Mullan Forest Health Collaborative Project

ENVIRONMENTAL ASSESSMENT

Project Area located south of Mullan, Idaho

Coeur d'Alene Field Office

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BLM

Coeur d Alene Field Office, Idaho

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Acronyms and Abbreviations

ATV	All–terrain Vehicle
BMP	Best Management Practice
dbh	Diameter Breast Height
EA	Environmental Assessment
FLMPA	Federal Land Policy Management Act
FRCC	Fire Regime Condition Class
IDL	Idaho Department of Lands
NEPA	National Environmental Policy Act
OHV	Off Highway Vehicles
PSQ	Probable Sale Quantity
RMP	Resource Management Plan
USFS	United States Forest Service
VRM	Visual Resource Management
WUI	Wildland–Urban Interface

1 INTRODUCTION

The Mullan Forest Health Collaborative Project area encompasses approximately 1,275 acres with treatments proposed on approximately 494 acres of Bureau of Land Management (BLM) managed land and 37 acres of National Forest System lands in Shoshone County. The project area lies in the BLM's Coeur d'Alene Field Office and the Idaho Panhandle National Forests' Coeur d'Alene River Ranger District jurisdiction in Sections 1 & 2, T. 47 N., R. 5 E, and Sections 25, 26, 27, 34 & 35, T. 48 N., R. 5 E., Boise Meridian. (See Map A – Vicinity for the general location of the project.) The project area is immediately adjacent to the town of Mullan, Idaho which is among several communities in Shoshone County that were identified as being at high risk from wildfire in a 2001 United States Forest Service (USFS) and BLM report titled, "Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire," (Federal Register pages 43384, 43403, and 43404).

1.1 Purpose and Need

The BLM is proposing the project in response to requests by community leaders to reduce the potential wildland fire threat to Mullan, Idaho, and to implement recommendations in the "Shoshone County Wildland Urban Interface Fire Mitigation Plan" 2011 Revision. The proposed forest health improvement project has been developed through the Shoshone County Forest Health Collaborative which includes representatives from the City of Mullan, Shoshone County, environmental groups, interested citizens, US Forest Service, Idaho Department of Lands and Avista Corp. The project may also provide the county a short term economic stimulus.

Mullan is a city located in a sheltered canyon of the Coeur d'Alene Mountains in Shoshone County in the northern part of Idaho. The proposed project is located within the "high and steep mountains' and narrow gulches" that burned around Mullan in 1910. In 1910, as the Great Fire approached, a local newspaper quote described the situation around Mullan as, "The mountains' so high and steep with the narrow gulches between, resembled curtains of fire suspended from the clouds."

The forest in the project area is a mosaic of mixed conifer species. A dry conifer forest exists on the lower elevation south facing aspects. It is composed of ponderosa pine, Douglas-fir, grand fir, lodgepole and western white pine trees. Lower elevation northern aspects are mostly wet warm conifer forests composed of western redcedar, western hemlock and western larch trees. On the higher elevations the forest is mainly composed of lodgepole pine, western larch, western white pine, and hemlock trees. The majority of the trees on the project area are now about 100 years old. Some tree species, such as western redcedar, ponderosa pine, Douglas-fir and western larch have a long life span of over 100 years, but lodgepole pine is not long-lived and reaches maturity when the trees are about 100 years old.

When lodgepole pine trees reach maturity, they have a weakened ability to withstand attacks by the mountain pine beetle (*Dendroctonus ponderosae*) due to moisture stress. Upper elevation forests are more prone to mortality because of more frequent extremes in weather events in those areas and subsequent stress to damaged trees (Filip et al. 2007). Trees under stress (low vigor) are more susceptible to pests, primarily bark beetles (Furniss and Carolin 1977, Waring and Pitman 1983, 1985, Christiansen et al. 1987, Kolb et al. 1998). Bark beetles are the most important forest insects causing mortality of western conifers (Furniss and Carolin 1977, Schowalter and Filip 1993). Currently, there are approximately 50 acres of dead and dying lodgepole pine trees located on the project area.

There are approximately 40 acres of Douglas-fir and grand fir trees located on the lower elevation northern aspects of the project area dying from root-rot (*Armelliaria mellea)*. Dead trees are more easily consumed by fire than live trees (Edmonds et al. 2000) and thus may increase wildfire severity more than live trees, thus making fire control much more difficult (Brown et al. 2003).

The Proposed Action would transition forests closer to their pre-settlement species mix, density, structure, and diversity so it could be more resilient and resistant to the effects of insects, disease, and wildfire (Fulé 2001; Graham 2004). Pre-settlement fire behavior at lower elevations would have typically been low intensity, frequent understory burning in the western white pine, ponderosa pine and Douglas-fir forest types. Higher elevation forest types would be more conducive to stand replacing crown fires in lodgepole pine and fir forests.

Crown fires are extremely difficult for firefighters to contain and can spread rapidly. To decrease the probability of a crown fire, thinning of the overstory and reducing understory fuels (ladder fuels that can lead to a crown fire) would reduce the ability of wildfire to migrate to the tree crown.

- The first principle of a fire-resilient forest is to manage surface fuels to limit the flame length of a wild land fire that might enter the stand. This is generally done by removing fuel through prescribed fire, pile burning, or mechanical removal. These treatments make it more difficult for a fire to jump into the canopy. (Scott & Reinhardt 2001)

- The second principle is to make it more difficult for canopy torching to occur by increasing the height to flammable crown fuels. This can be accomplished through pruning, prescribed fire that scorches the lower crown, or removal of small trees.

- The third principle is to decrease crown density by thinning overstory trees, making tree-to-tree crowning less probable.

- The fourth principle is to keep large trees of fire-resistant species. (Hummel & Agee 2003; Brown, Agee & Franklin 2004)

Reducing in-growth by thinning is essential for conserving dominate trees, and old growth ponderosa pine, Douglas-fir and western larch trees that did not burn in 1910. The Proposed Action would enhance continued development of the forests from their current mid-successional stage toward the late successional stage (mature, large tree, old growth), and initiate early seral vegetation in areas that are now dominated by dead and dying grand fir, Douglas-fir and lodgepole pine trees.

The proposed project would also supplement the economy of Shoshone County by providing timber industry jobs and service work related to the project.

1.2 Relationship to Laws, Policies and Land Use Plans

The Federal Land Policy and Management Act of 1976 (FLPMA) requires an action under consideration be in conformance with the applicable BLM land use plan, and be consistent with other federal, state, local and tribal policies to the maximum extent possible.

1.2.1 BLM Land Use Plan Conformance

The proposed action as described in chapter 2 of this EA is in conformance with the Coeur d'Alene Resource Management Plan (RMP), approved June 2007. The following objectives and actions support the proposed action.

Goal WF-1- Protect life and property while returning fire to its natural role in the ecosystem.

> **Objective WF-1.5 –** Improve or protect valuable resources and improve the FRCC through the use of fuels treatment activities within the 8,200 acres where vegetation treatments will occur.
>
> > **Action WF-1.5.2** – Fuels treatments (prescribed fire, mechanical, chemical, or biological) will be conducted on identified areas.
> > **Action WF-1.5.4** – Coordinate fuels treatment activities with adjacent land owners and other management agencies.
>
> **Objective WF-1.6** – Reduce impact from wildland fire to WUI areas, municipal watersheds, and infrastructure.
>
> > **Action WF-1.6.3** – Conduct mechanical fuels treatments on identified areas.
> > **Action WF-1.6.5** – Coordinate fuels treatment activities with adjacent land owners and other management agencies.

Goal AQ-1 – Comply with existing air quality laws and regulations to meet health and safety requirements.

Objective AQ-1.1- Manage prescribed fire and wildland fire use in a manner to minimize degradation of the airshed.

Action AQ-1.1.1- Include minimization of impacts on air quality as a criterion in Wildland Fire Situation Analysis (WFSA), Wildland Fire Implementation Plans (WFIPs), and Prescribed Fire Burn Plans.

Objective AQ-1.2—Cooperate with other members of the Montana/Idaho Airshed Group on smoke management.

Action AQ 1.2.1- Follow procedures outlined in the Montana/Idaho Airshed Group Smoke Management Plan.

Action AQ-1.2.2- Conduct planned activities in accordance with the Idaho State Implementation Plan of the Clean Air Act (upon completion) and other plans and policies that control smoke emissions on public lands.

Action AQ-1.2.3- Ensure treatments using prescribed fire are consistent with US Environmental Protection Agency's (EPA's) Interim Air Quality Policy on Wildland and Prescribed Fires or with more current direction.

Goal VF-1- Restore forest vegetation towards historic species composition, structure, and function across the landscape.

Objective VF-1.2 – Restore forest stands to historic species composition, structure, and function by conducting vegetative treatments.

Action VF-1.2.6 – Restore forest structure and function by reducing tree density and brush/shrub competition using appropriate silvicultural treatments including, but not limited to, intermediate treatments, release treatments, use of pesticides, and prescribed burning. Aerial spraying to control brush/shrub competition will not occur. Prioritize these treatments within FRCC 2 and FRCC 3 areas (16).

Objective VF-1.3 – Maintain or enhance wildlife habitat function through the above objectives and actions, and in accordance with the goals, objectives, and actions listed in the Fish and Wildlife and Special Status Species sections (16).

Goal TM-1 – Provide adequate administrative access for resource management needs and appropriate public access to recreation opportunities on BLM – managed or partnered lands and waters.

Action TM-1.1.4 - In closed or limited areas, the following vehicle uses will be allowed without prior explicit written permission:

- Any military, fire, emergency, or law enforcement vehicle being used for emergency purposes.
- Any combat or combat support vehicle when used in times of national defense emergencies.
- Official use as defined in the OHV regulations

Action TM-1.1.8 – Within areas designated limited, adjustments to the transportation network restrictions may be considered annually provided changes are consistent with the management direction of other resource programs. Changes may add or eliminate available routes, change allowed seasons or use, or modify allowed types of use.

Goal FP-1- Provide forest products to help meet local and national demands while protecting natural component of the environment.

Objective FP-1.1- Provide a PSQ of 4.4 MMBF/year over 15 years of commercial forest products (e.g., saw timber, hew wood, pulp, fuel wood, biomass, etc.) from vegetation treatments designed to improve forest health on at least 8,200 acres. Note: PSQ is the allowable harvest level that can be maintained without decline over the long term if the schedule of harvests and regeneration are followed.

Action FP-1.1.1 – Identify and treat areas to promote forest health and restore forest stands to historic species composition, structure, and function by:

- Retaining large diameter trees when consistent with treatment objectives.
- Treating areas with excessive forest fuel loading and ingrowth.
- Treating areas with insect and disease infestation.
- Treating areas where other disturbances have occurred (45).

Goal FW-2- Provide terrestrial habitats for a natural abundance and diversity of native and desirable nonnative wildlife species with self-sustaining populations in northern Idaho.

Objective FW-2.2- Maintain adequate habitat for snag and cavity dependent animals, with emphasis on migratory birds, waterfowl, and bats.

Action FW-2.2.4- Retain snags ≥ 14 inches dbh (or largest available) according to the following:

Cover Type	**Snags/Acre**
Wet Cold Conifer	8.1
Dry Conifer	3.3

Wet Warm Conifer	5.4

Goal SS-2 – Ensure that BLM authorized actions are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species under provisions of the Endangered Species Act.

Objective SS-2.5 – Ensure that rare plant populations/associated habitats and rare plant communities are stable or continue to improve in vigor and distribution.

Action SS-2.5.3 – Appropriate mitigation/guidelines (e.g., avoidance of occupied areas, distances from occupied habitat) will be designed when a project occurs near special status plant population(s).

Action SS-2.5.6 – Prioritize weed control at special status plant populations threatened by weed infestation. Methods of weed spraying within or near habitat will be formulated on site-specific and species-specific basis.

Action SS-2.5.7-Seeding within occupied habitat will be avoided unless clearly beneficial for special status plants.

Goal SE-3 - Provide opportunities for economic benefits while protecting cultural and natural resources.

Objective SE-3.1- Balance resource protection with opportunities for commercial activities and other noncommercial human uses (65).

1.2.2 Consistency with Non-BLM Authorities

The proposed action is in conformance with and would implement recommendations of the Shoshone County Wildland Urban Interface Fire Mitigation Plan, revised in 2011.

The project is being planned jointly with the USFS, and is consistent with the 1987 Forest Plan.

All Forestry Practices would meet or exceed those set forth under the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code.

The following table identifies elements of the human environment that are regulated by a statutory or regulatory authority that would be affected and are analyzed in chapter 3 of this EA, as well as those that BLM determined would not be affected.

Table 1.2.2: Review of Statutory Authorities

ELEMENT/RESOURCE	Affected	Comment
Air Quality	No	See Section 2.1, Proposed Action. Any burning will be under the guidance of the Idaho/Montana Airshed Group to minimize effects to the residents of Mullan and the Silver Valley by limiting operations to days when atmospheric conditions are favorable (i.e. good atmospheric mixing and favorable transport winds)
Area of Critical Environmental Concern	No	The proposed forestry project would meet the BLM's resource management objectives identified in the approved Coeur d'Alene Resource Management Plan. No areas of Critical Environmental Concern or other special designation is in the vicinity of the project.
Cultural Resources	No	A cultural resource inventory was conducted in the project area, and no cultural resources will be affected by the proposed action.
Environmental Justice	No	Fair treatment and involvement of all people occurred with the development of this project and will continue with project implementation. No disproportionate adverse impacts would occur to low income or minority population. The project is designed to provide economic stimulus to local communities.
Farm Land -Prime/Unique	No	No farm land is located in the project area.
Fisheries	No	See Section 3.2.8 (Fisheries)
Floodplains	No	The project area is not located in a floodplain.
Human Health & Safety	No	The Lucky Friday mine and the Vindicator mill site is located adjacent to the project area. The project will sustain the continued operation of the mine.
Migratory Birds	Yes	See Section 3.2.7 (Wildlife/Habitat, including Special Status Species)
Native American Religious Concerns	No	No concerns have been identified by potentially affected tribes. See Chapter 4, Consultation and Coordination, Section 4.1
Non-Native Invasive and Noxious Species	Yes	See Section 3.2.10 (Weeds).
Threatened/Endangered Species		See Sections 3.2.9 (Vegetation), and 3.2.7 (Wildlife).
Water Quality (Surface/Ground)	No	See Section 3.2.11 (Soil and Water Resources).
Wastes, Hazardous/Solid	No	The Vindicator mill site is located outside the project area.
Wetlands, Riparian Zones	No	See Sections 3.2.11 (Soil and Water Resources), and 3.2.9 (Vegetation)
Wild & Scenic Rivers	No	No designated Wild and Scenic Rivers are currently managed by the BLM within the analysis area.
Wilderness	No	There is no designated Wilderness or recommended Wilderness Study Areas in the project analysis area.

2 ALTERNATIVES

This chapter describes the Proposed Action and No Action alternative. The following alternatives were formulated after collecting inventory data at the project area as well as consulting with interdisciplinary team members.

2.1 Proposed Action

The proposed project is the product of a cooperative undertaking by the Shoshone County Forest Health Collaborative to recommend actions needed to protect valuable resources, improve infrastructure and forest health on public lands near Mullan, Idaho.

The proposed project would be started in the fall of 2012 and terminate in 2017, or when the logging slash burning, prescribed burning and reforestation actions are completed.

The project is located adjacent to Mullan, Idaho. (See Map A – Vicinity) The project would decrease existing hazardous fuels through a combination of vegetation treatments and fuel reduction actions on public land and national forest system lands during the next several years to reduce the potential wildfire threat. To attain scenic quality and landscape objectives, the proposed project is a joint action with the US Forest Service. Several complementary actions may improve the ability of communities to resist fire hazards to lives and property, including enhanced firefighting resources, improved access routes and rural address systems, heightened public awareness, reduction of structure flammability (Cohen 2000), and reduction of forest susceptibility to crown fire (Fulé et al. 2001).

Fuel reduction and vegetative treatments would remove dead and dying trees from lodgepole pine forests, thin live trees in mixed conifer stands, and prescribe burn ponderosa pine forests. The greatest concern in the wild land/urban interface is crown fire, both "passive" crown fire (tree torching) and "active" crown fire (fire spreading through the canopy). Crown fires spread rapidly (Rothermel 1991), resist control by hand crews and often mechanical or aerial equipment (Pyne and others 1996), and threaten structures with intense heat and firebrand showers (Cohen 2000). In a typical stand of lodgepole pine with a forest litter or shrub understory, a 28 mile per hour (mph) or more wind on a 45 percent slope could push surface flames into the tree crowns (See Attachment Fire/Fuels Weather and Fire Behavior Analysis). Following the proposed treatment even a 50 mph wind would not be capable of pushing a surface fire into the tree crowns (See Attachment Fire/Fuels Weather and Fire Behavior Analysis). Thinning of dense stands has been shown to significantly increase tree vigor and resistance to pests, particularly bark beetles (Mitchell et al. 1983, Waring and Pitman 1985, Kolb et al. 1998).

