 2012a], retrieved August, 2012). The analysis area lacks the deep persistent snow conditions typically preferred by wolverines. Wolverines have been shown to avoid areas of human activity (Austin 1998), and occurrence within the analysis area, which is within 2 miles of two highly impacted highways, is therefore likely to be very limited. At most, transient wolverines may cross the analysis are to move between more suitable habitats at higher elevations in the Gallatin and Madison Ranges.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. There would be no effects on travel behavior or change in collision risk.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on wolverines.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Project activities are consistent with ongoing use of the analysis area, and wolverines attempting to cross through the analysis area are unlikely to perceive project activities differently than those associated with high traffic volumes, recreation use, and private residences. Project activities would be in constant motion along the proposed project route, and the duration of effects in any given location would therefore be limited. Wolverines may temporarily avoid traveling through a particular area in order to avoid project activities. Alternate travel routes are abundant, and wolverines would easily be able to select a more preferable route to move across the highway. Effects would be temporary and limited to a small extent at any given time.

The slow pace at which activities would occur would ensure that implementation of the project would not pose any increased risk of collisions between construction equipment and wolverines.

Cumulative Effects

Because the project would have no direct or indirect effect on collision risk, there would be no cumulative effects on this indicator.

When added to the reasonably foreseeable future actions listed earlier in this document, the proposed action would result in a net increase in the suite of disturbance factors that have the potential to alter travel behavior of wolverines across the Gallatin River Canyon. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations would all increase human presence and noise that would continue to affect how wolverines choose to travel through the analysis area. Effects of the proposed action would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

For these reasons, it was determined that the project ***may affect, but is not likely to jeopardize the continued existence*** of the wolverine.

FOREST SERVICE SENSITIVE SPECIES

American Peregrine Falcon

Effects to peregrine falcon were evaluated by considering proximity and relative elevation of known eyries to project activities, occupancy and reproductive history of known eyries given their current environmental context, and potential effects of activities based on best available science. Based on this review, it was determined that noise and activities associated with the proposed action have the potential to affect breeding and/or foraging behavior of peregrine falcons. Indicators selected to measure effects of the alternative therefore included the following:

- Effects on breeding behavior as measured qualitatively by considering the location, relative intensity, extent, and duration of proposed activities.
- Effects on foraging behavior as measured qualitatively by considering the nature of the proposed activities.

Spatial and Temporal Context for Effects Analysis

Spatial Context: The spatial boundary used for the analysis of effects to American peregrine falcons (hereinafter referred to as peregrine falcons) is the area within 800 meters of the proposed project route. This is based on a recommendation from the Montana Chapter of the Wildlife Society (Hamann et al. 1999) to maintain an 800 meter spatial buffer around peregrine falcon eyries. Because the Gallatin River Canyon contains suitable habitat for eyries and the entire canyon has not been surveyed, it is possible that unidentified eyries may exist along the project route. Effects on any potential eyries are therefore considered by analyzing the area within 800 meters of the entire project route.

Temporal Context: The timeframe for this analysis includes the period during which implementation would occur, because the potential source of effects on peregrine falcons is limited to disturbance associated with construction.

Affected Environment

Two peregrine falcon breeding sites, each with two known cliffside eyries, are located along the portion of the Gallatin River Canyon corridor that would be affected by the project. The Gallatin River Canyon corridor also contains an abundance of suitable cliffside eyrie habitat, and it is possible that additional unknown breeding sites are located along the project corridor.

Peregrine falcons vary in their response to human disturbance. They tend to be more sensitive to disturbances occurring above cliffside eyries, than to disturbances occurring below (Herbert & Herbert 1969, Ellis 1982, and Hustler 1983 as cited in Ruddock and Whitfield (2007)). In their review of the scientific literature regarding the response of peregrines to human disturbance, Ruddock and Whitfield (2007) conclude that peregrines can tolerate some human disturbance, as evidenced by their occupation of disturbed nest sites such as working quarries and urban centers, but the level of tolerance likely depends on the regularity and form of disturbance which occurs as compared to what they refer to as ‘background’.

The two known breeding sites located within the Gallatin River Canyon where the project area is located are surveyed annually, and both have been consistently occupied and have successfully fledged young for the last several years. Regular occupancy and reproductive success at these breeding sites suggest that these peregrine falcon pairs are tolerant of current levels of disturbance within the vicinity of their breeding sites. Human activities occurring in close proximity of the known breeding sites include recreation (fisherman, hikers, and rafters), residents of homes that are in sight of the eyries, and an adventure camp located just below one of the known breeding sites that offers zip-lines, rope climbing, and other similar activities.

Peregrine falcons forage by perching in a location with a high vantage point and preying on smaller birds which are taken on the wing. The project area contains limited opportunities for foraging, given the high traffic volumes directly adjacent which would prevent use of the area by prey species and high collision risk for peregrines.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. Peregrine falcons would continue to breed at the known eyries. There would be no effects on foraging behavior.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on American peregrine falcons

Alternative 2- Proposed Action

Direct and Indirect Effects

The proposed activities that would take place within view of the breeding sites would occur below the eyries, which is less threatening than to disturbances that take place above (Herbert & Herbert 1969, Ellis 1982, Hustler 1983 as cited in Ruddock and Whitfield (2007)). Project activities would generally be consistent with current ongoing activities, in that the equipment that would be used (tracked Caterpillar®-type vehicle and backhoe) resembles vehicles that currently travel along Highway 191. Human activities associated with the proposed action are similar to those that already occur along the Gallatin River corridor. Resident peregrines already exhibit tolerance for current activities, and, given their consistency, those associated with the proposed action would not be expected to be notable. Proposed activities would be in constant motion along the length of the project area, therefore limiting the extent and duration of noise and disturbance effects at any one location at any given time. Because proposed activities are located below known eyries, are consistent with current ongoing activities, and would be limited in extent and duration at any given time, effects on breeding behavior are expected to be immeasurable. Project activities would further limit the quality of the project area for foraging. Prey species may avoid use of the area during construction, which would further limit hunting opportunities for peregrines.

Cumulative Effects

The existing conditions described above reflect the net effects of past and present actions in the analysis area. When added to the reasonably foreseeable future actions listed earlier in this document, the proposed action would result in a net increase in the suite of disturbance factors that have the potential to alter breeding or foraging behavior of peregrine falcons in the Gallatin River Canyon. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations would all increase human presence and noise that, at some point, may exceed an unknown disturbance threshold that could cause resident peregrine falcons to abandon the area. Effects of the proposed action would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

Based on this analysis, it has been determined that effects of proposed action on breeding and foraging behavior of peregrine falcons would be minimal. Proposed activities may impact individuals or habitat, but would not lead to a trend toward federal listing.

Bald Eagle

Effects to bald eagles were evaluated by considering proximity of the known nest location to project activities, occupancy and reproductive history of the known nest given its current environmental context, and potential effects of activities based on the best available science. Based on this review, it was determined that noise and activities associated with proposed action may affect breeding behavior and may result in loss of foraging habitat. Indicators selected to measure effects of the alternatives therefore included the following:

- Effects on breeding or foraging behavior as measured qualitatively by considering the location, relative intensity, extent, and duration of proposed activities.
- Effects on foraging habitat as measured qualitatively by considering the nature of the proposed activities.

Spatial and Temporal Context for Effects Analysis

Spatial Context: The spatial boundary used for the analysis of effects to bald eagles is the area within one-half mile of the proposed project route. This is the avoidance buffer in the primary use area surrounding an active bald eagle nest described in the Greater Yellowstone Bald Eagle Management Plan (Greater Yellowstone Bald Eagle Working Group 1996).

Temporal Context: The timeframe for this analysis includes the period during which implementation would occur, because the potential source of effects on bald eagles is limited to disturbance associated with construction.

Affected Environment

Bald eagles have been observed along the Gallatin River Canyon in proximity of the project area (MNHP Tracker Database [MNHP 2012a], retrieved August 20, 2012), and a nest is located approximately 1,500 feet from the southern portion of the project area. The nest was last reported to be occupied in 2010. The frequency with which the nest is checked for occupancy is unknown, and it therefore not known if the nest was unoccupied in 2012 or if it was just not surveyed. In order to protect breeding bald eagles, the exact location of the nest is not reported in this document. Two observations of non-breeding bald eagles in the Gallatin River Canyon are also documented in the MNHP Tracker Database.