Vegetation treatments consist of biomass utilization, piling and burning, thinning, slashing, and prescribed burning. The project would treat up to 531 acres of vegetation (BLM – 494 acres and USFS – 37 acres) on the 1,275 acre project area, or 50% of the government land within the analysis area. When the project is completed, the existing

road system would be improved for firefighter access and there would be a no net increase in motorized road use on the project area after treatment, and possibly a 0.3 mile decrease. The proposed project would construct one permanent road south of Interstate 90 for fire fighters to have a faster response time for suppressing wildland fires. (See Map B - Proposed Mullan Forest Health Collaborative Project Preferred Alternative)
A contract for this project would be solicited for award in the fall of 2012.

The Proposed Action would:

- Reconstruct about ½ mile of an old mining road;
- Construct 1⅓ miles of permanent road with a 14 foot wide running surface;
- Close about 1⅞ miles of permanent road/ATV trail;
- Construct two metal gates on permanent roads;
- Install one low water crossing on an intermittent stream;
- Construct about ⅞ mile of temporary road that would be closed at the end of the project;
- Replace two structurally deficient creek crossing structures on Mill Creek with metal "squash bottom" culverts;
- Harvest trees on 331 acres of forested land that could produce about 3 million board feet of timber;
- Decrease the hazardous fuels on 18 acres of forested land adjacent to the Mullan municipal water supply tanks (2) and a power line supplying the water treatment building;
- Decrease the fire hazard on 30 acres of forested land adjacent to the Avista Utilities power line that serves Hecla Mining Company's Lucky Friday Mine by removing understory trees;
- Construct a shaded fuel break on 20 acres of forested land by decreasing hazardous fuels;
- Construct one helicopter landing area (helispot);
- Conduct prescribed burning on 142 acres of south facing Ponderosa pine forests, and 20 acres on a north facing slope brush field with dead and dying lodgepole pine trees;
- Reforest about 50 acres of forest land with western white pine, and 0.2 acres with quaking aspen seedlings;
- Construct two, 300-foot long buck and pole fence enclosures to protect aspen seedlings;
- Precommercial thin 6 acres of forested land;
- Improve the scenic quality along ½ mile of property line by scalloping and feathering;
- Implement hazardous fuels monitoring on treatment units;
- Implement wild fire effectiveness monitoring of the project;
- Perform maintenance of hazardous fuels during the next ten years on treatment units adjacent to the Mullan city limits.

2.1.1 Transportation

The following actions are proposed to meet transportation objectives for this project:

- Construct a road south of Interstate 90 to improve fire response;
- Close open roads and ATV trails where ever possible;
- Utilize existing roads when possible;
- No road construction across fish bearing streams.

Roads have many adverse ecological effects (Furniss et al. 1991; Noss & Cooperrider 1994; Rieman & Clayton 1997; Jones et al. 2000; Trombulak & Frissell 2000) but are paradoxical in terms of fire management. They open access so that human-caused ignitions increase but also decrease response time to wildfires, act as holding lines, and make prescribed fire easier to apply (Agee 2002).

The current road density on the BLM project area is about 4.8 miles of road per square mile of land. (See Map C – Pre-Project BLM Motorized Road Density) Historically, existing roads on the project area have not had any failures. Upon completion of the project the proposed road density would be 4.5 miles of road per square mile of land.

As part of Interior Columbia Basin Ecosystem Management Project, Quigley et al. (1996) categorized road densities as very low (0.02 – 0.1 mi/mi²), low (0.1 – 0.7 mi/ mi²), moderate (0.7 – 1.7 mi/ mi²), high (1.7 – 4.7mi/mi²), and extremely high (4.7 + mi/ mi²). Although the current road density on BLM lands is extremely high, the BLM RMP states "Action FW-2.1.5 - Reduce (through decommissioning) or maintain open motorized route densities to one mile of motorized route per square mile or less, outside of urban or rural areas". The proposed project lies within the urban interface adjacent to the city of Mullan. The BLM would continue to collaborate with adjacent private property owners to close spur roads that are not required for forest management actions. Road density would not change on USFS lands since the proposed action would only construct temporary roads and no permanent roads on USFS.

Existing Road - Spot rocking along existing roads (road segments 2, 5, 12, 14, 15 & 19) would be done where needed to control erosion. Wet spots on existing roads where water is seeping from the cut bank and running across the road would be rocked . Normal road maintenance would be performed by a grader to provide proper drainage and reduce ruts from forming. One sub-standard culvert (see Map G – point 1) and one wooden bridge (point 2) located at Mill Creek on 2nd Street (see Map B - road segment 12), would be replaced with large pipe arch culverts. Removing the existing structures and constructing the new crossing would be done when water flows are low. The culverts would be over-sized (8 feet 2 inches by 5 feet 9 inches) to accommodate high water flows caused by rain-on-snow storms in the Mill Creek drainage and also the extensive timber harvest in the headwaters of the drainage.

BLM contractors would be required to obtain permission across private landowners to access the project area, and provide a letter to the BLM from the private land owner granting the contractor access. Existing access roads on private land would be improved where needed to facilitate the safe use by contractors. This would be done by road-side

brushing, grading and minor road work to fill in ruts or remove large rock on the running surface of the road. Generally, private roads would be left in a better condition after the project than they are in now.

Photo 1. A picture showing the existing culvert located on Mill Creek.

Photo 2. A picture showing the existing wooden bridge located on Mill Creek.

Road Reconstruction - Reconstructed roads would have a 14-foot out-sloped native material running surface and rolling water dips placed where needed. The road would have a ditch constructed near draws and the road would be gently out-sloped near ridges. Road grades would be less than 10 percent, and turning radiuses would be 60 feet. The average clearing width for the road would be 50 feet. Road segment 7 would utilize an old mining exploration route to access road segment 8. A switchback located at road segment 11a would be enlarged for log truck accessibility. Brush and small trees would be removed so that fill and cut slope reshaping could occur. A ditch may be needed where out-sloping isn't feasible. Cut and fill slopes would be seeded with the District seed mix. The road surface would be outsloped following logging to provide drainage. See Map G for location.

Proposed New Permanent Road - The project would construct 1.33 miles of permanent road (road segments 1, 3, 4 & 6) for fire fighters to use in the event of a wildland fire south of I-90. New construction would involve clearing of trees and brush. The physical attributes of running surface width, road grade, turning radius and re-vegetation would be the same as for reconstructed roads, except that road grades could approach 20%. The road would be maintained to ensure proper drainage, and would be slightly out-sloped where possible to effectively remove water from rain runoff, and rolling dips could be used to drain water from the road running surface to minimize erosion. A low water ford mimicking natural channel structure would be installed on an intermittent stream located at the junction of the proposed road reconstruction and the proposed BLM permanent road.

Temporary Road - Temporary roads would be constructed at minimum standards with no ditches, turn-outs or rolling dips. Following the completion of logging operations road segments 9a would be obliterated by pulling the fill slope back into the cut slope for at least the first 100 feet of new construction and out-sloping the remaining running surface. Road segments 8, 13 & 18 would be closed by placing an earthen berm at the beginning of the new construction. The road could be re-vegetated with a combination of alder and the District seed mix.

Gated Road - Road segments 4 & 17 would be closed by a metal gate when the project is completed and would only be opened for monitoring and fire suppression. The BLM, the Mullan Fire Department and the Idaho Department of Lands would have locks on the gate to allow for administrative and official access.

Table 2.1.1a: Proposed Road Status

Segment No.	Length (ft.)	Type	Proposed Status
1	135	Proposed New Permanent Road	Open
2	1,660	Existing Road	Open
3	3,550	Proposed New Permanent Road	Open
4	2,475	Proposed New Permanent Road	Closed
5	1,705	Existing Road	Open
6	835	Proposed New Permanent Road	Open

Segment No.	Length (ft.)	Type	Proposed Status
7	2,800	Road Reconstruction	Open
8	435	Temporary Road	Closed
9	22,085	Existing Road	Open
9a	580	Temporary Road	Closed
9b	255	Temporary Road	Closed
10	630	Existing Road	Open
11a	265	Road Reconstruction	Open
11b	975	Existing Road	Open
12	1,335	Existing Road	Open
13	1,570	Temporary Road	Closed
14	535	Existing Road	Open
15	4,495	Existing Road	Open
16a	1,230	Existing Road	Open
16b	745	Existing Road	Open
17	6,640	Existing Road	Closed
18	1,605	Temporary Road	Closed
19	2,413	Existing Road	Open
20	1,052	Existing Road	Open

Table 2.1.1b: Road Summary Table

Road Type	Length (ft.)	Proposed Status
Existing Road	38,860	Open
Existing Road	6,640	Closed
Proposed New Permanent Road	4,520	Open
Proposed New Permanent Road	2,475	Closed
Temporary Road	4,445	Closed
Road Reconstruction	3,065	Open

Proposed Road Closure - An existing road/ATV trail, segment #17, would be gated at the south property line and an earthen berm would be constructed at the north property line to close motorized vehicular access. This 6,640 foot long road historically provided access to private land that is no longer required.

The proposed new permanent road, segment #4, would be gated at the start of the road construction to restrict motorized vehicular access. A locked gate would control motorized access after timber harvest and reforestation actions have been completed. The 2,475 foot long road segment would be constructed for timber harvest and fire suppression actions. The public would not have vehicular access to this road segment.

All-Terrain Vehicle (ATV) Trails – There are many ATV trails located on public lands within the project area. The majority of them were constructed as jeep trails for mining activities during the early 1900's. The trails are mostly steep and narrow, and are only

useable by ATV's to reach locations like Grouse Peak, Stevens Peak or Mullan Pass. There are three ATV trails located on public lands south of Interstate 90, totaling about 1.46 miles. These ATV trails would remain open to the public.

There are four ATV trails located on public lands north of Interstate 90, totaling about 2.57 miles. The two ATV trails located due north of the Lucky Friday mine would remain open to the public.

Two ATV trails, totaling of 3,640 feet long, which are located northeast of Mullan would be closed to vehicular access as described below.

An existing road located west of Deadman Gulch that is over-grown and only accessible by ATV would be closed by either obliterating one hundred feet of road or constructing an earthen berm at the north property line. Historically, this 2,440 foot long road was used for the water pipeline that served the Gold Hunter Mill.

An existing road located east of Gentle Annie Gulch that is over-grown and only accessible by ATV would be closed by constructing an earthen berm at the north property line. This 1,200 foot long road was used in the past to provide access to private land to harvest timber and is no longer needed.

In summary, on the project area there would be a net decrease of 0.3 mile of motorized road access on the project area. (See Maps C & D – Pre & Post-Project BLM Motorized Road Density)

Dust Control - Dust abatement measures would be taken as needed; usually by application of water to roads and landing surfaces that are generating dust. Dust abatement would increase the safety to public and contractors by improving visibility in the area as well as preserving the running surface of the road and reducing road maintenance needs. If road watering alone is not effective, a speed limit of 25 mph would be posted and enforced.

2.1.2 Vegetative

Actions are proposed to meet the vegetation management objectives for this project:

- Create a visually pleasing mottled "park-like" landscape;
- Scallop and feather harvest lines adjacent to past private harvest areas;
- Decrease the hazardous fuels by removing the brush, dead and dying trees and understory vegetation that is growing into the crowns of the overstory vegetation;
- Decrease merchantable understory conifers, primarily lodgepole pine, grand fir and Douglas-fir trees;
- Decrease the number of sapling size conifers on 6 acres by precommercial thinning;
- Retain ponderosa pine, western redcedar, western white pine and western larch trees;
- Reforest root rot and insect mortality areas with disease resistant western white pine seedlings;

- Reintroduce quaking aspen.

Thinning of co-dominant trees would contribute to restoration of more open stand conditions in some areas and increase the growth of forbs and shrubs, which retain moisture until later in the season, reducing fire behavior (Agee et al. 2002). The most effective approach to reducing fire severity is to apply fuel reduction treatments simultaneously to multiple fuels strata. Fire hazard treatments intended to decrease tree mortality should reduce surface fire intensity, as well as crown fire potential, in order to minimize mortality from crown scorch (Raymond 2005).

All known or discovered wetlands, seeps, bogs, elk wallows and springs less than one acre in size would be protected with a 100-foot "no activity" buffer along their perimeters.

Within the project area, tree marking paint would be minimized so that recreationists and other visitors could enjoy the forested natural setting without the “symbols” of management. Plastic flagging and cardboard or plastic posters would be used to designate management boundaries and would be removed after the timber sale is terminated

Wildlife snags greater than 8 inches diameter breast height (DBH) would be retained, except for snags that must be felled to meet OSHA safety regulations or to facilitate burning operations. All trees containing nests and snags with apparent cavity nesters would be retained. The number of retention and recruitment snags would meet or exceed the snag management guidelines of 8.1 snags per acre and 8.1 future snags per acre as identified in the BLM Coeur d’Alene Resource Management Plan (RMP) June 2007. About eight live trees and eight dead trees per acre shall be retained on all treatment areas. When large trees are present they would be left as individuals, and when small trees are present, groups of trees would be retained. Trees greater than sixteen inches in diameter would be retained for potential old growth habitat or for future snags.

Hazardous Fuel Removal - Hazardous fuels located adjacent to the Mill Creek road (Unit A) would be treated to provide safer fire fighter access, decrease the fire hazard adjacent to the water treatment plant power line, and the two municipal water tanks located on the east side of Mill Creek.

Photo 3. A picture showing one of the municipal water tanks located along Mill Creek.

Snags and trees less than six inches in diameter would be cut and piled along with ground fuels and limbs from retention trees that would be pruned up to about 10 feet. Hand tools would be used to perform the work; there would be no mechanized equipment.

Hazardous fuels in treatment Unit B would be removed from a ridge line to serve as a shaded fuel break in the southwest portion of the project area (see Map H for location). A fuelbreak is a "strategically located wide block, or strip, on which a cover of dense, heavy, or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability" (Green 1977). The primary reasons for a fuelbreak are to change the behavior of a fire entering the fuel-altered zone and to reinforce defensible locations and facilitate suppression action by indirect firefighting tactics including backfiring (Green 1977, Omi 1996). Fuelbreak may also be used as anchor points for indirect attack on wildland fires, as well as for prescribed fires (Agee et al. 2006). The shaded fuel break would vary in width (100 – 400 ft), depending upon the fuel type and the defensible space needed to contain a wildfire. Commercial timber products would not be removed.

Table 2.1.2a: Hazardous Fuel Removal

Unit	BLM acres	USFS Acres
A	18	0
B	20	0
TOTAL	**38**	**0**

Precommercial Thin - In 1985, the BLM's Gentle Annie Gulch timber salvage sale harvested dying western white pine trees on 6 acres in this area (Unit C), and then planted disease resistant western white pine seedlings. Over time understory vegetation has become quite dense and is now shading out the planted western white pine saplings. Understory sapling trees would be thinned from about 2,500 trees per acre to 300 trees per acre, with disease resistant western white pine the preferred retention tree. Thinned trees would be lopped and scattered. A fire hazard would exist for a few years until the material starts to decompose. This process would be aided by the deep snow accumulations in the Mullan area which would compress the material onto the ground to aid the decomposition process. See Map H for location.

Prescribed Burn - Large ponderosa pine and Douglas-fir trees located on Units D thru H are at risk because dense understory conifer vegetation would enable a ground fire to transition to the crowns of the large trees. All understory vegetation less than 6 inches in diameter would be cut and burned when the cut vegetation dries out. All burning would be within constructed fire lines and conform to air quality standards.

Unit I is a brush field with intermingled dead and dying lodgepole pine trees that is located on a north facing slope. To reduce the fire hazard in this area, a prescribed broadcast burn would be done. Numerous lodgepole pine and western larch trees adjacent to this unit should provide seed for natural regeneration. A helicopter landing site would be constructed in this unit to aid fire suppression actions.

Table 2.1.2b: Prescribed Burning

Unit	BLM acres	USFS acres
D	26	0
E	52	0
F	6	0
G	36	0
H	22	0
I	1	19
TOTAL	**143**	**19**

Selective Thin - The primary silvicultural prescription for treating the conifer forest is a selective thin, where the biggest and usually the best trees would be retained on the landscape. The smaller understory trees, root rot diseased trees and insect infested trees would be cut and harvested. Because trees are constantly dying on this dynamic landscape the silvicultural prescription will vary across the landscape. Where healthy trees are located the average spacing between leave trees would be about 30 feet (50 trees/acre), or 20 feet for pole sized trees and 40 feet for mature trees. In areas with root rot (about 40 acres), the spacing between leave trees would increase to 40 feet, and in insect infested areas the spacing would increase to 50 feet. This treatment would establish a "park-like" landscape and decrease the density of live trees. When several trees are growing within a few feet of each other in a "clump", the "clump" would be treated as one tree. Either the entire clump would be cut or retained, depending upon the

species in the "clump". The treatment would create a diverse mosaic of structural diversity across the treatment areas giving the landscape a "mottled" appearance. Because the project area is located in areas with dying lodgepole pine trees and root rot dying fir trees, snag management won't be a problem because of the active snag recruitment. Following harvest and slash reduction actions (small pile burning), disease resistant western white pine seedlings would be planted in root rot and insect infested areas.