Although bald eagles are often sensitive to human disturbance, individual pairs vary in their tolerance, and some pairs nest successfully in proximity to human activity (USFWS 2012). This range in tolerance results from a variety of factors, which may include visibility of the activities from the nest and the eagle pair’s prior experiences with humans.

Bald eagles forage opportunistically, with fish comprising a majority of their diet. Bald eagles that occur within the vicinity of the project area likely rely on the Gallatin River for a majority of their foraging opportunities.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. Bald eagles would continue to reproduce at the known nest location and use the Gallatin River Canyon for roosting and foraging.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on bald eagles.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Because the bald eagle pair in this case selected a nest location in proximity of Highway 191 and the associated traffic, noise, and activities currently occurring in the area, it is assumed that this pair tolerates the current level of disturbance in the vicinity of the nest. Using this same rationale, bald eagles that choose to roost or forage in the Gallatin Canyon are also assumed to tolerate the activities occurring there. The proposed activities associated with this project are consistent with activities already occurring in the project area and its vicinity in reference to level of noise, location of vehicles/equipment, and amount of human activity. Construction equipment that would be used to implement the project within line-of-sight of the nest resembles vehicles that already travel along Highway 191, which range in size from passenger cars to semi-trucks hauling heavy equipment. Several residences are in line-of-sight of the nest and closer to the nest than proposed activities, and the eagles are therefore already accustomed to human activities occurring within proximity of their nest. Because proposed activities are consistent with ongoing activities, this project is not expected to elevate noise or disturbance levels above a threshold that would cause bald eagles to change their behavior. This rationale is consistent with the National Bald Eagle Management Guidelines (USFWS 2007a), which state that “Eagles are unlikely to be disturbed by routine use of roads, homes, and other facilities where such use pre-dates the eagles’ successful nesting activity in a given area. Therefore, in most cases, *ongoing*, existing uses may proceed with the same intensity with little risk of disturbing bald eagles”.

The National Bald Eagle Management Guidelines (USFWS 2007a) recommend implementation of a 660 foot buffer around the nest for construction of linear utilities that would be visible from the nest and where similar activity is occurring closer than 1 mile from the nest. All project activities would take place approximately 1,500 feet from the nest, which is well outside the recommended disturbance buffer of 660 feet. This buffer would minimize visual and auditory impacts associated with the project and is large enough to protect the existing and potential alternate nest trees. The project area is shielded from the nest by forested vegetation along the highway and, as a result, is visible from the nest for less than 0.2 miles.

The Greater Yellowstone Bald Eagle Management Plan (GYBEMP) (1996) recommends mitigation measures for three Zones around a nest site, which are defined by increasing distances from the nest. Zone I is defined as the area within 400 m (1,312 feet) of a nest - the distance at which the presence of humans first causes significant stress or behavior in eagles that could result in inattentiveness to young or eggs. All project activities would take place beyond the recommended 400 m distance from the nest. Zone II includes the area within 800 m (2,625 feet) from the nest – the distance at which eagles exhibit territorial behavior, and in which over 75% of the adults’ foraging and loafing activity occurs during the nesting season. Zone III includes the area within 4 km (2.5 miles) of the nest and is the area that typically accounts for all foraging habitat and associated eagle movements during the nesting and brood rearing season. Project activities would occur within Zones II and III. The bald eagles that occupy this already exhibit tolerance to the high traffic volumes, recreationists, and private landowner activities that currently occur within Zones II and III. Project activities are consistent with these ongoing activities and are unlikely to affect the nesting eagles. Surface disturbance within Zones II and III would occur

only within the already disturbed ROW along Highway 191, and would not alter preferred nesting or foraging habitat.

The proposed project would have no impact on bald eagle foraging habitat, as all of the activity would take place within the disturbed ROW along Highway 191 and 64, along an existing Forest Service road, and on the opposite side of the highway as the Gallatin River. Potential impacts on fish from sedimentation would be addressed by locating all activities on the opposite side of the road as the Gallatin River, (with one exception for a distance of 180 feet), avoiding removal of riparian vegetation; and complying with the State of Montana Best Management Practices for Forestry, Forest Service Soil and Water Conservation Practices, and State of Montana Streamside Management Zone Requirements. Additionally, all disturbed areas would be rehabilitated with a seed mix to prevent erosion (see Invasive Weed Mitigation Measures).

Cumulative Effects

The existing conditions described above reflect the net effects of past and present actions in the analysis area. When added to the reasonably foreseeable future actions listed earlier in this document, the proposed action would result in a net increase in the suite of disturbance factors that have the potential to alter breeding or foraging behavior of bald eagles in the Gallatin River Canyon. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations will all increase human presence and noise that, at some point, may exceed an unknown disturbance threshold that could cause resident bald eagles to abandon the area. Effects of the proposed action would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

Based on this analysis, it has been determined that effects of the proposed action on breeding and foraging behavior of bald eagles would be minimal, and there would be no effect on foraging habitat. Proposed activities may impact individuals or habitat, but would not lead to a trend toward federal listing.

Bighorn Sheep

Potential effects on bighorn sheep as a result of the proposed action would consist of potential disturbances to foraging behavior, effects on foraging opportunities, effects on lambing habitat or winter range, seasonal movements, or increased collision risk. Indicators selected to measure effects of the alternatives therefore included the following:

- Effects on foraging behavior as measured by considering the timing of proposed project activities.
- Effects on forage availability as measured by the extent and timing of proposed project activities.
- Effects on lambing habitat or winter range by considering the location of proposed project activities.
- Effects on seasonal movements or lambing activities by considering the intensity, duration, and extent of proposed project activities.
- Effects on collision risk as measured by the pace of proposed activities.

A Spatial and Temporal Context for Effects Analysis

Spatial Context: The analysis area consists of the project area and the lambing areas located on the western slope above the Gallatin River between Moose Creek and the town of Big Sky.

Temporal Context: The timeframe for this analysis includes the period during which implementation would occur plus two years, which is the time it would take for vegetation to re-establish back into disturbed areas.

Affected Environment

Bighorn sheep may be found foraging within the project area during the winter months north of the intersection between Highway 191 and 64. While the project area is not located in any identified bighorn sheep seasonal ranges, it does provide foraging opportunities to individuals during the winter; although, due to its proximity to well-traveled highways, the project area is not an area that is managed to benefit bighorn sheep, as is it desirable to attract bighorn sheep to a major highway due to collision risk. Montana Department of Fish Wildlife and Parks (MFWP) personnel have identified winter and spring bighorn sheep range on the south-facing slopes that occur between the Moose Creek drainage to Highway 64, and bighorn sheep may travel through the project area to move between these seasonal habitats. The highways that are located adjacent to the project area present a collision risk to bighorn sheep, and motor vehicle accidents that result in the death of bighorn sheep are common.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. There would be no effects on foraging behavior, forage availability, lambing habitat, winter range, seasonal movements, lambing activities, or collision risk.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on bighorn sheep.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The Proposed Action Alternative would have no impact on bighorn sheep foraging behavior in the project area, because bighorn sheep forage there in the winter months, and all project activities would occur in the non-winter months.

The project could result in a temporary and slight reduction in forage availability during the time it would take vegetation to re-establish back into those areas where it was removed. The project area makes up a very small portion of available winter forage for bighorn sheep, and winter forage is available immediately adjacent to the proposed disturbance corridor. This very small reduction in forage and immediate availability of alternate forage would have negligible effects on forage availability. By reducing the amount of forage along the highway, bighorn sheep could benefit by seeking winter range opportunities in more preferred locations away from the highway corridor where collisions with motor vehicles result in losses of individuals every year.

No alteration of identified bighorn sheep winter range or lambing habitat would occur as a result of the proposed activities, because these areas do not overlap the project area.