To meet visual objectives, scalloping along the edges of the treatment areas would be done on the east side of unit 12 to reduce the straight harvest line, and feathering would be done on units 1, 3, 9, 10, 11 and 12 to blend the proposed harvest treatments with neighboring land treatments. See Map E for locations of the proposed silvicultural treatments, and Silvicultural Prescription Table in the attachment section.

Photo 4. A picture showing most of the lodgepole pine trees located in Unit 4 are dead after a mountain pine beetle disturbance in 2009 – 2011.

The primary retention trees on the project area are: ponderosa pine, western redcedar, western larch and western white pine. The primary trees to be harvested are: lodgepole pine, grand fir, Douglas-fir and diseased western white pine.

The majority, 276 acres, of the selective thinning is located on steep slopes and logging would be done with a multi-span skyline yarding machine. The machine would be capable of keeping the leading end of the log airborne while yarding the log from the stump to the landing. Yarding corridors would be unevenly spaced and diagonal corridors would be used to lessen the visual sensitivity.

On the remaining area, which is located on the ridge tops that are less steep (50 acres), trees would be skidded from the stump to the landing with ground based equipment like a rubber tired skidder, small cat or a feller buncher. Also, trees would be skidded on steeper ground below Avista's Lucky Friday Mine power line in Unit 3 (16 acres). See Map F for locations of logging methods.

Skid trails would be designated and directional falling is required to reduce soil compaction and minimize the damage to residual trees. Skid trails would be at a 12 foot width, and spaced about 150 feet apart on dry ground, except where they converge. Skid trail spacing would be reduced to about 70 feet when operations are conducted on two feet of snow or on frozen ground. All logging skid trails would be rehabilitated to reduce the opportunity to become future roads.

Table 2.1.2c: Proposed Logging

Unit No.	BLM acres	USFS acres	Skyline acres	Tractor acres
1	10	0	8	2
2	45	0	40	5
3	26	0	10	16
4	32	0	18	14
5	5	0	5	0
6	12	0	12	0
7	5	0	5	0
8	7	0	7	0
9	46	3	38	11
10	21	1	19	3
11	42	1	33	10
12	62	13	69	6
TOTAL	**313**	**18**	**276**	**55**

Currently, there are no quaking aspen trees growing on the project area. The proposed planting of quaking aspen would help determine if quaking aspen could be successfully established on the project area. Quaking aspen would be planted in two buck and pole fenced enclosures on the west side of Unit 2 in an area of dead, dying lodgepole pine. The fence is best described as a three-dimensional, A-frame, rail fence. It would be approximately 6 feet high and 6 feet wide at the base utilizing horizontal poles spaced about one foot apart to keep large animals out. On site lodgepole pine trees would be used to construct the fence. The 0.1 acre enclosures would be about 50 feet wide and 100 feet long. The enclosure would be oriented up and down the slope to minimize impacts to large animals.

Activity Fuels Treatments – Activity fuels are those fuels which are created by timber harvest treatments. They would be evaluated after treatment within the logging units to determine if they pose a significant threat and/or they exceed the 5 point maximum hazard rating used the Idaho Department of Lands. If they pose a threat, various methods

such as chipping, piling, slashing and/or burning may be used to effectively reduce fuels across the area.

Reforestation – Following completion of timber and fuels treatment, the entire project area would be surveyed to determine the need for planting of seral tree species. Natural reforestation of treated areas with western larch, lodgepole pine, grand fir and Douglas-fir is expected following timber harvest.

Noxious Weeds - Following harvest and fuels treatment, the area would be monitored for the presence and spread of noxious weeds. Noxious weed populations would be treated through the use of herbicides, non-chemical or biological control methods. To help prevent the introduction of new weed species, washing of all equipment brought onto the site would occur throughout the project period. Cleaning must occur off BLM lands. (Cleaning requirements do not apply to vehicles that would stay on the established roadway and use the constructed landing.)

Wildlife - In compliance with the CDA BLM RMP, snags would be left in order to meet current and future recruitment needs, unless identified as hazard trees during logging operations (2007). Logging operations would be postponed from April to July to reduce the mortality of breeding BLM sensitive and migratory bird species.

2.1.3 Environmental Design/Resource Protection

The BLM will meet and exceed requirements for the Best Management Practices for forest operations prepared by the Idaho Department of Lands, Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code.

Proposed permanent roads would be located in areas where sediment from road construction and use would not enter intermittent or permanent streams. Roads would be designed so that any point source for sediment is minimized. Roads would be constructed when the ground is dry (usually May thru October), and low water crossings would be installed when constructing the road (see Map G for location). Culverts would be installed when the stream is at low flow, and a stream by-pass would be required to protect water quality. Project inspectors would be on site during culvert and low water crossing installations to ensure that proper procedures are followed. All disturbed ground would be re-vegetated as soon as it is feasible.

Work on the project area would be accomplished with care to ensure that no oil, diesel, gas or other harmful materials foul the soil or enter any stream. To help protect soil, the contractor would have the option to log the area when the ground is frozen with 12 inches of snow cover.

Following road construction actions, disturbed ground would be seeded and fertilized with the District approved seed mix. After the grass starts growing, any weed populations on the project area would be inventoried and sprayed with herbicides.

Reduce sources of seed and/or plant parts and minimize risk of spreading existing infestations by treating pre-existing weed populations prior to project activities.

Reduce opportunities for weed invasion in disturbed sites by seeding all disturbed soil (except the travel way on surfaced roads) in a manner that optimizes plant establishment for that specific site. Use a certified weed-free seed mix that includes fast-growing, early season species to provide quick, dense vegetation.

Reduce impacts of weed populations following project completion. Post-harvest activities would employ an integrated weed control strategy of: monitoring and treatment of weed infestations on ATV trails, roads, landings, skid trails, and treatment areas. Weed treatments will use biological controls, mechanical removal, and/or herbicides after considering the effectiveness of all potential methods and combination of methods. Road and trail closures would reduce the likelihood of weed introduction, spread and persistence in these areas.

The Fuels Program will coordinate with the Field Office Botanist throughout implementation of this project to ensure the BLM Sensitive plant populations at this site are not negatively impacted. The Field Office Botanist will be on-site during prescribed burn activities as a Resource Advisor.

Proposed handlines associated with any broadcast burn would not be built through the locations of the bank monkeyflower populations; instead handlines would be routed around these spots.

The vegetation treatment unit E is adjacent to a historic wooden stave pipeline. Since most of the pipeline is covered with soil it will be protected. In the area where 20 percent of the line is exposed, a fire fighting engine and crew will be deployed to protect the pipeline. They will use water or foam to spray the wood to dampen it and then monitor the fire to ensure it does not get to the pipeline.

To protect the Vindicator Mine buildings from the prescribed fire in Unit D a fire engine and crew will be stationed by the buildings as a precautionary measure.

Snags that are a safety concern near the rare plant locations would be felled away from those sites.

Ignition of vegetation could be conducted near the bank monkeyflower populations but not directly inside them, allowing the fire to burn through these locations at a lower intensity level. Any mop-up activities that would occur near the rare plant populations would be coordinated with the Field Office Botanist. For example, concentrations of heavier and/or denser fuels that may be located nearby (such as stumps and down logs) would not be allowed to “burn-out”; they would be extinguished in that particular spot as soon as the ignition phase is completed. Prescribed burn plans would incorporate measures to protect bank monkeyflower populations located in proposed burn units.

Rehabilitation of hand lines in the vicinity of the BLM Sensitive plant populations would be coordinated with the Field Office Botanist. Of particular concern are any post-burn revegetation efforts using non-native plant species that may be completed in the vicinity of the BLM Sensitive Plant population. If a hand line needs to be reseeded or replanted to inhibit post-burn weed invasion or expansion only species appropriate for the project area and that do not outcompete bank monkeyflower plants should be used.

Weed treatments would be coordinated with the Field Office Botanist to reduce potential impacts to the bank monkeyflower populations. Herbicides that may be used to reduce the weed threats associated with this project should be carefully planned and applied; otherwise, they could have detrimental effects on non-target (especially BLM Sensitive) plant populations.

The project area in the vicinity of bank monkeyflower populations should be inventoried for weeds prior to burning. Existing weed infestations should be pre-treated with appropriate weed control measures. Post-burn weed control measures should be designed to protect the bank monkeyflower populations. Inventory, pre-treatment and monitoring of project area weed infestations would reduce potential impacts to a BLM Sensitive plant species. Monitoring the BLM Sensitive plant locations and surrounding community following the burns may provide valuable, local fire effects information that could be applied to future projects.

Revegetation techniques that may be used in the vicinity of bank monkeyflower populations should include only those species that would not negatively affect bank monkeyflower populations.

All burning, either the prescribe burn or slash piles resulting from the shaded fuel break construction, selective thinning or hazardous fuel removal would be done in conformance with air quality regulations, and coordinated with the North Idaho Airshed Group and Hecla Mining Company.

To ensure scenic quality objectives are met, the location of the proposed roads and silviculture prescriptions for timber harvest would conform to the natural landscape.

2.1.4 Monitoring

A BLM representative would be onsite to inspect all active contract work. Post-project monitoring would include appropriate site preparation in areas to be reforested. Following seedling planting, out years stocking surveys would be done to determine the reforestation success. These surveys would depend on funding adequacy.

Effectiveness monitoring would be done on the Hazardous Fuel Removal areas to determine if the fuel reduction objectives are achieved.

The Field Office Botanist would monitor the bank monkeyflower populations after fuels reduction activities are completed.

After harvest activities would employ the Coeur d'Alene Field Office's weed and vegetation management strategy to monitor and treat weed infestations on trails, roads, landings, skid trails, and treatment areas. Future weed treatments may use biological controls, mechanical removal, and/or herbicides after considering the effectiveness of the methods, as described for the Integrated Weed and Vegetation Management program in environmental assessment #ID-410-2008-EA-224 and the Standard Operating Procedures (SOPs) and environmental design measures in Appendix B and Appendix C of the EA (BLM 2010).

2.2 No Action

The No Action alternative represents a continuation of the trend away from desired conditions. With this alternative, no forest or fuel management activity would occur and the area would continue to be susceptible to stand replacement wildfire. Reduction of stand densities would not occur and forest fuels would continue to accumulate. Fire suppression would continue and shade tolerant species including Douglas-fir, grand fir, western redcedar, and western hemlock would eventually dominate the forest. Western larch and western white pine would remain on the site as scattered individuals. Increased stocking densities of shade tolerant tree species would allow for an increase of fuel loads and ladder fuels and would also result in stand conditions more susceptible to biotic pests like bark beetles. As a result the potential for a stand replacement wildfire would be increased. Stands dominated by Douglas-fir, western hemlock, and western redcedar easily support crown fires because the trees do not self-prune well and retain large branches low in the canopy (Graham and others 1999). The potential for attack by mountain pine beetle in the lodgepole pine stands would increase.

In the event of a fire, the potential for loss of timber on BLM, USFS lands and on adjacent private lands would be increased. No artificial reforestation activities would occur.

2.3 Alternatives Considered but not Analyzed in Detail

Thin Tract 1 Along Transmission Line (Tract 1) – This alternative proposes selective harvest by commercial thinning all understory trees less than eighteen inches in diameter in the area identified on Map A as Tract 1, in T. 48 N., R. 5 E., Section. 25. Although this tract of land is located adjacent to a Bonneville Power Administration transmission line, the tract does not pose a fire hazard threat to the transmission line since the surrounding forest has been cut or does not contain hazardous fuels.

Thin Tract 2 Southwest of Mullan – This alternative proposes selective harvest by commercial thinning all understory trees less than eighteen inches in diameter in the area located southwest of Mullan in T. 47 N., R. 5 E., Section. 3 (Map A, Tract 2). This tract does not pose a fire hazard because the surrounding private forest has been cut or does not contain sufficient amounts of hazardous fuels.

Timber Harvest on T. 48 N., R. 5 E., Sections 34 & 35 – Selective harvest by commercial thinning understory trees and construct 1.5 miles of temporary road. This alternative was analyzed as a categorical exclusion in 2008 as the Mullan South Hazardous Fuels Reduction Project. Although this proposal reduced hazardous fuels it did not provide fire fighters a permanent road for fire suppression activities. Additionally, the proposal did not address hazardous fuels north of Interstate 90. For these reasons the proposal was changed to the Mullan Forest Health Collaborative Project that addressed these additional concerns.

3 AFFECTED ENVIRONMENT AND EFFECTS OF ALTERNATIVES

General Setting

The town of Mullan is located in the bottom of a narrow valley within the South Fork Coeur d'Alene River Watershed in Shoshone County (Map A). Mullan is one of the snowiest cities in the state. Mullan Pass, located 8 miles east of the project area is the snowiest location in Idaho, receiving the highest annual average snowfall of 283.5".

Mill Creek, which flows thru the project area, is a tributary to the South Fork of the Coeur d'Alene River. The watershed is steep and partially forested. In the recent past, there have been timber sales located on private land in the Mill Creek drainage. There are four additional streams located in the project area, Boulder Creek, Gold Hunter Gulch, Deadman Gulch and Gentle Annie Gulch, which all flow into the South Fork Coeur d'Alene River.

Photo 5. A picture showing private timber harvest in the headwaters of the Mill Creek drainage.

Elevations on the project area range from about 3,400 feet up to 4,600 feet. The project is located on both north and south aspects, and approximately 80% of the area has slopes

greater than 45%. The north facing slopes are typically wetter, and sustain a wet/warm vegetation cover type. The primary species composition is Douglas-fir, grand fir, western redcedar, western larch, western white pine, lodgepole pine, hemlock and some scattered ponderosa pine. Essentially all species across the area have been affected by either insects (mountain pine beetle, Douglas-fir beetle and spruce budworm) or some sort of disease (fir root rot, white pine blister rust and larch casebearer) except for the hemlock and western redcedar.

The project area is comprised of BLM and USFS lands totaling approximately 1,275 acres adjacent to Mullan. Since the early 1990s aerial insect and disease timber survey data has been collected by the USFS that indicates significant mortality from various insect attacks and diseases.

Historically, fires have played an important role in the ecosystem. Fires have provided repeating cycles of disturbance which create openings that enhance soil moisture, increase sunlight and nutrients providing habitat for disturbance adapted plants and animals, thus resetting succession. Due to the increase in the Wildland Urban Interface (WUI), naturally occurring fires have been suppressed throughout much of the west. This has created an accumulation in fuels and allowed succession to near climax with less fire resilient species growing in the forest.

3.1 Scope of Analysis

The analysis area varies based on each resource affected; however, for the purposes of the overall analysis in the Proposed Action and No Action Alternative, the area analyzed consists of approximately 1,275 acres consisting of BLM, USFS ownership.

3.1.1 Potentially Affected Resources and Uses

The geographic extent of resources and uses directly, indirectly and cumulatively affected by the proposed action varies by the type of resource and impact, as noted below.

Table 3.1.1: Issues Analyzed and Extent of Area Studied

Section #	RESOURCE/USE	Analysis Area	Acres
3.2.1	Fire Management	Project Area	1,275
3.2.2	Visual Resources	Project Area	1,275
3.2.3	Recreation	Project Area	1,275
3.2.4	Forest Vegetation	Project Area	1,275
3.2.5	Air Quality	Airshed 11	3,536,820
3.2.6	Social/Economic Resources (Forest Products)	Shoshone County	18,014
3.2.7	Wildlife/Habitat	Varies depending on species relative home range size and critical habitat niche (s)	727,040

Section #	RESOURCE/USE	Analysis Area	Acres
3.2.8	Fisheries	Project Area	1,275
3.2.9	Vegetation/Special Status Plants	Project Area	1,275
3.2.10	Invasive, Nonnative Species	Project Area	1,275
3.2.11	Soil & Water Resources	Project Area	1,275
3.2.12	Cultural Resources/Native American Concerns	Project Area	1,275

3.1.2 Related Past, Present and Reasonably Foreseeable Actions

As defined by NEPA regulations (40 CFR 1508.7), "Cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

Past, Present and Reasonably Foreseeable Actions

Human caused and natural events have had varying levels of impacts on the resources and values affected by the proposed forestry project. Species composition continues to change to more shade tolerant species and residual trees continue to experience increased mortality due to insects and diseases. Past BLM actions in the vicinity of the Mullan Project area included selective harvest and reforestation on two timber sales. In 1985 the BLM harvested dead and dying western white pine trees on the Gentle Annie Timber Sale (Unit C). More recently in 2007, the BLM harvested dead and dying lodgepole pine trees on the Gold Hunter Timber Sale, totaling approximately 50 acres of salvaged dead and dying trees. Both harvest areas were planted with seedlings after the timber sales.

The majority of the private forest land has been harvested to salvage dead and dying trees from either root rot or the mountain pine beetle infestation that began about a decade ago.

The USFS has no past or present activities within the project analysis area. As a partner in this project, the USFS proposes to harvest trees on 18 acres, and prescribe burn 19 acres of national forest system lands.

Since the majority of the private forested land has already been harvested, it is reasonable to conclude that private timber land will not be harvested and no new roads would be constructed in the analysis area.

Other past, present and reasonably foreseeable actions and events that contribute to the analysis of cumulative impacts to resources include road building and ATV trail use and maintenance; mining; fire suppression activity; insect and disease outbreaks, and home and town site establishment.

3.2 Effects of the Alternatives

The degree to which resources/uses would be affected by the proposed activities are discussed in the following subsections. Each subsection includes discussion of the:

(1) Affected Environment (current condition) of the resource or use;
(2) Effects (direct and indirect) of each alternative;
(3) Cumulative Impacts

3.2.1 Fire Management

Affected Environment

Suppression of all wildfires in the Mullan project area has been ongoing for nearly a century. Fire exclusion has caused a substantial change in stand conditions and related fire behavior, especially in the dry habitat types of the project area. Increases in surface, ladder, and crown fuels have resulted in the potential for increased fire intensity and burn severity should a fire start. The arrangement and amount of fuel, particularly in the dry habitats types, could carry a fire into the crowns of trees, resulting in fires of an intensity and severity outside of the historic fire regime. (The moist habitat types adapted with mixed-severity disturbances where the severity of the fire events often times exceeded 10 percent but were less than 90 percent lethal.) These intense fires are difficult to suppress, threaten human life and property, and can result in the loss of key ecosystem components (tree species such as ponderosa pine, white pine, and western larch). Erratic fire behavior of this nature within close proximity to urban residences can endanger lives, disrupt communities, and degrade water quality.

The key issue for the fire and fuels analysis for the Mullan Forest Health Collaborative Project is to prevent the effects of a large wildland fire in the wildland urban interface, protecting the residents of Mullan, Idaho. This issue has been identified through scoping as a key issue of the project and is of sufficient concern to drive the development of an alternative.

The Fire and Fuels section tracks the following issue indicators throughout this analysis:

1. Changes in surface fuel loadings that would reduce fire intensity *(measured by potential flame lengths).*
2. Spatial arrangement and amount of the landscape treated *(measured by acres of the project area treated).*
3. Changes in fuel continuity (vertical and horizontal) that would reduce the crown fire hazard *(measured by fire type, surface, passive, or active crown fire).*

Broad Scale Fire History

Fire is a major disturbance factor that produces vegetation changes in our ecosystems. If the role of fire is altered or removed, this will produce substantial changes in the

ecosystem. Fire has burned in nearly every ecosystem and nearly every square meter of the coniferous forests and summer-dry mountainous forests of northern Idaho, western Montana, eastern Washington, and adjacent portions of Canada. Fire was responsible for the widespread occurrence and even the existence of western larch, lodgepole pine, and western white pine. Fire maintained ponderosa pine on sites throughout its range at the lower elevations and killed ever-invading Douglas-fir and grand fir (Spurr and Barnes 1980). Many ecosystems are regularly recycled by fire; life for many forest species literally begins and ends with fire.

The types of fires that occur in forested ecosystems (Zack and Morgan 1994) include:

- **Nonlethal Fires** – These fires kill 10 percent or less of the dominant tree canopy. A much larger percentage of small understory trees, shrubs and forbs may be burned back to the ground line. These are commonly low-severity surface and understory fires, often with short fire return intervals (a few decades).
- **Mixed-severity Fires** – These fires kill more than 10 percent, but less than 90 percent of the dominant tree canopy. These fires are commonly patchy, irregular burns, producing a mosaic of different burn severities. Return intervals on mixed severity fires may be quite variable.
- **Lethal Fires** – These fires kill 90 percent or more of the dominant tree canopy. These are often called "stand-replacing" fires and they often burn with high severity. They are commonly crown fires. In general, lethal fires have long return intervals (140-250+ years apart), but affect large areas when they do occur. Local examples of these types of fires include the Sundance and Trapper Peak fires of 1967 that burned over 80,000 acres in a relatively short time during late summer drought conditions.

The project area has had a variable fire regime characterized by both infrequent, large, lethal (stand-replacing) fires and more frequent, shorter interval, nonlethal and mixed-severity fires (Zack and Morgan 1994). The variability of wildland fire severity and intensity shaped forest structures throughout the landscape. Zack and Morgan (1994) found that lower severity fires structure how the landscape responds when a lethal fire occurs. Lower severity fires increase the proportion of the landscape that contain big trees and open canopies, maintaining conditions that will not sustain a crown fire.

The interaction of fire throughout the Mullan landscape was historically influenced by several different ignition methods, including but not limited to lightning and human ignitions. The number of lightning fires regularly experienced in northern Idaho is more than adequate to account for a disturbance regime that includes regular major wildfires (Zack and Morgan 1994). Fire suppression efforts have been effectively excluding fire from the ecosystem since the 1930s, subsequently eliminating underburns and mixed-severity fires. Such fires served as the thinning agents that favored dry habitat type legacy trees like larch and ponderosa pine. The changes that have occurred to western warm-dry forests have been well documented (Keane et al. 1990, Harvey 1994).

Project Area Fire History

The last substantial landscape fire that burned in the Mullan project area occurred in 1910 (Fire/Fuels project file). Throughout the 1910 fire season, approximately three million acres burned in northern Idaho and western Montana (Fire/Fuels project file). This fire

event most likely burned very similar to a mixed-severity fire, because some large legacy trees exist in the project area. It is also reasonable to assume that as the 1910 fire progressed through the project area it burned with high intensity and severity on the southern, dry aspects where wind, slope, and fuel aligned causing crown replacing fire, evidence by the brush fields that exist in the project area presently. Mosaic patterns where fire did not burn were also likely created, presumably influenced by greater fuel moistures and/or site-specific variability with wind and weather events. Arno and Davis (1980) state that fires in moist habitat types burned under variable intensities, ranging from light ground fires that did little direct damage, to crown fires that covered hundreds of acres in a major run. Overall, Arno and Davis (1980) conclude that presettlement fire history in moist habitat types left a patchy pattern of complete stand-replacement, partially killed overstory, underburning with little overstory mortality, and unburned forest.

Lands managed by the BLM in the Coeur d'Alene Field Office have fire protection by the Idaho Department of Lands and the US Forest Service per the Idaho State Fire Protection Agreement. The project area is predominately protected by the Idaho Department of Lands. The 1910 fire burned 2,655 acres of the 4,629 acre Fire/ Fuels analysis area (57%), and of the acres that did not burn was most likely rock, and unburnable (infrastructure, highways, private lands removed of vegetation. Historic fire ignition data from the recent past only shows four fires in the database (1980-2001). The largest fire in the project area burned in 1987, burning 0.5 acres. The other three fires also occurred in the 1980s , all suppressed at under 0.1 acre, and all of them being human caused ignitions near the Interstate 90 and the community of Mullan. All of the fires occurred in August and September thus having the potential for a larger fire had suppression actions not occurred. Within close proximity to the project area there is a rich fire history record. From this ignition history data, it would be reasonable to assume that the project area had more than four wildland fires in the recent past and given the protection swap, some of the fires did not get recorded accurately. It is also reasonable to assume this recent fire history would have been adequate to maintain the historic fire regimes that this ecosystem naturally adapted with if fire suppression activities had not taken place. Nevertheless, it is clear that fire has played a major role in shaping the ecosystem in the project area.

Fire Regime Condition Class (FRCC) obtained from LANDFIRE, National database 2010, currently shows the project area is 7% Condition Class 3; 78% Condition Class 2; and 8% Condition Class 1 (Table 3.2.1). Approximately 7% of the project area is classified as "urban." The fire regime condition class analysis for the project area showed that the landscape as a whole is in Condition Class 2, and is in need of restoration of fire effects, vegetation composition and structure, and fuel characteristics. The dry habitat types are most altered, falling into Condition Class 3. Moist habitats fall into Condition Class 2. Both the departure from natural fire frequency, severity, and the departure from natural vegetation composition, structure, and fuel characteristics influences the dry and moist habitat types. Fire exclusion and white pine blister rust are the primary factors in pushing the condition class rating towards Condition Classes 2 and 3.

Table 3.2.1. Definition of Fire Regime Condition Class.

Fire Regime Condition Class	Description	Potential Risks
Condition Class 1 (low)	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) is low.
Condition Class 2 (moderate)	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate; Risk of loss of key ecosystem components is moderate.
Condition Class 3 (high)	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

Throughout the project area, shade-tolerant understories continue to advance in succession, which will create a denser stand in the future if disturbance processes such as wildfire continue to be excluded. Surface fuels, which were once light on these sites, have accumulated for approximately a century, and are most likely heavier than they were in 1910 when a majority of the project area burned. Downed woody material is now common from forest insect and root disease influences.

Fire exclusion in fire-adapted ecosystems can cause many changes in vegetation and potential fire behavior, which are well documented. Large, lethal wildfires, which were historically rare in the open dry habitat type ponderosa pine forests, have become common in the dense stands that have developed as a result of fire exclusion. These dense stands provide abundant fuel ladders that allow fires to increase in intensity and burn explosively through the tree crowns (Arno et al. 1996).

The increased potential for crown fire as a result of fire exclusion is of concern to fire managers, particularly when the conditions exist close to communities. Crown fires are the most difficult to suppress and as a result are more likely to become large. The project area surrounds private land and homes; a large, uncontrolled fire could threaten the community of Mullan, Idaho.

Direct and Indirect Effects of Alternatives

Proposed Action

Changes in Surface Fuel Loading and Potential Flame Lengths

The use of BehavePlus helps illustrate the differences in predicted fire behavior from the existing condition to the Proposed Action, Alternative 1. The fire behavior modeling shows that if Alternative 1 is implemented, the potential flame lengths would be less than four feet, which is a threshold that enables direct fireline suppression tactics, in the treatment areas. Potential flame lengths in representative lodgepole pine stands go from 8 foot height to 1.5 foot flame height with treatment. Likewise the ponderosa pine/ Douglas fir stands have a post treatment potential flame length of 4 feet. Direct attack with hand crews is most effective with flame lengths under four feet. Once flame lengths surpass this mark, fires are too intense for direct attack making other indirect suppression tactics such as backfiring or burnouts necessary to control the spread of the fire. Indirect tactics are those where suppression forces would retreat to a safe and defensible place where they believe the fire can be stopped, and attempt to hold the fire at that location. Use of this tactic often results in more acreage burned. Once flame lengths are greater than 11 feet, crowning, spotting, and major fire runs are common. That type of fire behavior presents serious control problems that increase threats of wildland fire to life and property, and increase costs associated with fire suppression activities. The proposed action shows that with environmental conditions at or above the 97^{th} weather percentile, flame lengths in the treated areas drop to four feet or less (Fire/Fuels project file).

The predominate fuel reduction method to reduce surface fuels in the project involves the use of prescribed burning, which can have a range of effects depending on the fuel and weather conditions at the time of the fire. Prescribed burning is completed using a weather prescription and prescribed fire burn plan in order to control and predict the effects of management-ignited fire. Common effects of prescribed burning include surface fuel reduction, understory and overstory mortality, tree crown and bole scorch, duff consumption, soil heating, and mineral soil exposure. The degree of each effect of a prescribed fire can be controlled by careful ignition in the appropriate weather conditions

and modification of ignition patterns and methods. Weather conditions, however, cannot be predicted completely accurately, so there is some risk of escape with every prescribed fire that is ignited. The proximity of the Mullan project area to private land and communities increases the values-at-risk, and dictates very careful implementation of all prescribed burning.

Changes in aspect and shaded draws would be used as boundaries for prescribed burning; these areas often have higher fuel moistures (especially in the spring), and in many cases would burn with very little intensity, if at all. Even with careful forethought and planning, prescribed burning can be uncertain, and small, burned areas outside of the designated treatment areas should be expected. These "slop-overs" tend to be relatively small, suppressed with contingency resources, contained quickly, and should not cause substantial effects.

Changes in Fuel Continuity Measured by Fire Type

The Proposed Action uses prescribed burning activities in the wildland-urban interface to directly affect potential fire behavior. The effect of the treatments in Alternative 1 would reduce potential flame lengths below four feet and change the fire type from passive and active potential crown fire behavior to surface fire in the treated areas (consistent for both the lodgepole pine and ponderosa/ Douglas fir representative stands). The reduction in potential fire intensity increases the ability to suppress wildfire because it allows for incorporation of direct suppression tactics, where firefighters can create a fireline adjacent to the flanking front, pinching off the spread and limiting the size of a wildfire. This effect is consistent with the goals and objectives of the Shoshone County Community Wildfire Protection Plan to reduce the rate of spread and acres of land burned by forest fires through the implementation of targeted fuel mitigation treatments where the landscape has the potential to sustain fires that threaten communities and other assets in the wildland urban interface (Online *http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/shoshone/2011-chapter1.pdf*).

Spatial Arrangement and Amount of the Landscape Treated

Peterson et al. (2005) state that fuel treatment programs should consider the spatial pattern of fuel across large landscapes to be most effective at reducing large-scale crown fire. Therefore, spatial arrangement and amount of the landscape treated are issue indicators used to determine the effectiveness of treatments to reduce the potential threats to the city and residents of Mullan, Idaho. This spatial illustration of the values at risk is used as a context to determine the effects of the proposed activities throughout the landscape. Alternative 1 treatment area map, illustrates the location of treatments on the landscape with regard to the values at risk. The units identified for treatment in Alternative 1 are oriented on the landscape to break up the connectivity and homogeneity of the fuels in the project area. The prescribed burns provide for opportunities to promote characteristics that are resilient to disturbance.

An indirect effect of Alternative 1 is that it provides the greatest opportunity for fire suppression efforts. This is achieved by treating a greater expanse of land (525 acres) in the project area. Without treatment, the units identified in Alternative 1 would have little

to no opportunities for successful fire suppression. Due to the intense fire behavior that could occur, indirect suppression tactics would be necessary.
Alternative 1 reduces potential fire intensity (flame lengths less than four feet and passive and active fire type) and fire behavior on more acres and across a greater expanse of the landscape than the No Action alternative. The reduction in potential fire intensity increases the ability to suppress wildfire because it allows for incorporation of direct suppression tactics, where firefighters can create a fireline adjacent to the flanking front, pinching off the spread and limiting the size of a wildfire. This effect is consistent with the goals and objectives of the Shoshone County Community Wildfire Protection Plan to reduce the rate of spread and acres of land burned by forest fires.

Besides prescribed burning activities, Alternative 1 also includes features to create 1 helispot strategically located in the project area. The helispot would be approximately 90 feet in diameter and will have the direct effect of cutting the vegetation greater than 1.5 feet in height. All of the slash generated from the activity would be hand piled and ultimately prescribed burned to eliminate the material. The helispot would provide suppression agencies an avenue for quick fire suppression response increasing the likelihood of preventing large wildland fires.

Cumulative Effects, Proposed Action

The past, present, and reasonably foreseeable activities that are pertinent to the fire and fuels analysis within the project area are past timber harvests, wildfire incidents, defensible space activities, and road access in and within the vicinity of the Mullan project area. The majority of the private forest land has been harvested to salvage dead and dying trees from either root rot or the mountain pine beetle infestation that began about a decade ago. Past BLM actions in the vicinity of the Mullan Project area included selective harvest and reforestation on two timber sales. In 1985, the BLM harvested dead and dying western white trees on the Gentle Annie Timber Sale (Unit C). More recently in 2007, the BLM harvested dead and dying lodgepole pine trees on the Gold Hunter Timber Sale, totaling approximately 50 acres of salvaged dead and dying trees. Both harvest areas were planted with seedlings after the timber sales. There are approximately 10 acres of state lands (Idaho Department of Transportation lands) near Interstate 90 that have been treated in 2004 by creating defensible space to mitigate the effects of wildfire and protect values at risk. Fire suppression activities have been occurring in the cumulative effects area for nearly a century. The cumulative effects of all of the harvesting activities, fire suppression, and defensible space treatments are analyzed for each alternative in this section.

Fire suppression has been effective in the Mullan project area for nearly a century, and the incremental effect of suppressing each small fire throughout the landscape has contributed to a substantial change in the vegetation throughout the project area. Fire suppression is currently occurring in the Mullan project area and will continue in the future due to RMP direction (on lands managed by the BLM), value at risk in terms of providing domestic water sources for the residents of Mullan, and the close proximity to communities and urban residences. Fire suppression will allow the continuation of

surface fuel accumulation, as well as allow shade-tolerant and fire-intolerant species (Douglas-fir and grand fir) to regenerate and continue in succession. However, this trend would be reversed by prescribing treatments that reduce potential fire intensities on eleven percent of the project area.