Activities have the potential to affect bighorn sheep movements between seasonal habitats and disturbance to lambing activities that are in the vicinity of the project area. Because proposed activities are consistent with current activities already taking place along Highway 191 and 64, it is likely that bighorn sheep would perceive proposed activities as similar to the high traffic volumes, recreational activities, and private landowner activities that already characterize the project area. Project activities would be in constant motion along the proposed route thus limiting the amount of time that they would occur within any given location. Due to the limited intensity, duration, and extent of project activities, it is expected that their effect on seasonal movements and lambing activities would be negligible.

The slow pace at which activities would occur would ensure that implementation of the project would not pose any increased risk of collisions between construction equipment and bighorn sheep.

Cumulative Effects

The existing conditions described above reflect the net effects of past and present actions in the analysis area. Because the project would have no effects on foraging behavior, winter range, or lambing habitat, there would be no cumulative effects on those indicators.

When added to the reasonably foreseeable future actions listed earlier in this document, the proposed action would result in a net decrease in forage availability within the project area. MDT activities and future utility installations would result in removal of vegetation along the highway corridors, and this project could incrementally add to that loss of forage availability. This loss has the potential to benefit bighorn sheep, as the highway corridor is not a desirable location for bighorn sheep to congregate due to high collision risk, and by decreasing foraging opportunities within the highway ROW, bighorn sheep may seek forage in locations that provide high quality winter forage away from the highway.

The proposed action would result in an increase in the suite of disturbance factors that have the potential to alter seasonal movements and lambing activities in the Gallatin River Canyon. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations will all increase human presence and noise that may disrupt travel patterns or lambing activities. Effects of Alternative 2 would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

Based on this analysis, it has been determined that the proposed action may have minor disturbance effects on bighorn sheep and may reduce forage availability to a very limited extent. For these reasons, it was determined that proposed activities may impact individuals or habitat, but would not lead to a trend toward federal listing.

Black-backed Woodpecker

Black-backed woodpeckers occur in early successional burned conifer forests for approximately three to five years post-fire (MNHP 2012 b). This habitat type does not exist within the project area. The closest early successional burned conifer forest that burned within the last five years is the Millie Fire, which burned in 2012 and is located six miles east of Highway 191 near Storm

Castle Creek. Black-backed woodpeckers are vulnerable to extinction due to reductions in habitat from fire suppression and intensive post-fire salvage logging (Corace, Lapinski and Sjogren 2001) rather than from disturbance factors associated with human activities. In fact, black-backed woodpeckers are generally tolerant of humans (Dixon and Saab 2000). This project would not affect black-backed woodpecker habitat, and it would occur six miles from the closest suitable habitat for this species, which is enough distance to attenuate potential impacts of noise and activities associated with the project. The project would therefore have no impact on black-backed woodpeckers.

Flammulated Owl

Flammulated owls inhabit dry, open forest types, showing a strong preference for yellow pines, relying mostly on Ponderosa pine for nesting habitat, although, Douglas fir and aspen may be used as well (McCallum 1994). Yellow pines do not occur within the project area. Douglas-fir is present within the vicinity of the project area, but the mature, open structure preferred by flammulated owls is not characteristic of the forested areas along the Gallatin River Canyon corridor. Nesting flammulated owls have not been documented anywhere on the Gallatin National Forest, and habitat conditions are marginal. The species is not suspected to occur in the project area. The project would therefore have no impact on flammulated owls.

Gray Wolf

Potential effects on wolves as a result of the proposed action would consist of disruption in travel behavior or increased collision risk. Indicators selected to measure effects of the alternatives therefore included the following:

- Effects on travel behavior as measured by considering the intensity, duration, and extent of proposed project activities.
- Effects on collision risk as measured by the pace of proposed activities.

A Spatial and Temporal Context for Effects Analysis

Spatial Context: The project area does not contain high quality habitat for gray wolf, and wolf presence is therefore restricted to transitory movements across the project area. The area within 2 miles of the project area was selected to capture potential effects of noise on wolves moving in the vicinity of the project area.

Temporal Context: Effects on wolves from this project could result from disturbance or increased collision risk. The timeframe for this analysis therefore includes the period during which implementation would occur plus two years, which is the time it would take for vegetation to re-establish back into disturbed areas.

Affected Environment

Gray wolves are habitat generalists and make use of a wide variety of habitat types. Whittington et al. (2005) found that wolves typically avoid areas of high human use, such as busy road corridors, yet gray wolves occupy the vicinity of the project area (M Ross, personal communication, September 17, 2012). The Wilson Creek wolf pack, which consists of 6 individuals, inhabits an area within a few miles northeast of the project area. Wolves use the Gallatin River Canyon corridor and may cross through the project area on occasion. No packs reside directly within the project area, and the project area does not contain any known rendezvous sites or denning locations. The primary prey species for gray wolves is elk, and the

project area does not provide important habitat for this species. Elk may use the project area during winter months; however, during the timeframe when project activities are proposed to take place (non-winter months) elk are likely to have moved to higher elevations and would not be residing or making use of the project area.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. There would be no effects on travel behavior or change in collision risk.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on gray wolves.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Project activities are consistent with ongoing use of the project area, and wolves that use the canyon are already accustomed to traffic and human use. Project activities would be in constant motion along the proposed project route, and the duration of effects in any given location for any given amount of time would therefore be limited. Because use of the project area by wolves is limited to travel between more desirable habitats on each side of the Gallatin River, they may temporarily avoid traveling through a particular location in order to avoid project activities. Alternate travel routes are abundant, and wolves would easily be able to select a more preferable route to move across the highway. Effects would be temporary and limited to a small area at any given time.

The slow pace at which activities would occur would ensure that implementation of the project would not pose any increased risk of collisions between construction equipment and wolves.

Cumulative Effects

The existing conditions described above reflect the net effects of past and present actions in the analysis area. Because the project would have no effect on collision risk, there would be no cumulative effects on this indicator.

When added to the reasonably foreseeable future actions listed earlier in this document, the Proposed Action Alternative would result in a net increase in the suite of disturbance factors that have the potential to alter travel behavior of wolves across the Gallatin River Canyon. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations will all increase human presence and noise that will continue to affect how gray wolves choose to use the analysis area. Effects of the Proposed Action Alternative would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

Based on this analysis, it has been determined that effects of Alternative 2 on travel behavior of gray wolves would be minimal. Proposed activities may impact individuals or habitat, but would not lead to a trend toward federal listing.

Harlequin Duck

Effects to harlequin ducks were evaluated by considering habitat quality and historic use of the analysis area. Based on a review of the best available science, it was determined that the proposed action could potentially affect harlequin ducks through alterations in water quality and disturbance. Indicators selected to measure effects of the alternatives therefore included the following:

- Effects on water quality as measured qualitatively by considering the nature and location of proposed activities.
- Effects on harlequin duck habitat as measured by the location of proposed activities.
- Effects on breeding and foraging behavior as measured qualitatively by considering the location, duration, and intensity of proposed activities.

Spatial and Temporal Context for Effects Analysis

Spatial Context: Harlequin ducks are strongly tied to waterways, and the spatial boundary used for this analysis therefore includes the waterways and areas immediately adjacent to the Gallatin River and tributaries within the project area.

Temporal Context: The timeframe for this analysis includes the period during which implementation would occur, because the potential source of effects on harlequin ducks is limited to disturbance associated with construction.

Affected Environment

Harlequin ducks have been observed along the Gallatin River Canyon in proximity of the project area (MNHP 2012c], retrieved August 20, 2012). The most recent sighting was in 1996. None of the observations showed evidence of breeding activity. Harlequin ducks typically nest along remote, swift-moving, clear mountain streams with dense shrub habitat along the stream banks. Breeding habitat is typically located away from concentrated human use areas (Clark et al. 2011). The proximity of Highway 191 and high levels of recreational activities along the Gallatin River reduce its quality as breeding habitat by harlequin ducks.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, conditions as they currently exist would be unaltered. There would be no changes in water quality, and breeding and foraging habitat would be unaffected.