Cumulative effects from incremental hazardous fuel reduction projects identified in the Shoshone County CWPP promote a desired condition where potential flame lengths and fire intensities decrease. Activities such as these cumulatively decrease the opportunity for wildland fire to spread to adjacent lands and conceivably the Mullan project area, having an effect with the Proposed Action that supports the purpose and need of the project.

Timber harvesting on both public and private lands occurred from removal of selected individual trees to regeneration harvesting in and around the Mullan project area. The effects on fire from timber harvest can vary, depending on the amount of canopy removed, the subsequent fuel treatment, and the time since harvest. Timber harvest without subsequent fuel treatment may have much the same effect as fire suppression, by causing an increase in surface fuels. Research suggests that despite repeated silvicultural cuttings over a period of over 80 years, thickets of understory conifers (ladder fuels), down woody fuels, and litter fuels tend to increase in the absence of fire (Smith and Arno 1999). These findings support the conclusion that the primary factor in analyzing cumulative effects for the fire/fuels resource is the absence of fire, caused by nearly a century of effective fire suppression.

Most often, timber harvests on private lands tend to be partial cuts that remove trees of the highest economic value (usually the largest) and typically remove large fire-resistant seral species. Natural regeneration is relied on to fill most created openings. This tends to favor shade-tolerant Douglas-fir and grand fir trees over early seral species such as ponderosa pine and western larch. With increased values for private timber, and historic harvest practices on private lands, it is probably safe to say that inherent disturbance regimes and historic vegetation patterns will never be reestablished on private lands bordering the analysis area.

The Shoshone County Fire Mitigation Working Group has explored options to conduct fuel reduction treatments on private lands within the project area to create defensible space around participating landowners' property and homes. The fuel reduction work includes thinning, pruning, and harvesting treatments to reduce potential flame lengths and reduce the probability of crown-fire behavior. The location and extent of these treatments complements the purpose and need of the project. Future efforts depend on landowner participation and cooperation with the Shoshone County fire mitigation program, an element of the National Fire Plan and the 10-Year Comprehensive Strategy Implementation Plan activities would complement the Proposed Action by progressing towards a landscape approach of reducing fire intensities in the wildland-urban interface.

No Action

The effects of no action would be indirect and cumulative. Indirect effects include the continued accumulation of surface fuel and successional changes in stand structure that would affect fire behavior. The fire behavior prediction software BehavePlus was used to estimate the potential fire behavior that would be reasonably expected over time, if none of the proposed activities were implemented and succession continued.

Changes in Surface Fuel Loading and Potential Flame Lengths

Without treatment in the Mullan project area, natural succession will continue and disturbance will inevitably occur with forest insects, forest disease, wildfire, or all of the above. Shade-tolerant understory vegetation would continue to grow and replace the overstory. As it dies and falls down, it causes an accumulation of surface fuels and an increase in potential flame lengths much greater than 4 feet (Fire/Fuels project file). The existing condition shows that with environmental conditions at or above the 97th weather percentile[1], flame lengths quickly surpass the 4- and 11-foot thresholds, resulting in erratic fire behavior (Fire/Fuels project file). No action would allow the vegetation to continue in succession until some disturbance process takes place; if fire continues to be successfully excluded, forest insects and disease would assume the primary disturbance process of the stands. The accumulation of biomass on the forest floor would contribute to greater flame lengths and subsequently greater fire intensities in the event of a wildfire (Fire/Fuels project file).

Changes in Fuel Continuity Measured by Fire Type

The fuel buildup over time and changes in vegetation with continued succession in the Mullan project area would most likely lead to an increased probability of a large, uncontrollable wildfire due to increased fire intensity associated with higher fuel loads, which would hamper fire suppression efforts. Large fires in north Idaho have historically been wind-driven events, occurring when uncontained fires were hit by strong winds (such as the north Idaho and western Montana fires of 1910, MacPherson Fire of 1931, and Sundance Fire of 1967). These wind-driven fires often spread several miles within hours; the Sundance Fire traveled 16 miles in 9 hours (Anderson 1968). Firebrands were found 10-12 miles in advance of the Sundance Fire (Anderson 1968), indicating the potential for spot-fires to develop ahead of the main fire.

No Action in the Mullan project area results in fire behavior outputs that show a greater amount of passive and active crown fire in the Mullan project area. Passive and active crown fire type has a greater resistance to control, thus being difficult for fire suppression efforts when compared to surface fire.

No Action would also have an indirect effect on fire behavior, trending the vegetation away from historic conditions, creating an increased challenge to fire suppression forces. Fires would continue to be more intense, and therefore more dangerous to firefighters. Fires with high intensities are also more likely to escape initial attack and require more

[1] A percentile is a value on a scale that indicates the percentage of a distribution that is equal to it or below it. For example, a temperature at the 97th percentile is equal to or higher than 97 percent of the observed temperatures.

time and money to control. Forests where pathogens or diseases exist have the additional problem of snags, which are particularly dangerous for firefighters.

Larger, more intense fires that threaten nearby homes and communities could have various unwanted effects. Wind-driven wildfires often have a characteristic spread direction, traveling from the west or southwest to the east or northeast. A wind-driven fire originating in the Mullan project area would most likely have its primary spread towards the adjacent communities, and/or backing spread and wind shifts would also pose substantial threats to the community. The project area consequently has ideal juxtaposition to predominate southwest winds that travel over the St. Joe Divide. The slopes of the project area are also steep, which combined with wind, produces radiant heating of the fuels upslope, and greater rates of fire spread.

However, other fire-spread possibilities exist depending on the weather situation and the behavior of the potential wildfire. A wildfire could be plume-dominated, rather than wind-driven, which would result in far more unpredictable spread, because downdrafts created by the plume could surface in any direction. Another possibility is the presence of easterly winds, which could push a fire in the project area towards the community of Mullan and eventually Wallace, Idaho. Easterly winds are most common in the cool months, and are more frequent in the periods from September through April than during summer months (Rothermel 1983). Large fires during spring and fall, though less common, have occurred in north Idaho. The possibility exists that a large fire could occur during periods when 97th percentile weather conditions are not reached.

Spatial Arrangement and Amount of the Landscape Treated

The No Action alternative does not change the spatial arrangement and successional stages of vegetation that currently exist in the project area. No efforts will be taken to break up the homogeneity of fuels in the project area. There will not be any treatment in the project area that could serve as opportunities for fire suppression efforts or potentially altering fire type, intensity, and severity of fire on the landscape. If post-fire rain events were to occur on severely burned area, the No Action alternative does not provide any effort towards reducing potential effects to water quality from surface and rill erosion. No action in the Mullan project area results in no change in potential fire type given a wildfire event occurring with a 97th percentile weather event.

The occurrence of intense and severe wildfire behavior within the Mullan project area given the No Action alternative would have indirect effects following the fire. Removal of the canopy by intense and severe wildfires disrupts the photosynthetic activity of the stand, consequently interrupting the use of water to complete that activity. Depending on the intensity of the fire and the severity of its effects, wildfire can alter watershed soils by consuming the erosion-limiting litter layer at the top of soils and the binding organics within the soil (Ice 2003). Condensation of volatized organics on soil surfaces often results in water-repellant (hydrophobic) soil conditions (DeBano 1981, Doerr et al. 2000; Dyrness 1976) that can contribute to overland flow and increased in-channel failures (Ice 2003). This is of particular concern being that the Mullan project area has several streams that are used as domestic water sources.

Cumulative Effects

The No Action alternative does not meet the purpose and need of the Mullan Forest Health Collaborative project. Given intense and severe fire behavior, it is reasonable to expect expensive wildfire suppression costs, and damages or changes to values such as water quality, soil productivity, recreation, aesthetics, or other resources. Effects to these resources could be prevented or lessened with activities that treat forest fuels.

The No Action alternative fails to provide preventative steps to protect water quality for the domestic water sources in the Mullan project area from an uncontrolled wildfire and/or erratic fire behavior. The continued succession of fuels, vegetation, mortality from insect disease, and the exclusion of fire will create areas where the trend in fire behavior characteristics exceed the goals, objectives and actions established in the RMP.

3.2.2 Visual Resources

Affected Environment

The entire project area is classified as a Class III Visual Resource Management (VRM) area. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape (Manual H-8410-1 - Visual Resource Inventory).

Private land in the town of Mullan has been developed for home sites and businesses. The greater Silver Valley area has seen substantial historic disturbances from mining and timber harvest activities on the surrounding landscapes. The 1910 fire was extremely intense and consumed nearly all the vegetation within the project area at that time. Since 1910, successful fire suppression actions and the lack of timber management activities have allowed a much different forest type to develop within the area. The area has evolved from the post-1910 fire with burned, fallen trees to a continuous cover of trees. This one-time fire event has created a “carpet like” covering of the hillside where the vast majority of the trees are the same height. The project area is characterized by steep slopes covered with dense forest composed of cedar, hemlock, fir, pine and larch trees. The view south of Mullan (see cover photo) is a hillside blanketed with mature evergreen trees.

Roads, OHV and ATV trails are not noticeable on the project area from downtown Mullan. The view north of town has changed recently due to timber harvest operations

performed with ground based tractors or skyline cables on private land. See Photo 5 on page 25.

Direct and Indirect Effects of Alternatives

Proposed Action

As described within the affected environment section, the surrounding landscape has been subjected to significant disturbances from mining, timber harvest, and other human activities since the 1800's. The mitigation measures and design features built into the Proposed Action will minimize any cumulative impacts from the project as compared to other timber management practices observed in the surrounding area over the last several years. Adjacent private lands have undergone significant timber harvest and road construction during the last decade. These disturbances have significantly changed the visual nature of the area. When considered from a larger-scale visual perspective, the modest levels of harvest, burning, and mechanical thinning on the subject 525 acres will not detract significantly from the overall visual appeal of the Silver Valley area. In the longer-term, the return of the project area to a more sustainable forest type will help ensure the area remains visually appealing, particularly from the primary viewpoint of the Mullan city park.

Cumulative Effects

The chance of a wildfire impacting the proposed project area will be greatly reduced for 10-20 years post project. Even if a wildfire was to impact the area post project the impacts would be short lived and only be visible for 5-10 years depending upon the severity of the burn.

No Action

The No Action alternative will not have any direct impacts on any of the visual resources of the Mullan viewshed. There will be no indirect impacts as a result of this alternative.

Cumulative Effects

The potential for intense wildfire would remain a threat within the area, which could dramatically alter the visual character of the area. The potential for dozer lines and blackened trees would impact the visual resources for up to 10-15 years post fire, depending upon the severity of the wildfire.

3.2.3 Recreation

Affected Environment

The Silver Valley Special Recreation Management Area (SRMA) is managed for motorized road and trail-related activities for adventure, exploration, and social group or family affiliation within front and mid-country forested mountain settings. The Silver Valley SRMA is classified as both a roaded-natural area and rural-roaded area for travel management. The current allocation of roaded natural and rural roaded is 12,845 and 3,054 acres respectively. Generally, these travel management classifications are characterized by a culturally modified environment or by a generally natural appearing environment with moderate evidence of the sights and sounds of man. Recreational motorized vehicles are limited to designated roads and trails. Recreational users outside of the developed area, which includes the project area, should expect contact between visitors to be less frequent and opportunities to interact with the natural environment may either be present or prevalent.

Direct and Indirect Effects of Alternatives

Proposed Action

Potential direct effects to motorized recreation include the removal of some roads that the local residents were probably using for recreational purposes. However, the new and remaining road system will maintain both a roaded natural and rural roaded recreational spectrum and provide more loops and connectors to other recreational roads in the area. The road densities will decrease slightly with the proposed project; however, the project area will still support access for recreationalists trying to access both BLM and USFS areas. Some of the roads identified in the RMP are not actually travelable, as they have either grown in with trees/brush or there is no access to the route from either private or public lands.

The new roaded routes in the Proposed Action will actually decrease the amount of area impacted by the roads and probably have a net increase in wildlife use.

Indirect effects include the increased chance of frequent interaction with other motorized recreationalists in the project area due to the more circular routes that are being developed.

The Proposed Action will not change the allocation of roaded natural and rural roaded acres within the Silver Valley Special Recreation Management Area.

Motorized routes will still be limited to designated routes as defined in the Proposed Action.

The Proposed Action is consistent with recreational travel planning (RC-1.7.3), which is to conduct activity level travel management planning to design an interconnected recreational road and trail network.

Cumulative Effects

There is a slight risk of increased off road use because of the slight decrease in open roads, although this is unlikely. The proposed action may lead recreationalists to other areas of USFS lands, which may become impacted by illegal OHV/UTV/ATV activities or dumping in areas that will be difficult to clean. The private timber lands north of the north side project area are highly roaded and this may lead to illegal off road use on BLM lands. The improved access for fire engines and other firefighting apparatus will help to reduce the potential for wildfires impacting recreational activities. However, there could be an increased chance of a human caused wildfire due to more motorized users in the project area.

No Action

Potential direct effects to the No Action proposal include a road system that has few connected routes or travel areas that lead to other recreational opportunities on USFS lands. The current system does meet the definition of both roaded natural and rural roaded recreational spectrum.

The No Action alternative will not change the allocation of roaded natural and rural roaded acres within the Silver Valley Special Recreation Management Area.

Motorized routes will still be limited to designated routes as defined in the proposed action.

The No Action alternative is not consistent with recreational travel planning (RC-1.7.3), which is to conduct activity level travel management planning to design an interconnected recreational road and trail network.

Cumulative Effects

Currently, the cumulative effects of the No Action alternative are lack of road/trail planning leading recreationalists to develop their own routes through BLM managed lands. The current road system is inadequate for the desired routes for the motorized users. The adjacent private lands are highly roaded and may have some impacts to motorized recreationalists looking for a more remote setting.

3.2.4 Forest Vegetation

Affected Environment

Since the project area is located on both north and south facing slopes there is considerable diversity in the forest setting. There are four principal forest habitat types on the project area and are represented in a vegetative mosaic across the project area. Generally, south and east facing aspects sustain both Douglas-fir and grand fir habitats,

north facing aspects sustain hemlock habitats, and west facing aspects sustain a western redcedar habitat.

The project area appears to have not sustained a significant wildfire for several decades. Fire scars on large trees throughout the project area appear to be greater than 100 years old.

Several of the entomological and pathological agents are active in the project area as discussed below.

Mountain Pine Beetle

Mountain pine beetle is a native bark beetle with a one-to-two year life cycle that affects ponderosa pine as well as other pines. Adults select green trees of sufficient size and phloem thickness to nourish their larvae. The pitch tubes on the bole and boring dust at the base of the tree are evidence of beetle entry. Beetles are subject to mortality from parasites, predators such as woodpeckers, cold winters, drying of the pine following infection, and resin from the host tree. In ponderosa pine stands, infestations tend to occur in second growth stands with basal area (BA) above 120 ft per acre; old growth trees with high risk rating and poor sites. Thinning can help reduce susceptibility to mountain pine beetle. Thinning to residual BA of 80 ft^2 per acre is recommended.

Pockets of mountain pine beetle killed trees have been noted in the project area primarily effecting the concentrations of large diameter ponderosa pine. Several pockets of large diameter ponderosa pine killed by mountain pine beetle have been salvage logged just north of the project area.

Root Diseases

Root diseases are slow spreading insidious fungi that can affect all sizes, ages and species of trees. In the watershed, grand fir and Douglas-fir are most highly susceptible and the prevailing root pathogens affecting them are armillaria and annosus root rots. With the continued exclusion of fire, loss of ponderosa pine will continue, grand fir and Douglas-fir will increase, and root disease will likely also increase. However, this change is not toward conditions outside historic ranges. Where Douglas-fir has encroached on ponderosa pine stands, these will be more susceptible to root disease. Fire and root disease appear to have contributed historically to the maintenance of larch in mixed conifer stands. Without fire, root disease is unlikely to sufficiently limit grand fir competition leading to the eventual elimination of larch from the stand.

Root disease has probably increased severity. The older a stand becomes and the more it shifts toward grand fir, the more severe root disease will be. Root disease may play a more important role if ponderosa pine is reduced and Douglas-fir and grand fir increase. It will affect canopy cover, cover types, size, and age distribution of trees, and timber productivity. The effects will be to create forest openings, favoring shrubs and regeneration of more susceptible grand fir or increased dominance by less susceptible species. Over the long-term, without fire or harvest to sustain less susceptible species, more stands will become susceptible.

Photo 6. A picture showing the Avista power line right-of-way, and typical forest conditions within proposed units 2 & 3 of the project area.