Cumulative Effects

Because there would be no direct and indirect effects with the No Action Alternative, there would be no cumulative effects on harlequin ducks.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Impacts to water quality could affect foraging habitat quality for harlequin ducks. Potential water quality impacts would be minimized by locating all activities on the opposite side of the road as the Gallatin River (with one exception for a distance of 180 feet), avoiding removal of riparian vegetation; and complying with the Soil BMPs (see Appendix A). Additionally, all disturbed areas would be rehabilitated with a native seed mix to prevent erosion. Therefore, no measureable impacts to water quality and associated forage productivity are expected.

Neither streamside vegetation nor stream form or function would be affected by the proposed action, and harlequin duck habitat would therefore not be affected.

The proposed activities are generally consistent with current, ongoing activities, and is not expected that project activities would be perceived any differently by harlequin ducks than those that already occurring. Because activities would occur on the side of the road opposite as the Gallatin River, they would be visually obstructed from any individual ducks that may be using the river for breeding or foraging. Given their similarity to current activities, proposed activities would be relatively low in intensity. Construction would be constantly moving along the project route, thus limiting their extent and duration at any given time at any given location. Due to the low intensity and limited duration and extent of proposed activities, it is expected that they would have minimal effects on harlequin ducks.

Cumulative Effects

The existing conditions described above reflect the net effects of past and present actions in the analysis area. Because the project would have no effects on water quality or harlequin duck habitat, there would be no cumulative effects on those indicators.

When added to the reasonably foreseeable future actions listed earlier in this document, Alternative 2 would result in a net increase in the suite of disturbance factors that have the potential to alter breeding or foraging behavior of harlequin ducks in the Gallatin River Canyon. Current activities may have already reduced the quality of the Gallatin River to a level that harlequin ducks no longer use the area for breeding or foraging. Increased access to NFS land, weed spraying, private land development, insecticide treatment of gypsy moths, future MDT activities, and future utility installations will all increase human presence and noise that only continue to make the area less desirable for this species that is sensitive to human disturbance. Effects of the proposed action would incrementally add to these activities, but, given the nature of current and future activities along the heavily impacted Gallatin River Canyon corridor, the additional effects of the proposed action would be negligible.

Based on this analysis, it has been determined that the Proposed Action Alternative may temporarily disturb harlequin ducks, but these effects would be minimal. Proposed activities may impact individuals or habitat, but would not lead to a trend toward federal listing.

Townsend’s Big-eared Bat

Townsend’s big-eared bats occur in a variety of habitats; although their distribution is strongly correlated with the availability of suitable caves or cave-like roosting habitat, which may include substantial surface exposures of cavity forming rock (Pierson et al. 1999). The Gallatin River Canyon contains large areas of exposed rock formations which may provide roosting habitat for

Townsend's big-eared bats. There are no known roosts in the canyon, and no sightings have been reported in MNHP's Tracker Database (MNHP 2012, retrieved 9/21/2012). Townsend's big-eared bats may forage along the Gallatin River corridor and use the airspace above the project area for traveling and/or foraging. Threats to the species include habitat loss/alteration and disturbance of individuals in roosting locations (Pierson et al. 1999). Project activities would not result in habitat loss or alteration, nor would they cause disturbance to habitat that supports roosting bats. Activities would take place during the day when bats are roosting, while no activities would take place during the night, when bats are actively foraging. Because there would be no habitat alteration, disturbance to individuals in their roosts, or disruption in foraging behavior, the project would have no impact on Townsend's big-eared bats.

Trumpeter Swan

Trumpeter swans occupy marshes, shallow lake waters, beaver ponds, and, on occasion, oxbows or slow-moving river backwaters (Clark et al. 2011). The project area does not contain, nor is it adjacent to trumpeter swan habitat. According to the MNHP Tracker database, no trumpeter swans have been observed in the project area or along the Gallatin River. The project would therefore have no impact on trumpeter swans.

Management Indicator Species (MIS)

Elk

Elk is the GNF Forest Plan MIS for big game species. According to Julie Cunningham, MFWP Bozeman Area Wildlife Biologist, elk make some use of the Gallatin River Canyon (personal communication, email, September 25, 2012). Use has been observed to have increased during harsh winters. Most of the regular seasonal use occurs south of Deer Creek, which is three miles north of the southernmost portion of the project area. Construction would take place during the non-winter months, when elk are likely moving to or foraging at higher elevation sites. Elk generally avoid roaded areas, and use of the project corridor would be limited to occasional crossings when elk move from one side of the valley to the other. The slow pace at which project activities would occur would minimize the potential for collisions between elk and project equipment. Elk are not likely to alter movements through the area as a result of project activities, which are consistent with ongoing activities. The project area does not provide important forage for elk, nor does it contain winter range, security areas, or hiding and/or thermal cover. Because project activities would not alter important foraging areas and because they are consistent with ongoing activities already taking place in the highway corridor, this project would have no effect on the population trend of elk on the Forest.

Northern Goshawk

Northern goshawk is the Forest Plan MIS for old growth (dry Douglas fir) forest types. Although the Forest Plan references old growth (dry Douglas fir), northern goshawks are not dependent on large, unbroken tracts of old growth or mature forest (Brewer et al. 2009), and, on the Forest, northern goshawks breed and forage in forest types other than Douglas fir. Regardless of the type of forested habitat that they prefer, no northern goshawk habitat would be altered as a result of implementation of this project. The closest known nest is 2 miles from the highway corridor, which is well beyond the recommended 40-acre no-disturbance buffer around nests recommended in Brewer et al. (2009). If unknown northern goshawk nests do exist within 40 acres of the project area, these individual pairs already exhibit tolerance to the high traffic volumes, noise, and human

activities that occur within the project area, and the project activities, which are consistent with current activities, would have no impact on those individual pairs. Because habitat would not be altered, and goshawks are not known to breed within proximity of the project area, this project would have no impact on the population trend of northern goshawks on the Forest.

Pine Marten

Pine marten is the Forest Plan MIS for moist spruce old-growth forest types. Although the Forest Plan references spruce old-growth, pine martens use other moist habitat types that have older coniferous forest with abundant woody debris and snags. This habitat type is not found within the project area, and the project would have no impact on the population trend of pine martens on the Forest.

Migratory Bird Species of Concern (MBSC)

The Montana Department of Fish, Wildlife and Parks (MFWP) Species of Concern list for Gallatin County was used to identify species for this analysis. Peregrine falcon, black-backed woodpecker, flammulated owl, and northern goshawk were eliminated from the list, as these species were analyzed under other listings. Species that occur in grasslands, moist conifer forests, open conifer forests, moist grasslands, prairie riparian forest, sagebrush, and sagebrush grasslands were also eliminated from the list, as these habitat types do not exist within the Gallatin River Canyon corridor at a scale at which species dependent upon these ecosystems would occur. Black-necked stilts were also eliminated from the list, because they rely on shallow marshes, which do not occur within the project area. Effects on the remaining species (Clark’s nutcracker, great gray owl, Cassin’s finch, great blue heron, and veery) were analyzed in this document (Table 6).

Table 6. Migratory bird species of concern that may occur in the Gallatin River Canyon corridor.

Habitat	Species
Conifer forest	Clark's Nutcracker
	Great Gray Owl
Drier conifer forest	Cassin's Finch
Riparian forest	Great Blue Heron
	Veery

Because the project would take place within the existing disturbed ROW along Highway 191 and 64, nesting habitat for the five bird species listed in Table 6 would not be affected. Foraging habitats would also be unaffected, as use of the project area by these species is likely to be infrequent and incidental. These species occur in forested habitat types, and they are likely to avoid the high traffic volumes, noise, and high level of activities already taking place within the project area. The slow pace of project activities would minimize the likelihood of collisions between construction equipment and migratory bird species of concern. Because habitats important for these species would not be altered, and because these species likely already avoid use of the project area, the proposed project would have no impact on migratory bird species of concern.

SUMMARY OF EFFECTS ON SPECIAL-STATUS SPECIES

The potential effects of the proposed action on Federally-listed; Forest Service, Region 1, sensitive species; Gallatin National Forest MIS, and MBSC are summarized in Table 7.

Table 7. Summary of effects determinations for special-status species.