See Map I for locations of the habitat types. Shade intolerant shrub and herbaceous growth is vigorous where the forest canopy is more open, in contrast to deeply shaded areas with sparse understory vegetation. Vegetation within the project area has been disturbed by recreational use of roads and trails; fire activity; insect and disease outbreaks; logging; road building and/or maintenance; and mining. Weedy species primarily occur along the roadways or ATV trails and have begun moving into the native plant communities where disturbance has created sites vulnerable to invasion.

Direct and Indirect Effects of Alternatives

Proposed Action

Transportation

Continued use and maintenance of the existing roads would deter vegetation from re-colonizing and closing-off those corridors. Plants growing within the areas proposed for reconstruction, permanent road, temporary road and heli-spot construction would be destroyed. Use and maintenance would discourage vegetation from re-establishing in these areas, although a swath of lower-growing, shade-intolerant vegetation may eventually establish adjacent to the road running surfaces and on the perimeter of the heli-spot. Weedy species may be introduced into these disturbed areas by passenger

vehicles, wildlife, or OHV traffic. Seeding the cut-and-fill slopes on new construction would enhance vegetation recovery and discourage weed invasion.

Decommissioning existing road segments, as well as the temporary road associated with the project, would allow vegetation to begin re-colonizing those road corridors. Using seed mixes and plantings to augment re-establishment of desirable vegetation would potentially reduce weed invasion and competition for sunlight, water, nutrients, and pollinators.

Fuel Reduction Treatment

Fuels reduction treatments vary from the mechanical removal of excessive down wood and thinning to prescribed fire. Thinning treatments are further described within the Vegetation Treatment section.

Prescribed fire treatments can take place in either the spring or fall with the goal of reducing fuels, protecting the soil from excessive heat, reduce conifer encroachment, increasing the ability of firefighters to protect the fuel break and providing wildlife forage. Mature mixed ponderosa pine/ Douglas-fir forests (Units D, E, F, G & H) would be prescribed burned in a mosaic pattern with approximately 30-60% of the unit receiving treatment. The method of firing could include drip torches or helitorch. Ground fuels moistures should exceed 25% to not negatively affect the soil.

The goal for burning the activity fuels slash piles would be to reduce 80-90% of the slash pile, to avoid impacts to the soil, to preclude the spread of noxious weeds, and to minimize smoke effects on Mullan , Lucky Friday Mine or Interstate 90. Pile burning would be conducted in either the spring or the fall.

Harvest Operations The amount of change in forest composition and structure of the treatment units would be related to species' retention priorities, diameter cut limits, and reforestation objectives. Removal of smaller diameter tree in-growth and intermediate and suppressed trees growing into the crowns of healthy dominant and/or co-dominant trees, as well as group selection harvest of trees affected by insects and disease, would visibly change the current forest structure, as well as reduce competition with retention trees for water, sunlight, and nutrients. Reducing the average number of trees per acre would open the forest canopy, with openings initially dominated by shade-intolerant shrub and herbaceous species, until re-planting or natural regeneration of trees occurs. Retention and management of larger diameter trees would further develop the large tree structural component. Retaining larger woody debris on the forest floor would be important for tree seedling establishment, soil carbon cycling, nutrient and water storage, and wildlife activity.

On the acres designated for cable logging, vegetation would be injured or killed where the cable tower system is set up, along the cable corridors themselves, where individual trees are cut, and where trees are stockpiled for loading onto logging trucks. Logging with ground-based equipment would cause the most ground disturbance and injury to

plant communities in the action area, when compared with helicopter or cable logging. However, measures such as restricting skid trails to certain spacing intervals and widths could concentrate the most intense impacts into certain areas, helping reduce more widespread disturbance to vegetation due to skidding activities. Impacts to vegetation also could be reduced if tractor operations occurred on two feet or more of snow, while operating over frozen ground probably would not reduce damage to the above ground portions of plants. Disturbance to vegetation in tractor landing areas would be similar to that which would occur with helicopter or cable logging methods.

Reforestation Planting blister rust resistant western white pine seedlings would aid re-establishment of diverse, resilient, and/or resistant forest vegetation in the project area. However, managing for seral tree species would require subsequent actions to discourage re-growth of tree species (such as grand fir and Douglas fir) that may dominate sites to which they are adapted where natural disturbance regimes have been altered. Planting quaking aspen saplings would enhance species diversity, structural development, and recovery of the hardwood community.

Vegetation, including Invasive, Non-native Species

Vegetation Communities
The proposed action would change the species composition, vertical structure, and density of forest vegetation on approximately 525 acres through selective thinning, mechanical fuels treatment, burning, or reforestation.

Harvest Operations, Thinning, and Mechanical Fuels Treatment
Some site vegetation would be killed (for example, trees that are cut; ingrowth that is thinned) or injured during project operations (for example, retention trees marred by logging equipment or by felling activities). Reducing the average number of trees per acre in the project area from 250-550+ (all size classes) to 70-100 (16”dbh) would open the forest canopy and favor plant species adapted to warmer, drier growing conditions, while other shade-tolerant plant species would be negatively impacted, such as by sun scalding. Thinning dense trees would reduce the intense competition for water, sunlight, and nutrients which the desired tree species and size classes are currently experiencing. Shade intolerant vegetation species would proliferate in the gaps between trees following treatment, until altered by ecological succession or future disturbance.

Removal of smaller diameter tree in-growth and intermediate and suppressed trees, as well as the salvage harvest of trees affected by insects and disease, would visibly change the current forest structure. Retention and management of 16-inch dbh or greater trees would maintain and develop the large tree structural component. Where thinning occurs, spacing between residual trees would reduce crown contact, and would create openings initially dominated by shade-intolerant shrub and herbaceous species, until re-planting or natural regeneration of trees occurs. Retaining larger woody debris on the forest floor would be important for tree seedling establishment, soil carbon cycling, nutrient and water storage, and animal activity. The post-treatment structure of harvested and thinned areas would change as ecological succession proceeds or when a future disturbance

occurs.

On the 276 acres designated for skyline logging, vegetation would be injured or killed where the cable tower system is set up, along the cable corridors themselves, where individual trees are cut, and where trees are stockpiled in landing areas. Logging with ground-based equipment on 55 acres would cause more ground disturbance and injury to plant communities, when compared with skyline logging. However, measures such as restricting skid trails and skyline corridors to ≤100-foot and ≤150-foot spacing intervals, respectively, and minimum necessary width, would concentrate the most intense impacts into certain areas, helping reduce more widespread disturbance to vegetation. Impacts to vegetation also could be reduced if tractor operations occurred on two feet or more of snow, though operating over frozen, snow-free ground probably would not reduce damage to the above ground portions of plants.

Removal of trees within root disease centers can intensify the disease through fungus colonization of stumps and roots of harvested trees. These areas then provide food bases for a pathogen, allowing it to infect and kill other nearby trees. However, without any management actions, root disease centers continually regenerate with brush species followed by susceptible tree species, which are subsequently killed at relatively young ages. Not all conifer tree species are equally susceptible to root disease; therefore, planting disease tolerant species in root disease areas following harvest would help break the cycle of continued regeneration of susceptible tree species and return productivity to the site. This strategy promotes restoration of disease-resistant species composition in the project area by favoring trees that are less susceptible to root disease.

Vegetation and ground disturbance associated with harvesting and mechanical fuels treatment would create sites favorable for weed invasion and would produce conditions that allow more sunlight to reach the forest floor. Therefore weeds, which currently occupy sites in or adjacent to the units and tend to do extremely well in warmer, drier environmental conditions, may spread or at least maintain their present level of infestation.

Treatment Using Fire

Where fuels are piled and burned, the concentrated intensity of fire would kill plants directly under the piles, and kill or injure plants immediately adjacent to the piles. Over time, burn pile sites within project units would likely be recolonized by adjoining, surviving native vegetation, but additional replanting or seeding may be necessary to inhibit post-burn weed invasion. Soil beneath burn piles located at landings may be compacted, which could inhibit plant re-growth, though certain native pioneer species, as well as weeds, may be able to produce a sparse, post-burn vegetative cover.

Live plant response to treatment with fire, particularly broadcast burning, depends on many factors, including soil and duff moisture, plant vigor, phenological state (e.g., dormant; flowering; releasing seed) at time of burning, and fire severity (Agee 1993; Smith and Fischer 1997). Response also depends on stand history. As organic material accumulates between fire events, seedlings and new rhizomes of some species become

established in the organic horizons, where they are more vulnerable to fire than plants established in mineral soil (especially if heavy fuels have accumulated and increased potential fire severity exists) (Smith and Fischer 1997).

Mature ponderosa pine, Douglas-fir and western larch trees have several fire-resistant characteristics such as very thick, insulating bark, relatively deep roots, and open foliage which increase chances of surviving lower intensity fire (Smith and Fischer 1997); therefore, lower intensity fire may be lethal to only small-diameter saplings and seedlings. Either species may be vulnerable to fire if pitch has collected around old fire scars, or fires burning in deep surface fuels or deep duff affect the fine roots (Smith and Fischer 1997). Douglas- fir trees also develop fire-resistant bark as they mature, so only seedling, sapling and small-pole size trees may be vulnerable to lower intensity surface fire. However, the resistance offered by a thick layer of bark may be offset by shallow roots susceptible to fire damage, growth of closely spaced branches along the trunk, and pitch-streaked lower trunks (Agee 1993; Smith and Fischer 1997). In comparison, other tree species in northern Idaho such as subalpine fir, grand fir and western redcedar do not possess characteristics that protect them as well from fire and, therefore, are less resistant to its effects and are more likely to suffer mortality from broadcast burning.

Lower intensity fire may not be lethal to many of the shrub and herbaceous species that occur in the action area. It is recognized that some plants or their means of reproducing themselves such as seeds, may die as a result of fire treatments, but it is anticipated that site populations adapted to fire would survive, and some species' growth actually would be enhanced (USDA Forest Service 2009). Although aerial portions of fire-tolerant shrubs or herbs may be killed, the plants would survive by re-sprouting from roots, stems, rhizomes, or stored seed (Smith and Fischer 1997; USDA Forest Service 2009). Fire may also remove competing vegetation, facilitating regeneration by decreasing competition for light, water, nutrients, and pollinators.

As fire intensity increases, though, impacts to vegetation would be expected to become more severe. For example, areas of dense tree regeneration and heavy fuels resulting from disease-caused mortality would increase potential for higher intensity fire (Smith and Fischer 1997). Also, fuels outside of root rot "pockets", such as downed logs, rotting stumps, or piled, thinned trees would produce more concentrated fire intensity that would kill or injure nearby live plants.

Treatment with fire perpetuates dominance by tree species that are resistant to both fire and root disease, especially the pine species and western larch. Conditions ideal for the spread of root disease tend to develop in forests where fire exclusion and selective logging have increased dominance by Douglas-fir and the true firs. (Smith and Fischer 1997) Therefore, broadcast burning that approximates historic fire frequencies converts stand composition back to early successional stages and is an effective tool for managing root disease (Rippy et al. 2005). The amount of root disease in the project area would likely be reduced as a result of burning. Removal of understory vegetation, small-diameter in-growth, as well as shade tolerant trees by burning would reduce competition for water, nutrients, and sunlight, which would increase the vigor of the remaining trees.

Bark beetles prefer stressed trees to vigorous trees, especially in dense stands where the target species dominates (Smith and Fisher 1997). Injuries to trees caused by broadcast burning can also affect the tree's ability to withstand attacks by insects and pathogens. Stress to trees caused by fire-damaged roots, cambium or foliage can weaken the tree and predispose it to attack by bark beetles and root pathogens (Hood et al. 2007; Rippy et al. 2005; Demars, Jr. and Roerrgering 1982). Trees weakened by fire can contribute to increased beetle populations; however, less damaged, surviving trees would have better defenses to withstand bark beetle attacks because reduced competition for water and nutrients increases overall tree health.

Over time, sites in the project area treated with lower intensity fire would likely be reseeded or recolonized by surviving native vegetation, although replanting or seeding may be necessary to inhibit post-burn weed invasion. Microsites in the native plant community that do not recover within one to two years following burning, perhaps due to more severe fire effects, would continue to be vulnerable to weed invasion or expansion.

Project features such as burn intensity, combined with site characteristics such as plant community response to fire, would contribute to a post-project mosaic of species, structures, and densities. For example, common native plant species that are less tolerant of burning or opening of the forest canopy may not be as well-represented in the post-treatment plant community, resulting in a change in the composition of site habitats over time. Establishment of new populations or persistence of existing weed infestations could also alter this mosaic. The post-project mosaic would change as ecological succession proceeds or a future vegetation disturbance occurs.

Reforestation

Re-introduction and maintenance of ponderosa pine, western larch, and western white pine in the project area would aid re-establishment of diverse, resilient, and resistant forest vegetation. Managing for seral tree species would require subsequent actions to discourage re-growth of tree species (such as grand fir, western hemlock, and Douglas - fir) that are well-adapted to project area growing conditions.

Road Construction/Renovation/Decommissioning

Plants growing within the right-of-way of the permanent and temporary roads would be injured or killed by clearing and route construction. Equipment/vehicle use of the road, plus periodic maintenance, would discourage vegetation from re-establishing, although a swath of lower stature, shade intolerant plants may eventually re-grow adjacent to the road running surface. Use of a temporary road would reduce the longer term ecological and economic (maintenance costs) impacts associated with a permanent road. Decommissioning the temporary ridge road/trail when project activities have concluded would allow vegetation to begin re-colonizing the road corridor and keep ATVs from spreading weeds into the recovering native plant communities.

Opening existing road segments that are blocked by brush or downed logs, for example, would disturb plants that have established since the road corridor was last actively

maintained. Impacts to these plants would be similar to those described for the temporary road/trail. Use and maintenance of the existing roads would deter vegetation from re-colonizing and closing-off the corridors. Road renovation of existing roads, plus blading and maintenance of roads during the life of the project, would disturb any vegetation that may have encroached onto the road surface since maintenance was last done.

Preparation, use, and maintenance of roads in order to implement the project would disturb plant communities and soils along the road corridors, increasing the threat of weed invasion and/or expansion. Weeds presently growing in the project area would have newly disturbed areas into which they could expand. Project-associated passenger vehicles and equipment, ATVs, wildlife movement, or wind currents could transport weed seed or fragments into native vegetation communities from off-site infestations. Weeds may out-compete and displace desirable, native vegetation, altering plant community composition, structure, and function both in the present and future. Inventory, treatment and monitoring of the project area and access roads would reduce potential impacts to native vegetation from weeds. Treatment of project-related noxious weed infestations would assist re-establishment of native vegetation in disturbed areas by reducing competition for sunlight, water, nutrients, and pollinators.

Currently, vehicle traffic on the project roads is unrestricted, although only ATVs are capable of negotiating many of the steep trails. Inventory and monitoring of weed problems in the action area would decrease their potential impact on native vegetation.

No Action

Vegetation Communities

Plant succession would continue toward the potential natural community, where possible. For example, over a period of years, sites in the area capable of supporting climax forest vegetation would become dominated by climax species, until a future disturbance such as timber harvest; wildfire; insect or disease outbreak; or weather event creates openings in the vegetation and restarts ecological succession. Tree mortality within Douglas-fir and grand fir as a result of root rot disease would continue within the project area, possibly preventing the development of large trees of these species in root rot pockets. Weeds would still remain in the project area and compete with native species.

Impacts to common native plant populations due to a future wildfire burning in untreated forest vegetation may be more severe due to the amount of fuels accumulated in the project area, and possibly spread beyond the boundaries of the proposed action. If a wildfire of higher intensity than a prescribed burn occurred in the project area, it is possible even more acres would be vulnerable to weed invasion due to more severe fire effects to native plant communities and soils, and proximity of weed seed/fragments to colonize the burned area. A wildfire has the potential to be stand-replacing but may also create a mosaic of burned and unburned vegetation in certain areas, depending upon factors such as variation in fire behavior.

With current conifer stocking and growth rates, and increasing levels of insects and disease, the No Action alternative would not help attain RMP goals nor meet the purpose and need of this project. This alternative would not help achieve the RMP goal for desired future conditions particularly species composition. Under this alternative, no reduction would be made in total tree numbers or stocking levels of pest-prone tree species. Improvements such as reduction in susceptible species as well as enhanced growth and vigor of residual trees through timber harvest and prescribed burning would not be made to enhance forest health and ecosystem sustainability.

Stocking levels of live trees would continue to increase while individual tree vigor would decrease, increasing susceptibility to damaging insects and disease. Early seral, shade intolerant trees such as ponderosa pine and western larch would decrease in numbers while the shade tolerant species such as grand fir would increase. The shrub, forb, and grass component of forest stands would continue to decline.

Root disease is apparent in portions of the project area. During a defoliator or bark beetle attack mortality is often first noticed in root disease centers because of the weakened state of the trees.

Increases in other insects such as fir engraver and Douglas-fir beetle often accompany a defoliator outbreak. Insects are often at endemic levels in the forest, but become more apparent and increase in numbers as a defoliator infestation progresses. Often these insects will "finish off" trees previously weakened by other pests or pathogens.