Federally Listed Threatened and Endangered Species and Designated Critical Habitat	**No Effect**	**May Affect, But Not Likely to Adversely Affect (for threatened or endangered) or Not Likely to Jeopardize the Continued Existence (for proposed)**	**May Affect, Likely to Adversely Affect (for threatened or endangered) or Likely to Jeopardize the Continued Existence of (for proposed)**
Grizzly bear (threatened) *Ursus arctos horribilis*		X	
Canada lynx (threatened) *Lynx canadensis*		X (both species and designated critical habitat)	
North American wolverine (proposed) *Gulo gulo luscus*			
Forest Service Sensitive Species	**No Impact**	**MIIH***	**WIFV****
American peregrine falcon *Falco peregrinus*		X	
Bald eagle *Haliaeetus leucocephalus*		X	
Bighorn sheep Ovis canadensis		X	
Black-backed woodpecker *Picoides arcticus*	X		
Flammulated owl *Otus flammeolus*	X		
Gray wolf *Canis lupus*		X	
Harlequin duck *Histrionicus histrionicus*		X	
Townsend's big-eared bat Corynorhinus townsendii	X		
Trumpeter swan *Cygnus buccinator*	X		
Management Indicator Species		**Effect**	
Elk *Cervus canadensis*		No effect on the population trend	
Northern goshawk *Accipiter gentilis*		No effect on the population trend	
Pine marten *Martes martes*		No effect on the population trend	

Migratory Bird Species of Concern	Effect
Clark's Nutcracker *Nucifraga columbiana*	No impact on population
Great Gray Owl *Strix nebulosa*	No impact on population
Cassin's Finch *Haemorhous cassinii*	No impact on population
Great Blue Heron *Ardea herodias*	No impact on population
Veery *Catharus fuscescens*	No impact on population

*MIIH = may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species

**WIFV = will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species

Aquatics

The following text is derived from an aquatic biologist's report filed in the Project Record as Item 8.

Regulatory Framework

Presidential Executive Order 12962 Presidential Executive Order 12962, signed June 7, 1995, furthered the purpose of the Fish and Wildlife Act of 1956, the National Environmental Policy Act of 1969, and the Fish and Wildlife Coordination Act, seeking to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities nationwide. This order directs Federal agencies to "improve the quantity, function, sustainable productivity, and distribution of aquatic resources for increased recreational fishing opportunity by evaluating the effects of Federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries and document those effects relative to the purpose of this order."

Forest Service Sensitive Species (FSSS) Sensitive species are those plant and animal species identified by a Regional Forester for which population viability is a concern as evidenced by a significant current or predicted downward trend in population numbers or density, and significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution (FSM 2670.5).

The objective of the Sensitive Species Policy is to maintain viable populations of all native and desired non-native vertebrate species in habitats distributed throughout their geographic range on National Forest System lands. The sensitive species program is intended to be pro-active by identifying potentially vulnerable species and taking positive action to prevent declines that will result in listing under the Endangered Species Act.

As part of the NEPA decision-making process, proposed Forest Service programs or activities are to be reviewed to determine how an action will affect any sensitive species (FSM 2670.32). The goal should be to avoid or minimize impacts to sensitive species. If impacts cannot be avoided, the degree of potential adverse effects on the species (and habitat) within the project area and for the species throughout its range must be disclosed. A given project can be approved even if it may

adversely affect a sensitive species, but it must not result in the loss of species viability or create significant trends toward federal listing.

Westslope cutthroat trout, Yellowstone cutthroat trout, western toad, and northern leopard frog are classified as a sensitive species throughout the Northern Region of the U.S. Forest Service. The project area falls outside the native range for both Yellowstone cutthroat trout and northern leopard frogs. In the most recent update to the Region 1 sensitive species list, fluvial Arctic grayling was removed from the list on the Gallatin National Forest and western pearlshell mussel (*Margaritefera falcata*) was added to the list for all National Forests within their native range.

Gallatin National Forest Plan (1987) Fish and Wildlife A-14: The Forest will be managed to maintain and, where feasible, improve fish habitat capacity to achieve cooperative goals with Montana Fish, Wildlife and Parks and to comply with State water quality standards.

MIS are species identified in the forest planning process that are used to monitor the effects of planned management activities on populations of wildlife and fish including those that are socially or economically important (USFS 1987, page VI-14). Under the Gallatin Forest Plan, population trends of indicator species and relationships to habitat changes are to be monitored (id., pages II-18 and IV-6). The expected precision and reliability for this monitoring is "moderate" and the reporting interval is 5 years. Therefore, this requirement is accomplished by observing the consequences of multiple management actions over time. A species group including all redd (or intra-streambed nests) spawning wild trout was selected and referenced in the Gallatin National Forest Plan (USFS 1987) as Management Indicator Species (MIS) on page II-19. This species group was selected as Management Indicator Species because it has been shown that spawning habitat can be affected by forest management activities thereby serving as indicators of habitat quality. Overall, wild redd spawning trout are widespread and common or abundant on the Gallatin National Forest within the Yellowstone and upper Missouri River drainages (USFS 2010). These factors combine to indicate that, in general, aquatic habitats are being maintained sufficient to support coldwater fisheries as required by the Clean Water Act. Sediment related impacts on this species group are discussed under each alternative.

Management Areas 5 (Travel Corridors) and 12 (Important Habitat for Summer and Winter Wildlife Use):

There are no specific standards for special uses listed under these two MAs (Pages III-14-16 and III-37-39).

Gallatin National Forest Travel Plan (2005) The following sediment standard has been incorporated as part of the Gallatin National Forest Travel Management Plan signed December 18, 2006. In the past, the sediment standard consisted of four categories of streams (A, B, C, and D). Fishless headwater streams (i.e., Category C and D streams) were managed at a level below what Montana DEQ considers as maintaining beneficial uses. This new direction formalizes a single standard for all B streams and previously classified C and D streams.

Standard M-1: Water, Fisheries, and Aquatic Life. In watersheds with streams currently at or above fish habitat management objectives, proposals for road and trail construction, reconstruction and maintenance will be designed to not exceed annual sediment delivery levels in excess of those in Table 8. Sixth-code Hydrologic Unit Codes (HUCs) are the analysis unit for sediment delivery (and other habitat parameters), except where a sixth code HUC artificially bisects a watershed and is therefore inadequate for analysis of impacts to aquatic habitat and aquatic organism meta-populations. In such cases, appropriate larger units will be analyzed (e.g.

5th code HUCs). Within the analysis unit, sediment delivery values in Table X will serve as guidelines; however, sediment delivery values denoted in individual 7th code HUCs may temporarily exceed sediment delivery rates denoted in Table 8, in the following circumstances:

- The HUC does not contain a fragmented sensitive or MIS fish population;
- The majority of HUC's in the analysis unit remain within sediment delivery values listed in Table 8;
- Other core stream habitat (e.g. pool frequency, pool quality) or biotic (e.g. macro-invertebrates, fish populations) parameters within the HUC do not indicate impairment as defined by DEQ; and
- Sediment delivery levels will return to values listed in Table 8 within 5 years of project completion.

Table 8. Substrate sediment and sediment delivery by Forest stream category, Gallatin National Forest.

Category	Management Objective (% of reference*)	% Fine Substrate Sediment (<6.3mm)	Annual % > Reference** Sediment Delivery
A Sensitive Species and/or Blue Ribbon fisheries	90%	0 – 26 %	30%
B All other streams (formerly Classes B, C, D)	75%	0 – 30 %	50%

*% of reference = % similarity to mean reference condition; reference conditions range.

**Reference = observed relationship between substrate % fines and modeled sediment delivery in reference (fully functioning) Forest watersheds.

Class A streams are those streams supporting a sensitive fish species or provide spawning or rearing habitat to the Gallatin, Madison, or Yellowstone Rivers, or Hebgen Lake. Class A streams are to be managed at a level which provides at least 90 percent of their inherent fish habitat capability. Class B streams are those streams that are regionally or locally significant and support both a quantity (substantial quantities of harvestable fish) and quality (numerous fish over 10 inches in length) fish populations.

All streams within the project area are considered to Class A streams because they provide both spawning and rearing habitat to the Gallatin River.

Spatial and Temporal Context for Effects Analysis

The spatial scale for the aquatic analysis includes the disturbed ROWs along Highway 191 and 64 as well as portions of the Gallatin and West Fork Gallatin Rivers and the short terminal segments of their tributaries which drain from the proposed project area.

The temporal scale includes from commencement of project implementation until three years after project completion. Recovery to pre-project conditions is expected to take approximately two to five years.

Affected Environment

Fisheries

The proposed fiber optic line would perpendicularly cross Logger, Hell Roaring, Cave, Greek, Swan, Moose, Tamphery, Portal, Goose, Jack Smith, and Dudley Creeks immediately upstream of their confluences with the Gallatin River. These crossings include boring under each of the respective stream culverts and would cross the Gallatin River and West Fork Gallatin River in attachments on four existing bridges.

The streams and rivers listed above are presently not occupied by genetically pure or greater than 90 percent pure westslope cutthroat trout. Historically, genetically pure westslope cutthroat trout (*Oncorhynchus clarki lewisi*), fluvial Arctic grayling (*Thymallus arcticus*), suckers (*Catostomus spp.),* longnose dace (*Rhinichthys cataractae*), mountain whitefish (*Prosopium williamsoni*), and mottled sculpin (*Cottus bairdi*) were native to the Gallatin River and tributaries. The make-up of the existing fisheries in the lower reaches of these tributaries closely resemble that of the main Gallatin River including rainbow trout (*Oncorhynchus mykiss*), rainbow trout x westslope cutthroat trout hybrids, Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) (outside their native range), brown trout *(Salmo trutta)*, mountain whitefish, various sucker species, longnose dace and mottled sculpin. Brook trout (*Salvelinus fontinalis*) occupy the upper reaches of Swan Creek, but are thought to be uncommon in the lower reach just above the Gallatin River. With the exception of Goose Creek, the lower reaches of the remaining tributaries are higher gradient, boulder dominated used primarily as rearing habitat. Goose Creek below the Highway 191 bridge is lower gradient with pockets of smaller-sized spawning substrate. Both rainbow trout in the spring and brown trout in the fall use this short reach for spawning.

Western pearlshell mussels (*Margaritefera falcata*) have not been observed in the Gallatin River drainage above the East Gallatin River confluence. Eighteen sites have been surveyed throughout the upper drainage. Stagliano (2010) classified western pearlshell mussels within the proposed project area as “Absent, failed to find evidence of a population.” Although classified as absent, the habitat within the main Gallatin River and larger tributaries appears to be suitable (predicted).

Amphibians

Montana Natural Heritage database has been queried for amphibian sightings up and down the Gallatin River corridor. One western toad observation was documented within this database in 1983 near the mouth of Greek Creek (MNHP 2012d). Several Columbia spotted frogs were also reported at several locations within the Gallatin River corridor (MNHP 2012d). No western toads have been observed during field reviews and incidental trips up and down the Gallatin River Canyon corridor. There is a small oxbow pond that was cut off from the Gallatin River near Goose Creek when Highway 191 was initially constructed. This pond is likely breeding habitat for both Columbia spotted frogs and western toads. No adults and/or tadpoles have been observed at this site during several breeding season visits. Although no amphibians have been observed, their presence is expected based on suitable breeding habitat.

Forest Service Sensitive Species (FSSS)

Westslope cutthroat trout, Yellowstone cutthroat trout, western toad, and northern leopard frog are classified as a sensitive species throughout the Region One of the USFS. The project area falls outside the native range for both Yellowstone cutthroat trout and northern leopard frogs. In the most recent update to the Region One sensitive species list, fluvial Arctic grayling was removed

from the list on the Gallatin National Forest and western pearlshell mussel (*Margaritefera falcata*) was added to the list for all National Forests within their native range.

Fisheries

Alternative 1 – No Action

Direct and Indirect Effects

The existing sediment delivery rates within the corridor would not change as a result of the implementation of the No Action Alternative.

Cumulative Effects

Since there would be no additive increased to sediment delivery to the Gallatin River and its tributaries under the No Action Alternative, there would be no impacts to cumulative effects.

Alternative 2 – Proposed Action

Direct and Indirect Effects

A similar fiber optic installation project on the Forest yielded no major impacts and experienced rapid vegetative recovery (White 2012). The expected effects of the proposed project would be temporary (less than three years), minor increase in sediment delivery to the Gallatin River, West Fork Gallatin River, and short terminal segments of their tributaries within the project area. Based on the monitoring results of this previous project (White 2012) and if all BMPs and mitigation measures are followed, it is anticipated that no measureable negative effects from increased sediment delivery to trout spawning habitat, pool rearing habitat, MIS wild trout, and western pearlshell mussels would occur.

Cumulative Effects

The effects of increased sediment delivery from the installation of the proposed fiber optic line are expected to be immeasurable at any point along the lower reaches of the listed tributaries and the main Gallatin and West Fork Gallatin rivers. Other sediment delivering activities, both concurrent and reasonably foreseeable, such as: MDT Projects 2013 (Highway safety improvement projects near Greek Creek and Moose Creek), NorthWestern Energy Transmission Line Enhancement Project, and decommissioning for Gallatin River fishing access roads are expected to result in increased sediment delivery. Together with these other actions, sediment from the proposed would not contribute a measureable amount to the cumulative impacts.

Amphibians

Alternative 1 – No Action

Direct and Indirect Effects

The No Action Alternative would not contribute any increase to the traffic volume along Highway 191 and 64, the greatest threat to feeding and basking western toads. Therefore, there would be no affects to amphibians.

Cumulative Effects

Since there would be no changes under the No Action Alternative, there is no potential for cumulative effects.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Although no western toads (tadpoles or adults) have been recently observed within the proposed project area, their presence is expected. Because the proposed activities are located away from known breeding sites and would occur from dusk and dawn hours, the impact to feeding and basking western toads is expected to extremely low, if any at all.

Cumulative Effects

The greatest threat to feeding and basking western toads is expected to be from the heavy traffic volume along both Highway 191 and 64. Although project related western toad mortality cannot be ruled out, it is expected to be extremely low.

Recreation

The following text is derived from a recreation specialist's report filed in the Project Record as Item 9.

Regulatory Framework

Gallatin National Forest Plan (1987) The Forest Plan identifies standards at two geographical levels, Forest-wide and Management Areas. Forest-wide Standards, which apply to NFS land that is administered by the Forest, are intended to supplement, not replace, the national and regional policies, standards, and guidelines found in Forest Service manual and handbooks. Forest Plan standards relevant to the proposed action are listed below:

2. Recreation

- 1. Campgrounds and other developed recreation facilities will be constructed and managed to disperse recreation use across the Forest. Private investment on private land will be encouraged to help meet the demand for more developed recreation. Permitted special uses or concession arrangements on NFS lands will also be relied on to meet demand. Forest Service investment will be necessary where there is no opportunity for private investment.

13. Facilities

- 7. Roads and trails that have been disrupted by management activities and are required for continued use will be restored to serviceable condition prior to completion of the project.
- 9. Existing roads and trails will be maintained consistent with management area goals.

The Forest has been divided into 26 management areas, each with different management goals, resource potentials, and limitations. Chapter III of the Forest Plan describes each management area and lists the goals, management standards, schedule of management practices, and monitoring requirements for each area.

The proposed action would be within MA 5, which consists of areas that are travel corridors which receive heavy recreation use, including portions of the Gallatin Canyon and Highway 191.

The following standards for recreation under MA 5 apply to the proposed project activities:

- Manage these areas to provide roaded recreation opportunities in a natural appearing forest setting. The Recreation Opportunity Spectrum (ROS) classes are roaded natural appearing and roaded modified.
- Public access shall be provided for trails or boat landings to lakes and rivers.

Spatial and Temporal Context for Effects Analysis

The spatial boundary for the recreational analysis area includes the proposed fiber optic route along the disturbed ROWs for Highway 191 and 64 and the existing recreational facilities accessed within or adjacent to the proposed fiber optic line route.

The temporal boundary for the recreation analysis includes the duration of the construction activities.