Any combination of the above listed factors could elevate the level of damage from defoliation to mortality. Additional mortality would add to fuel loads and increase the risk of stand replacement wildfire.

Threatened and Endangered Plant Species

This alternative would have no effect on water howellia or Spalding catchfly individuals, populations or habitat.

BLM Sensitive Species

This alternative would have no direct effect on clustered lady's-slipper, deerfern, Henderson's sedge, Idaho barren strawberry, rare moonworts, nail lichen, pine broomrape, or short-spored jelly lichen individuals or populations. Potential habitat for each of these species would persist in the project area unless plant succession or another type of disturbance creates conditions unsuitable for species' survival. Compared to the proposed action, however, the potential habitat could be burned over by a more intense wildfire, which might negatively affect species' habitat requirements such as composition and structure, as well as open more areas to weed invasion and/or expansion.

Cumulative Impacts

Proposed Action

The analysis area is defined roughly as the headwaters of the South Fork Coeur d'Alene River, adjacent to Mullan, Idaho and is approximately 1,275 acres.

Present activities and natural disturbances in the analysis area include road building, use, and maintenance; timber harvest; small-scale mining; fire activity; insect and disease outbreaks; and ATV trail development, use, and maintenance.

Reasonably foreseeable future actions and natural disturbances in the analysis area include limited road building, use, and maintenance; some timber harvest; small-scale mining; fire activity; insect and disease outbreaks; ATV trail development, use, and maintenance; and fuels reduction projects in the wildland urban interface.

Ongoing and future vegetation-disturbing activities in the analysis area would continue to promote a mosaic of plant communities in various stages of ecological succession. Ecological succession would proceed where vegetation is left undisturbed and would influence vegetation species composition, vertical structure, and density. Plant communities that revert to earlier ecological succession stages due to disturbance such as timber harvest, insect infestation, or disease would begin the process of maturing all over again. Ongoing and proposed activities that impact vegetation would open up sites favorable to weed invasion due to ground disturbance and/or reduction of tree canopy cover. Where left untreated, weeds would continue to threaten native plant communities.

The proposed action would treat approximately 525 of 1,275 acres of vegetation in the analysis area; therefore, this project is unlikely to contribute cumulative effects to vegetation communities; special status plant species; or invasive non-native species, due to the relatively small level of disturbance and its projected timing of implementation, when compared to the overall analysis area.

No Action

Under the No Action alternative, no acres of vegetation would be disturbed by harvest, thinning or burning in the project area. Vegetation composition and structure on adjacent lands in the analysis area could be altered by a future wildfire. The number of acres burned and severity of fire effects would be dependent upon many variables, including whether or not any treatments have been implemented to lessen the severity of those fire effects. Fires on these lands could also spread to the project area. Where left untreated, weeds would continue to threaten native plant communities.

3.2.5 Air Quality

Affected Environment

Air quality in the project area is good. Wind and weather patterns are generally from a westerly direction (SW to NW) with mountains and valleys providing local topographic influence to the wind pattern. As such, east winds are common in the valley. The project area is located in Airshed 11.

Direct and Indirect Effects of Alternatives

Proposed Action

Mechanical fuel treatments, temporary and permanent road construction, road realignment, road decommissioning, and road maintenance along with gravel and log hauling activities would increase the amount of dust in the area depending on the time of year, soil moisture, and the amount and kind of vehicle traffic. Treatments using a combination of mechanical and prescribed fire are the primary activities that may temporarily affect air quality within and around the project area. The mechanical vegetation treatment would be accomplished using a variety of machines to modify the vegetative biomass in the project area as presented in the description of alternative in Chapter 2.

The primary effect to air quality from these activities would be the generation of dust on roads from vehicle traffic during dry periods from July to September. Road dust would be contained to the project area and the access roads. Air quality impacts from dust would be minor and short term with the application of BMP's. Air quality impacts from smoke would be short term and minimized by following the guidance and regulations from the Idaho/Montana Airshed Group which complies with all state Department of Environmental Quality regulations.

Following procedures and permissions of the Airshed Group and prescriptive parameters in the site specific burn plan required by BLM Policy, managers pick the time and conditions to burn that are best suited for achieving resource objectives and minimizing effects to air quality from smoke and particulates. Depending upon transport winds within the airshed on approved burn days, smoke from prescribed burning or slash pile burning operations should not affect local residents or residents of downwind communities and airsheds. Burning activities would be stopped if on-site conditions are not providing the loft, mixing dispersion and transport to mitigate production of smoke and particulates as forecasted. Burning would cease until conditions allow for good smoke dispersion to maintain acceptable air quality.

The majority of the slash and non-merchantable material would be utilized by the local Kellogg School District for their biofuel-incinerator for heating the high school. In the immediate local proximity of the activity, dust may have a short term affect to visibility and safety issues related to traffic on project area roads, but dust is not expected to interfere with traffic on Moon Pass road or Interstate 90. Production of dust is temporary and occurs only while activities are taking place within the project area.

Dust impacts are easily mitigated by dust abatement measures; typically by applying water, using a water tender truck equipped with a spreader bar, to wet roads and work areas to keep down dust levels.

No Action

Cumulative Impacts

Dust impacts would be minimal due to the light nature of use of the roads in the project area. Should a wildfire occur, substantial smoke, dust and ash would be produced thus affecting the airshed.

3.2.6 Social/Economic Resources (Forest Products)

Affected Environment

Shoshone County, established in 1864, encompasses 2633.91 square miles with a population density of 5.2 people per square mile. According to the 2000 census data, the county had a population of 13,771; 5,906 households and 3,856 families residing in the county. In the last three decades of the 1900s its population declined by 30.2 percent. Slightly more than 95% of the population is white, non-Hispanic and the median resident age is 41.8, higher than the Idaho median age of 33.2 years. Industries providing employment include: Education, health and social services (20.8%); Agriculture, forestry, fishing and hunting, and mining (13.0%); and Arts, entertainment, recreation, accommodation and food services (12.3%). The median household income was $28,535, and the median income for a family was $35,694. About 12.4% of families and 16.4% of the population were below the poverty line, including 21.8% of those under age 18 and 10% of those over 65.

According to the Idaho Department of Labor, in December 2008, Shoshone County was one of six Idaho counties with a double-digit unemployment rate. While Shoshone County has had historically high unemployment rates, the 13.3% rate was higher than the past several years. Shoshone County's unemployment rate changes quickly due to the relatively low population and fluctuates due to cyclical industries such as agriculture, forestry and mining; typically with less people employed during the winter months.

BLM, USFS and private lands in the area provide a source of economic benefit to the Silver Valley area from the recreational and commercial opportunities. Public land, adjacent to private property, is sometimes viewed as being an asset because public lands cannot be commercially developed; providing landowners with a landscape that is unobstructed by other residential or commercial sites. Landowners place a high value on the visual benefits derived from open space and native vegetation and, based on conversations with some adjacent landowners, are willing to accept a change to the landscape that would increase protection of their investments should a wildland fire occur.

The ATV trails surrounding Mullan attract numerous motorized recreationists to the area who eat and sleep in the local area. Annual ATV jamborees attract several hundred visitors to the area for these three to four day events. Dispersed recreationists, including hunters or berry pickers add to the local economy and supplement the traditional industries of mining and logging.

Direct and Indirect Effects of Alternatives

Proposed Action

The economic discussion below shows the estimated "real" dollars that would be derived from the project areas. While the number of times that a dollar is cycled through the community is not projected, each dollar winds up benefitting several people and/or businesses as it is used to cover wages, supplies, operating expenses, living expenses, etc. The project would contribute to the local economy by providing jobs needed to accomplish the work described in the Proposed Action and by providing forest products to local sawmills and other manufacturers ranging from Shoshone County south to Benewah County and west to Kootenai County (depending on who purchases the various forest products derived from the project area).

The various forest products that would result from implementing the Proposed Action range from saw logs, studs from hew wood, hog fuel for cogeneration plants, pulp, chips for strand board, posts, poles, biomass and firewood. Due to the volatility of the wood product market, an accurate estimate of the type of forest products, quantity of forest products and the value of these products cannot be made. However, saw logs and hew wood quantities can be estimated as these are the most common forest products to arrive at an estimated forest product value. This estimated value would reflect the potential minimum value of forest products which would be removed from the project area based on the criteria in the proposed action.

Using April 2011 average delivered log prices for saw logs and hew wood, it is estimated that the value of saw logs and hew wood removed from the sale area would be approximately $500,000. Delivered log price is the amount a mill pays for loggers and/or land owners for wood delivered to the mill. Most often the basis for payment is either board feet or tons. No estimate of quantity is being made of other forest products that would be removed from the project area. However, any other forest products removed from the project area, such as biomass, would provide additional economic support to the local community. It is difficult to arrive at a total value for all forest products and to estimate how much more economic value is poured into the local economy from these manufacturers. For purposes of this discussion, it was assumed that two-thirds of the final product value covers the cost of getting it to the manufacturer (in this case delivered log price). Based on the above discussion, the sale of forest products would add another $50,000 to $100,000 to the local economy.

No Action

The No Action Alternative, by foregoing implementation of timber harvest and the development and restoration package would result in no change to the current revenue production or expenditures. The proposed timber volume in the project would be part of the BLM's allowable sale quantity of 46.9 million board feet per 15 year planning period. If the sale is not offered, the BLM's planned volume for the year in which the sale was to occur may decline, affecting local and regional economies. Changes in harvest levels translate into changes in timber industry employment and income levels.

3.2.7 Wildlife/Habitat

Affected Environment

The larger area around Mullan varies from dense forest stands with little road construction to highly disturbed environments where resource extraction and human traffic use is high. Many forest types, in conjunction with varying degrees of disturbance, road density, and timber harvest have resulted in a fairly diverse landscape within and around the larger project area.

The north side of Interstate 90 is highly disturbed. Historical areas of timber harvest, combined with high elevation, south-facing aspects, provide brushy to barren open areas where timber harvest has occurred, and islands of forest cover where it has not. BLM lands include most of the remaining islands of forest cover. A history of mining, recreation, and timber harvest have resulted in high road density and high levels of recreation and resource extraction related uses by all types of motorized vehicles.

One might consider the south side of Interstate 90 the opposite of the north side. Were it not for the significant and practically impenetrable barrier of Interstate 90 and the City of Mullan, it would make for an almost complimentary juxtaposition of habitat types, particularly for big game animals like elk. Forest stands on the south side are largely under Federal ownership. As a result recent timber harvest has been far more limited, except on private lands adjacent to Mullan. North-facing slopes, high gradient streams, and a relatively low road density provide a completely different environment for a different suite of wildlife species.

The end-result of this varied landscape is that the project area provides habitat for a wide array of wildlife species. Both "generalist" wildlife species, such as coyote and black bear, and "habitat specialists" such as black backed-woodpeckers and northern alligator lizard, may inhabit the site. Lodgepole pine dominated stands, dry site ponderosa pine forests, and mixed conifer stands provide habitat for many different upland terrestrial species like bobcat, western tanager, and northern pygmy owl. High-gradient streams, like Mill Creek, and the moist riparian environment nearby provide suitable habitat for tailed frog, Idaho giant salamander, Coeur d'Alene salamander, and Pacific wren. Mature, mesic forest environments dominated by cedar, hemlock, grand fir, and Douglas fir provide a habitat for golden-crowned kinglets, moose, and fisher.

An analysis of the effects of this project on Special Status Species is required to comply with NEPA. Species addressed include those listed by the U.S. Fish and Wildlife Service as Endangered, Threatened or Candidate species and BLM special Status Species. Effects to migratory birds, Idaho Fish and Game Species of Greatest Conservation Need, some game animals, and Partners in Flight High Priority Birds Species are also addressed.

Table 3.2.7a summarizes the Special Status Species that may be found in the project area.

Table 3.2.7a: Special Status Species that may inhabit the project site.

Species	Likely to Inhabit	Uncommon- May Inhabit	Encountered on Site Visit
Bald Eagle*		X	
Merlin*		X	
Northern Goshawk*	X		
Great Gray Owl*		X	
Northern pygmy owl*	X		
Flammulated owl		X	
Dusky Grouse*		X	
American three-toed woodpecker*		X	
Black-backed woodpecker*		X	
Red-naped sapsucker*	X		
Cordilleran flycatcher*	X		X
Olive-sided flycatcher*	X		
Hammond's Flycatcher	X		X
Cassin's finch*	X		
Brown Creeper[M]	X		
Calliope Hummingbird[M]	X		
Black-chinned Humminbird	X		
American Dipper[M]		X	
MacGillivray's Warbler[M]	X		X
Townsend's Warbler[M]	X		X
Varied Thrush[M]	X		X
Western Tanager[M]	X		X
Yellow Warbler[M]	X		
Ruffed Grouse[M]	X		
Gray wolf**		X	
Wolverine**		X	
Fisher*		X	
Canada lynx**		X	
Fringed Myotis*		X	
Townsend's big-eared bat*		X	
Long-eared myotis*	X		
California myotis*		X	
Long-legged myotis*		X	
Western small-footed myotis*		X	
Pygmy shrew*		X	
Red-tailed chipmunk*		X	
Common garter snake*	X		
Northern alligator lizard*	X		
Coeur d' Alene Salamander*	X		
Idaho giant salamander*		X	

*Special Status Species, ** Threatened, Endangered, Proposed, or Candidate Species, * IDFG species of Greatest Conservation Need, [M] PIF High Priority Species

Threatened and Endangered Species

There are currently three federally protected wildlife species that occur in north Idaho. Grizzly bear (*Ursus arctos*), woodland caribou (*Rangifer tarandus*) and Canada lynx (*Lynx canadensis*). All except the caribou are listed as Threatened under the Endangered Species Act. The woodland caribou is an endangered species. No listed species have been documented on the site. This project area is not within Critical Habitat for lynx or a Lynx Assessment Unit, nor is it in a Bear Management Unit or in designated Grizzly Bear Core Habitat.

Woodland caribou require high elevation old growth forest and a sufficiently developed lichen community for winter survival (Servheen and Lyon 1989). The project is not suitable habitat for caribou and does not hold potential for becoming suitable habitat for this species because of the elevation and the potential vegetation community.

Canada lynx are highly associated with both late and early succession forest stands. Early successional, densely stocked stands provide foraging habitat, while mature forest stands act as potential denning habitat (IDFG 2005, Ruggerio 1994). In 1999 a Canada lynx was reported south east of the project area, however verification of the sighting with documentation was never given and the observer's background was unknown.

The project area lies between the Cabinet Yaak Recovery Zone and the Bitterroot Ecosystem which have been outlined as areas important to the recovery of grizzlies throughout their historic range (USFWSa 2012). Currently this area is considered to be "unoccupied" by grizzlies (USFWSb). However, one young male was killed inadvertently near Rose Lake in 2010. Also an adult male was killed in Kelly Creek in the Clearwater Drainage in 2007. Otherwise, no grizzlies have been verified in this area in 60 years. Grizzly bears are more flexible in their habitat requirements. Their main habitat requirement is sufficient prey, forage, thermal cover, and denning habitat. But these things can be fulfilled in a variety of habitat types ranging from mountain meadows, high elevation alpine and subalpine habitats, and mid to low elevation coniferous forests (Snyder 1991).

A wolverine was documented near St. Joe Baldy in 2003 (IDFG 2003). In addition, three Idaho Fish and Game Conservation employees reported tracks and/or sightings in the Silver Valley Area in 1981, 1986, and 2003. Because of their large home range sizes and the very long dispersal distances of juvenile males, it is possible a wolverine may pass through or use part of the project area. Knowledge of wolverine habits, habitats, and behaviors is increasing every year. But some general assumptions about this species include that they are negatively associated with roads and clear cut forest stands (Hornhocker and Hash, 1981; Hash 1987; Copeland et. al 2007). The high density of existing roads, the consistent use by people for recreation and resource extraction make the habitat in project area and vicinity marginal at best. There is no historical or potential denning habitat in the project area.

It is possible that lynx, grizzly bear, or wolverine may pass through or temporarily use the site, but it is not likely that any of these species would inhabit the site with any regularity as habitat for all three would be considered marginal because of the high degree of human development and disturbance.

BLM Special Status Species

Very often, species that are habitat specialists are BLM Special Status Species or Idaho State Listed Species of Greatest Conservation Need. Their populations tend to be less secure because loss of their specialized habitat results in more dramatic population declines and higher rates of extinction (R.L.Smith 1992). With its variety of habitat types, the project area is occupied by several of these Special Status Species. A review of geographic species observations in the Animal Conservation Database indicates that there have been several observations of fisher near the project area. Also Idaho giant salamanders have been documented nearby.