Affected Environment

The project area provides many public opportunities to a variety of recreation users. The Gallatin Canyon is popular for river floating, sightseeing, rock climbing, fishing, hiking, photography, mountain biking, and horseback riding. There are some high use parking areas, popular side roads, and trailheads adjacent to Highway 191. This corridor is also a very busy route that receives resident and recreation traffic between Bozeman and Big Sky, MT. It also receives a significant amount of large tractor-semi haul traffic on a narrow curvy two-lane highway that creates a dangerous situation when this heavy traffic is combined with sightseers and recreation users who frequently pull in and out of traffic.

According to the MDT, Highway 191 is considered a ‘principal highway’ and paved two lane roadway. Within the project area, Highway 191 provides a major route for interstate and intrastate travel, including tourism and commercial routes to West Yellowstone and Big Sky, MT, and Yellowstone National Park from Interstate 90 near Bozeman, MT. It also provides the only access to all roads within the Gallatin Canyon, including access to NFS roads accessing campgrounds, trailheads, boat ramps, recreation residences, and other Forest recreation opportunities. Forest Service System roads provide public access to and across lands managed by the Forest from Highway 191. A few private roads also connect to Highway 191 providing access primarily to local subdivisions that are typically kept open on a seasonal basis.

Highway 64, also referred to as the Big Sky Spur road, is considered by the MDT to be classified as an ‘other highway’ and a two lane paved roadway that runs east-west and intersects with Highway 191 in the southern part of the project area. Highway 64 provides access to Big Sky, MT, including two large downhill ski resorts.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, the fiber optic line would not be constructed and no additional impacts to the existing recreation resources or traffic patterns would occur.

Under the No Action Alternative, the project would not be constructed and no additional impacts to the recreation resource would occur beyond the existing traffic and other construction projects located with the corridor. These impacts would include temporary disruptions for access to recreation sites.

Cumulative Effects

Under the No Action Alternative, there would be no additional cumulative impacts over those currently occurring.

Alternative 2– Proposed Action

Direct and Indirect Effects

The majority of the effects of the Proposed Action Alternative would be expected to traffic along Highway 191 and 64 and would occur as temporary lane closures and traffic delays during the construction period. Much of the construction associated with the Proposed Action Alternative would create temporary localized traffic impacts where construction is occurring. The proposed construction activities within the disturbed highway ROWs are expected to delay the closest lane of traffic for up to 20 minutes within a three mile stretch along the roadway at one time. Construction activities would adhere to MDT safety regulations, which include proper signage and use of flaggers. These safety regulations should reduce the incidence of traffic related accidents during construction activities.

During the construction phase of the proposed action, access to adjacent private land, Forest recreational users accessing campgrounds, trailheads, and recreation sites, and those accessing Forest Service recreation residences could be temporarily delayed. Temporarily delayed access to trails, recreation facilities, access points, and parking areas, as well as traffic controls that result in travel delays, may deter Forest visitors from utilizing the area for their recreational enjoyment. During construction of the project, such closures and delays could potentially cause a decline in visitors and recreationalists. In addition, financial impact to commercial enterprises such as outfitters and guides and campground concessionaires may potentially occur, due to the temporary decline in rafters, kayakers, climbers, bikers, riders, hunters, and campers requiring equipment rentals and guide trips in Gallatin Canyon. Once construction is complete and the project is in operation, it is expected that the numbers of tourists and recreationalists would return to current levels, at a minimum.

Cumulative Effects

Although the project would contribute to the overall traffic and access within the project area, the effects should be short and temporary in nature since installation would be continuously moving along the highway corridor. Along with other actions occurring within Highway 191 and 64 corridors, project related traffic delays during the construction phase may contribute minor impacts to traffic delays and recreation access cumulative effects.

Scenery

The following text is derived from a visual resource specialist’s report filed in the Project Record as Item 10.

Regulatory Framework

Gallatin National Forest Plan (1987) The project area is located in MA 5, for which the Visual Quality Objectives (VQOs) are specified to be Retention or Partial Retention. The definitions of these VQOs, as shown on page VI-44 of the Forest Plan, are as follows:

- Retention: Human activities are not evident to the casual Forest visitor. The landscape character should "appear" intact. Deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident.
- Partial Retention: Human activities may be evident. The landscape character may "appear slightly altered." Noticeable deviations must remain subordinate to the landscape character being viewed.

The Gallatin River meets the eligibility criteria for potential classification as Recreational Rivers under the Wild and Scenic River Act. The Forest Plan outlines the following Forest-wide Standards for Wild and Scenic Rivers (USFS 1987; page II-28, 29):

The following management standards would be applied to NFS lands one fourth of a mile from each stream bank to provide protection of eligible river segment areas until future suitability studies are completed and decisions are made on possible designation.

g. New transmission lines, gas lines, etc. are discouraged. Where no new reasonable alternative exists, additional or new facilities should be restricted to existing right-of-way. Where new right-of-ways are indicated, the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site.

Spatial and Temporal Context for Effects Analysis

The spatial boundary for evaluating the effects of this project on scenic resources extends approximately 0.25 mile either side of Highway 191 and 64. This distance from the highways captures these sensitive viewpoints along the highways and the Gallatin River.

The temporal boundary for this analysis would be the time frame of one year following the completion of construction activities.

Affected Environment

The project area consists of the previously, disturbed ROWs for Highway 191 and 64, where the initial development of these roadways created an area of disturbance at least twenty feet from the edge of the asphalt. The highway development also left a borrow ditch running parallel to these roadways. The borrow ditch areas are typically made up of the gravel and low-lying grass and other vegetation that has grown back.

The disturbed highway ROW also contains existing above ground facilities, including signs and pedestal splice boxes. It also contains MDT above ground facilities such as mile marker sign posts and various other informative highway signs.

The analysis area is located in the Gallatin River Canyon. This area includes popular recreation areas and facilities; the Gallatin River, which is eligible for potential classification and inclusion in the Wild and Scenic Rivers (WSR) system as a Recreation River; and Highway 191, which is a high use road for both local and regional traffic, and for recreationists and visitors.

The landscape character of the Gallatin River Canyon is lined with mountain slopes and ridges that are generally conifer covered. The tree cover is broken by patches of meadow that dapple the slopes. Rock forms are a dominant element of the canyon and include sheer faces, sculpted forms, boulders and scree slopes that break up the tree cover. The Gallatin River runs through the bottom of the canyon adding an element of motion to the landscape. Highway 64 and 191 also run along the bottom of the canyon. Other human developments such as private and Forest Service recreation resident facilities are located on or near the highways.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative, no fiber optic line would be installed and no direct or indirect impacts to the visual resources.

Cumulative Effects

Since there are no impacts from the No Action Alternative, there would be no cumulative impacts.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Proposed construction activities would cause soil disturbances by installing fiber optic cable underground. Initial construction activities would be most visible to the casual observer and would vary depending on the type of installation method.

The most soil disturbance would be caused by the trenching method for installation (approximately 35 percent of the total installation) with up to a 48 inch-wide ditch being dug to install the cable. Boring would cause a larger area of disturbance (10 foot by 10 foot area) at entry and exit locations, but it would only be used to install cable approximately five percent of the time. Soil disturbance caused during installation would be most visible from Highway 64 and 191 and would be most visible during and immediately after construction. Following construction activities, the impact to the scenery should be minor and temporary. If disturbed soils are reshaped and contoured after construction (see Soil Mitigation Measures), disturbed soil should be restored to near pre-project conditions and would appear consistent with existing soil conditions within the disturbed highway ROWs.

Equipment used to install cable would disturb a corridor within the project area up to 15 feet wide by crushing the existing vegetation, and in instances where tracked installation vehicles are used, causing a slight disturbance of surface soil. These impacts to the vegetation and soil would be short term (within one year) while vegetation grew back (see Soil and Invasive Weed Mitigation Measures).

The proposed above ground facilities that are located above grade include warning signs, pedestal splice boxes, and handholes. While handholes would be flush with the existing grade, warning signs and pedestal splice boxes would be more visible and would add to existing MDT signs and the existing utility warning signs and pedestals from other utilities located within the highway ROWs.

Handholes are metal covers encasing holes in the ground to allow for fiber line access points for pulling cable. Approximately 36 handholes would be installed within the project area. Each handhold would be approximately 36 inches by 36 inches and would be placed so the top would be flush with the existing grade and light beige in color. Although handholes are square in form, they would probably blend into the landscape because of the natural coloration and location (flush with the existing grade). Once installed, handholes would cause a minor visual impact and would become less visible over time as vegetation grows around them.

Approximately 48 warning signs would be located within the project area and would consist of an orange sign approximately three inches wide and four inches tall. Warning signs would be located on a post approximately 36 to 48 inches high. The orange coloration of the signs may stand out slightly against the existing grass and conifer coloration lining the ROW. Although the additional signs may contribute minor, long-term impacts to the visual quality in the project area, the warning signs would be located within a previously disturbed highway ROW and in addition to existing utility warning signs. The existing conditions would thereby decrease the scenic impacts.

Pedestals, located above grade, would provide access to fiber splice locations and would be light green in color. Pedestals are metal boxes approximately 36 inches wide, 24 inches tall and eight inches deep. Approximately 22 pedestals would be installed on NFS land. The green coloration of the pedestal boxes would be similar to the coloration of the conifers and grasses that line the disturbed highway ROWs. Although the project area may appear slightly altered by the casual observer by installing above ground facilities, this would still meet Forest Plan Standards. It also would not negatively contribute to the Gallatin River’s eligibility as a WSR.

Cumulative Effects

Proposed construction activities would be temporary in nature, contributing minor impacts to the cumulative impacts to visual resources. Along with other actions occurring within Highway 191 and 64 corridors, above ground facilities may contribute minor, long-term impacts to scenic quality cumulative effects. However, the proposed activities would be consistent with other activities within the project area and would still meet Forest Plan Standards.

Heritage Resources

The following text is derived from a heritage resource report filed in the Project Record as Item 11.

Regulatory Framework

National Historic Preservation Act (NHPA) Heritage resources include archaeological and historic sites and properties important to maintaining the traditional beliefs and lifestyle of local social groups (“traditional cultural properties”). Under Section 106 of the NHPA, the Forest Service has the responsibility, in consultation with the State Historic Preservation Officer (SHPO), tribes, and other interested parties, to identify historic properties within the area of potential effect and to determine the effects that the proposal could have on historic properties and cultural resources. Under Section 106, protection of historic properties is the same for eligible and listed National Register of Historic Places (NRHP) sites. A process for identifying historic properties, potential effects, and possible mitigation is defined in the NHPA’s implementing regulations at 36 CFR 800. The Advisory Council on Historic Preservation (ACHP) oversees the process.

Spatial and Temporal Context for Effects Analysis

The project area, including areas where above ground facilities would be installed, is considered the spatial boundary in the heritage resource analysis.

The temporal analysis would be limited to the timing during the construction phase or during installation of the facilities.

Affected Environment

There are numerous cultural resource sites within the Gallatin River corridor. Many of these cultural resources have been impacted and disturbed by past actions within the corridor, namely the building of the existing highways.

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no direct or indirect effects on existing heritage resources since there would be no project-related changes.

Cumulative Effects

Heritage resources are not expected to change under the No Action Alternative, so no cumulative effects are expected.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The proposed project would not potentially result in any impacts to heritage resources if the construction activity is regulated to the existing disturbed highway ROWs, where previous project disturbance has occurred.

Cumulative Effects

Since no heritage resources would be affected by the Proposed Action Alternative, there is no potential for cumulative effects to historic properties.

Chapter 4 – Consultation and Coordination

The Forest Service contacted and/or consulted with the following parties while preparing this EA:

Federal

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

State

Montana Department of Environmental Quality

Montana Department of Fish, Wildlife and Parks

Montana Department of Transportation

Montana State Historic Preservation Office

Local

3 Rivers Communications

Gallatin Conservation District

NorthWestern Energy LLC

Tribes

Confederated Salish and Kootenai Tribe

Crow Nation

Nez Perce Tribe

Shoshone/Bannock Tribe

Northern Cheyenne Tribe

Chapter 5 – List of Preparers

April Heesacker, Recreation Solutions Enterprise Unit, NEPA Interdisciplinary Leader

Bev Dixon, Wildlife Biologist, participated only during the initial scoping period

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Courtney Frost, Wildlife Biologist, participation began after the initial scoping period

Dale White, Hydrologist, participation began after the initial scoping period

Fred Haas, Recreation Specialist, participated only during the initial scoping period

Jane Ruchman, Scenic Specialist, participated through the scoping period

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Tom Keck, Soil Scientist

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Appendix A – Soil Best Management Practices (BMPs)

The following BMPs apply to the soil, water, and weed resources under the proposed action. The proposed action includes burial of the fiber optic line would be within the disturbed ROW of Highway 191 and 64, defined as twenty feet out from the current asphalt edge on either side of the highway. This definition includes paved pullouts as being part of the paved highway. Driveways or large paved parking lots are not considered to be part of the highway.

Excavations of Limited Extent

- The top one foot of mineral soil would be salvaged separately as a single, one foot topsoil lift for all excavations of limited extent, subject to exceptions noted below. This material would be replaced as the surface soil layer during backfilling. The topsoil salvaging BMP is included for this project even though the majority of soils within the disturbed highway ROWs have been previously disturbed. This is because surface soil layers throughout the project corridor contain abundant rhizomes from well-established, perennial grasses previously seeded by the MDT in the disturbed ROW. Retaining these rhizomes in the surface soil layers is the best possible means of ensuring the rapid revegetation of disturbed sites with a corresponding reduction in project related soil erosion and sedimentation impacts.
- The topsoil salvaging provision applies to all areas along the proposed fiber line installation route where one or more of the following conditions exist: 1) trenching would be used for cable installation, 2) the fiber optic line would be buried in a borrow ditch or along other drainage features, 3) any areas where the fiber optic line passes through mature stands of conifers or deciduous trees, i.e.: areas obviously lacking previous disturbance, or at installation sites for pedestals or handholds that are not located directly over a previously trenched, cable installation site.

Exceptions to Topsoil Salvaging Requirement

- Topsoil salvaging would not be required in any areas where the soil surface is characterized as rubbly, extremely stony, or extremely bouldery based on the size and amount of rock fragments on the surface or where surface soil horizons contain more than 60 percent total rock fragments by volume.
- Topsoil salvaging would also not be required in areas that are severely infested by noxious weeds or cheatgrass.

Backfilling

- Topsoil lift material would be replaced as the surface soil layer during backfilling.
- Excess subsoil, substrate, and/or large rock materials that cannot be buried in the excavated trench (trenching method) would be removed from the site.
- Some compacting of backfill soil materials would be required while when closing trenched portions of the fiber optic line so as to eliminate excess soil settling.
- Backfilled sites should be mounded slightly at the completion of backfilling to accommodate for a reasonable amount of settling.
- All disturbed sites will be seeded after backfilling with a suitable native grassland mix which complements the non-native, rhizomatous, grass species that will re-colonize disturbances

within the disturbed ROW. If grass seed is not established within two years of initial seeding then reseed as necessary.

Soil Compaction and Rutting

- The potential for detrimental soil compaction or rutting to occur during fiber optic line installation is very low for most areas along the proposed fiber optic line route. Exceptions are in Soil Management Units: 1D, 4B, and 6E (see Figure 3 and Table 3 in Soils analysis), which combined cover approximately one-sixth of the total fiber optic line corridor on National Forest lands. Soil compaction and rutting BMP's noted here apply almost exclusively to soils within these three management units.
- Areas of bare, compacted soil caused by the use of ground-based, mechanical equipment during installation of the fiber optic line or as a result of any temporary stockpiling of supplies or equipment storage would need to shallow ripped to an approximate 6 inch depth prior to re-seeding. This can be best done by pulling a toolbar of the appropriate width with steel shanks across the area after all other ground disturbing activities are complete. Shank spacing should be no less than 12 inches and no more than 18 inches.
- Any rutted areas that result due to fiber optic line installation activities would be ripped to a depth of 12 inches and then re-contoured back to the original ground surface profile.