Some of the species listed in Table 3.2.7a prefer dense, interior forest stands. For example, the northern goshawk, great gray owl, dusky grouse, and fisher prefer this habitat for some or all of their life history requirements. Goshawks are forest raptors that nest in relatively dense forest stands with canopy closure greater than 75% (Moser, B.W 2007). Dusky grouse are often found in higher elevation mixed forest, and so they may be found in the upper elevations of the project area (Poole 2005). They move up in elevation over the winter months and may spend portions of the year in the project area. They are ground nesting birds (Poole 2005). Great gray owls nest in dense coniferous forest but also use forest openings for hunting. Fisher are a small forest carnivore in the weasel family. They are most commonly found in mid to high elevation interior forest stands.

Other species in Table 3.2.7a are primary or secondary cavity users, so they require snags. Flammulated and northern pygmy owls are cavity nesters and are generally found in lower elevation dry conifer or mixed conifer forests (Poole 2005). Black-backed and American three-toed woodpeckers are habitat specialists that require spruce and fir forests and also use cavities for nesting. These woodpeckers pull off the scales of bark on spruce trees to get to the insects infesting the tree cambium (Poole 2005). An obvious sign of their presence in an area is spruce trees that have some or almost all of their bark removed. They use the same dying trees for nesting that they use for foraging. Red-naped sap suckers are found in mixed coniferous forests but are highly associated with hardwood stands like aspen or birch (Poole 2005).

The Cordilleran flycatcher is present in the project area. This song bird prefers mixed forests, often those with Douglas-fir or pines (Poole 2005). It is almost indistinguishable by sight and sound from its cousin the Pacific-slope flycatcher. The project area sits right near the geographic range boundary for both species. Cassin's finch is also found in mixed forests at all elevations, but they prefer to nest in spruce and fir forests or Douglas-fir and pine forests (Poole 2005). This little song bird eats the buds and seeds of most

conifer species (Poole 2005). Olive- sided flycatchers are found on the edges of naturally occurring forest openings or openings created by fire or logging. They hunt for flying insects while perching high in a snag or tree at the edge of a clear cut, or in the middle of a burn area. Their nest is built on a horizontal conifer branch (Poole 2005).

The fisher is a small carnivore in the weasel family. They prefer the interior habitat of more dense coniferous forests. Often these forest stands are older, more moist, and at middle to high elevations. They have also been associated with riparian areas in Idaho (Ruggerio et. al 1994). They eat small to medium sized mammals, birds, and carrion. Fisher habitat often includes an abundance of logs, snags, and forest debris. A diversity of tree sizes and shapes and small forest "gaps" are also characteristic of fisher habitat (Ruggerio et. al 1994). Like wolverines, female fishers raise their young in natal and maternal dens. Natal dens are where the young are born. Maternal dens are additional den sites the mother may move her kits to if she feels threatened by predator presence or needs to move kits to an area where food is more available (Ruggerio et. al 1994). Very few denning sites have been described for fisher in the western United States, but logs and snags are commonly used (Ruggerio et. al 1994). The densely stocked southside of the project area may be suitable habitat for this species which has been documented several times in the vicinity of the project area.

The northern alligator lizard is relatively rare and one of only a few reptiles found in the Idaho Panhandle. The alligator lizard is a habitat specialist that can occur in many different upland habitats, but is limited to those habitats that have talus slopes, or rocky outcrops (IDFG 2005). Common garter snakes are found in many upland and riparian sites in the Panhandle region of Idaho. There are both terrestrial and aquatic sub species, both of which may be found in the project area. Regardless of the sub species, they are usually not too far from a water source. They are habitat generalists that prey on insects, small fishes, amphibians, and occasionally small mammals and birds (NatureServe, 2009).

The Coeur d'Alene salamander is associated with three habitat types; waterfall spray zones, springs and seeps, and stream edges. In wet weather they may be found under leaf litter, logs, and bark (IDFG 2005). Forest sites where they have been documented have at least 25% canopy cover but can be highly variable in cover type; from ponderosa pine to hemlock (Montana Fish, Wildlife, and Parks 2009). Because they respire through their skin, the most important habitat component for the Coeur d'Alene salamander is moisture and humidity (IDFG 2005). On the project site, other types of salamanders would be located in perpetually wet areas, such as a seep, spring, creek, or waterfall spray zone.

The bat species in Table 3.2.7a are habitat specialists because they require roosting and hibernating habitats that are very specific in their temperature and airflow requirements (Adams 2003). Often bat population sizes and demography, roosting sites, and life history requirements are not well known. This lack of knowledge leads most wildlife and land managers to take a more conservative approach when it comes to actions that may impact these bat species or their habitats. There are 9 known mines in the project area, some of which have multiple adits. Other unknown shafts may exist on the site and may

be used by bats as day roosts, night roosts, hibernaculums (hibernating areas), or maternity roosts. Some species that use snags, loose bark, cavities, or foliage for roosting may also be present on the site. California myotis (myotis is a type of bat) prefer dry conifer sites, and they may use this site for foraging. They may also roost under loose tree bark (Adams 2003). The fringed myotis, which is relatively rare in north Idaho, is most likely to be found in low elevation ponderosa pine. Little is known about its roosting habitat requirements, but snags are one likely source in spring, summer, and early fall (Adams 2003). Townsend's big eared bat may use this site for foraging and roosting. Man-made structures may be used during the summer months as well (Adams 2003). The long-legged myotis and long-eared myotis are both forest dwelling bats that use snags, caves, mines, and sometimes structures as roosts (Adams 2003). This site may provide both foraging and roosting habitat for these two species.

Migratory Birds

A variety of forest stands on the project site provide foraging and nesting habitat for numerous neo-tropical migrants in spring and summer and resident birds throughout the year. Western tanager, Swainson's thrush, pine siskin, MacGillivray's warbler, orange crowned warbler, evening grosbeak, Hammond's flycatcher, red-breasted nuthatch, black-capped chickadee, pileated woodpecker, all three chickadee species, Chipping sparrow, and Townsend's warbler were documented during one site visit. A comprehensive breeding bird survey would likely reveal use by many more migratory bird species.

Migratory birds in the project area use a variety of habitat types for nesting and foraging. These sites include mixed coniferous forests, the shrubby forest understory, sunny forest openings with grasses and shrubs. These birds may nest in coniferous trees, from near to ground level up to the highest branches. They may be secondary cavity nesters, or nest on the ground. While many migratory bird species may be found on the project site, this analysis will focus on those species of particular concern, including BLM Special Status migratory birds, Idaho Fish and Game Species of Greatest Conservation Need, and Partners in Flight High Priority Species.

Other Wildlife

Sign of elk, moose, deer and black bear were found throughout the project area. These species are generalists and can be found in a wide array of vegetative communities from brushy clear cuts, to dense forests with little understory. Rocky Mountain elk prefer habitat that is composed of 60% forage and 40% cover (Thomas 1979). Areas with high canopy cover and little forest understory would not be considered productive foraging areas, but they are valuable as security areas and thermal cover areas during winter months. (Peek et. al 1982). South-facing slopes with vigorous brush fields and nearby escape cover, provide vital winter range for elk, while high elevation brush fields provide equally important transition range providing nutrition that elk need to improve their body condition prior to winter (Innes 2011). While the north side of the Interstate has greater forage availability, it lacks cover in many places. Peek et. al (1982) found that elk tend to

use forage areas within 1200 feet of cover. As a result, much of the copious forage available north of the Interstate is less valuable because of the lack of cover provided within and around brush fields. A simple analysis of forage and cover availability using ArcMap indicates that the larger landscape north of the Interstate currently provides roughly 38% cover (see Map K). As mentioned earlier, the BLM parcels on the north side provide a good portion of the cover available to ungulates in this area. Conversely, the south side has an abundance of thermal and security cover, but lacks productive forage in many areas. A simple aerial photo analysis of the south side of the Interstate indicates consists of around 26% foraging habitat (see Map L).

This project site also provides necessary habitat components for wolves, mountain lion, bear, grouse, wild turkey, bobcat, and numerous small mammal species. All of these species take advantage of many vegetation communities and their presence is largely influenced by the presence of humans. Areas with significant human disturbance are less likely to be used by many wildlife species (Steidl and Powell 2006).

Direct and Indirect Effects of Alternatives

Proposed Action

The following table indicates the *medium to long term effects* of the project on Special Status Species. For the purposes of this analysis, medium to long term is defined as from 2-30 years after project implementation.

Table 3.2.7b: Medium to long term effects of the Proposed Action on Special Status Species in the project area.

Species	Positive Effect	Neutral or No Effect	Negative Effect
Merlin*		X	
Northern Goshawk*	X		X
Northern pygmy owl*		X	
Flammulated owl	X		
Dusky Grouse*			X
American three-toed woodpecker*		X	
Black-backed woodpecker*		X	
Red-naped sapsucker*	X		
Cordilleran flycatcher*		X	
Olive-sided flycatcher*	X		
Hammond's Flycatcher			X
Cassin's finch*		X	
Brown Creeper[M]	X		
Calliope Hummingbird[M]	X		
Black-chinned Humminbird		X	
American Dipper[M]		X	
MacGillivray's Warbler[M]	X		
Townsend's Warbler[M]			X
Varied Thrush[M]			X
Western Tanager[M]		X	
Yellow Warbler[M]	X		
Ruffed Grouse[M]		X	

Species	Positive Effect	Neutral or No Effect	Negative Effect
Gray wolf**		X	
Wolverine**			X
Fisher*			X
Canada lynx**		X	
Fringed Myotis*		X	
Townsend's big-eared bat*		X	
Long-eared myotis*		X	
California myotis*		X	
Long-legged myotis*		X	
Western small-footed myotis*		X	
Pygmy shrew*		X	
Red-tailed chipmunk*		X	
Common garter snake*		X	
Northern alligator lizard*		X	
Coeur d' Alene Salamander*		X	
Idaho giant salamander*		X	

** Threatened, Endangered, Proposed, or Candidate Species, *Idaho Species of Greatest Conservation Need, [M] High Priority Partners in Flight Migratory Bird Species

Discussion of the medium to long term effects and short term impacts of project implementation are described in more detail below.

Threatened and Endangered Species

It is possible that Canada lynx, grizzly bear, or wolverine may pass through or temporarily use the site, but it is not likely they would inhabit the site with any regularity. Thinning and burning may promote colonization of an area by snowshoe hare, the primary prey of Canada lynx, or may eliminate them from the area depending on the timing of the action. If the site is already colonized by hares then these actions would be detrimental to lynx foraging areas, but if they are not yet in the area and the stand is greater than 30-40 years old, thinning and burning my make the habitat more agreeable to hares in the long term (10-15 years post implementation) (Ruggerio 1994).

If individual animals pass through the area at the time of implementation, they would likely be disturbed enough to leave the project site. This is highly unlikely, but if it did occur, it would not result in any significant or long lasting impact to the animal.

Opening the forest canopy, particularly on the south side of Interstate 90 is likely to result in more vigorous growth of the understory brush, grasses, and forbs. This should have a beneficial effect on big game by providing higher quality foraging areas than those that now exist on the site. Because grizzly bears take big game animals as prey items, this would be a beneficial, indirect effect of implementation of the proposed action. Opening the canopy of the north side of the Interstate will not be beneficial to any listed species. But they are unlikely to use this site currently. Therefore the proposed project will simply maintain this site as marginal, if not unsuitable, habitat for grizzly bear and Canada lynx. This site is unsuitable and will remain so, for woodland caribou.

The high density of existing roads and the consistent use by people for recreation and resource extraction make the habitat in project area and vicinity marginal at best for wolverine. If a wolverine was present during project implementation, it is likely the individual(s) would move away from the disturbance and any effects to the animal would be of very short duration and low to moderate intensity. Because there is no denning habitat within the project area, no impacts are expected. Indirect effects to wolverine are largely related to foraging and dispersal habitat quality. While a net reduction in road density is predicted, the effective reduction in human activity on roads will be determined by how effective the proposed closures are. Because there are existing ATV trails in both the north and south portions of the project area, continued authorized and unauthorized use of the road system is likely. This, in conjunction with substantial tree removal, will result in further reduction of already marginal habitat for wolverine.

Other Special Status Species

Effects on BLM, IDFG and Partners in Flight Special Status Species will vary throughout the project area. Where one species may be negatively affected by forest canopy reduction, another species may benefit. For example, aggressive tree removal negatively affects varied thrush, Townsend's warbler, and Hammond's flycatcher (Poole 2005). However olive-sided flycatcher, yellow warbler, and MacGillivray's warbler will benefit from tree removal once the shrub community responds to increased sunlight and decreased competition with trees (Poole 2005). Opening the canopy should benefit existing hardwood trees like birch and aspen. This will benefit red-naped sapsucker, as well as elk, goshawk, and flammulated owl (Poole 2005).

Removal of dead and dying trees will have short term negative impacts on cavity nesters, woodpeckers that use these insect infested trees as a food source, and bats that use the snags for roosting. However, retention of snags as proposed should provide enough cavity availability to accommodate primary and secondary cavity users. In addition, mortality of trees due to root rot, insects, and disease will ensure a continuous supply of dead and dying trees for cavity dependent wildlife. Minimizing snags that must be cut because of safety, and minimizing post project loss of snags due to blow down, is especially critical on the north side of the project area where there is less forest cover available on private lands. Short-term negative impacts to cavity dependent wildlife would occur at the time of harvest- when birds and bats may be using the cavities for nesting or roosting. Prohibiting logging between March and mid-July should mitigate some of the losses for resident and migratory birds, as many species will have had at least one nesting attempt by that time. In the medium to long term, snag availability and the recruitment of new snags on the site should be sufficient to accommodate the demand by cavity users.

Negative impacts to the northern goshawk, dusky grouse, and fisher can be expected in portions of the project area. Northern goshawk and dusky grouse prefer interior dense forests for nesting (Moser 2007, Poole 2005). Goshawks nest in closed canopy forests on moderate slopes (Moser 2007). However, Moser (2007) found timber harvest did not affect territory re-occupancy post timber harvest, as long as more than 39% of the 420

acre territory contained potential nesting habitat. The north side of the Interstate is currently low suitability for goshawk nesting habitat. However the south side of the project area holds promise for goshawk use. Tree removal in this area is more likely to negatively affect goshawk nesting habitat. However, goshawk will receive some benefit from new forest openings that can be utilized for hunting (Poole 2005). Great gray owls also prefer dense forest stands for nesting (Poole 2005). Tree removal on the south side of the project area, where this species is more likely to be found, would reduce nesting habitat quality. But like the northern goshawk, great gray owls also prefer to hunt in open forests, or even forest openings and meadows (Poole 2005). So some areas of the project will become more suitable as hunting areas for this diurnal boreal forest owl.

Fisher prefer older growth forest stands where rodents and birds are abundant (Ruggerio et. al 1994). Many portions of the north side of the project area are likely unsuitable for fisher. But the south side parcels would likely be suitable for fisher use. Tree removal and the reduction of downed woody debris will reduce habitat suitability for fisher (Ruggerio et. al 1994).

In the short term, bats like the myotis species listed in Table 3.2.7b that use dead or dying trees as roosting sites will be negatively affected during implementation of the project. Mortality is likely for those roosting in a harvested tree. Some bats may escape as the tree is falling. Over the medium to long term, enough snags will be retained and sufficient recruitment of new snags resulting from insects and disease will provide roosting habitat needed to support bat populations in the project area.

Most negative impacts to aquatic species like the Coeur d'Alene salamander, tailed-frog, and Idaho giant salamander would be avoided by stream buffers and road construction standards. Replacement of culverts and road closures may result in water quality improvements in some portions of the project area. If new and existing roads are not properly constructed or maintained, then erosion into streams may increase as a result of logging activity and public use. This would decrease habitat quality for Idaho giant salamander and tailed-frogs that utilize high-gradient, cold, low- sediment stream habitats. As proposed, the project should have little to no impact on these species.

Northern alligator lizards will be vulnerable to the direct effects of project implementation. Mortality could result from being crushed during logging activities, fire line construction, or broadcast and pile burning. It is possible that individuals may not be able to escape and will die as a result. Habitat effects should not be significant as these lizards prefer open rocky talus slopes and exposed soil areas which should remain essentially unaffected by the proposed project. In fact, these areas may increase as the forest canopy is opened and the understory temporarily removed via broadcast burning and brush field burning. Until recovery of shrub and other understory species, the project may create more suitable habitat in the short term but will not certainly not reduce habitat in the long term.

Other Wildlife Species

Raptors

Raptor species, such as merlin and great-horned owl that are nesting during implementation may be disturbed by logging activities. Actions 2.3.1 and 2.3.2 in the Resource Management Plan require that forest structure and activities around any active raptor nests in the project area be buffered by 100 yards. This will reduce disturbance and habitat impacts until nesting is completed. However, if active nests are not found prior to implementation, eggs and nestlings may be lost if the nest tree is cut down. This likelihood can be further reduced by postponing logging as long as possible during the nesting season throughout the project area.

Big Game

Opening up the canopy and reducing tree density would reduce thermal cover and security cover for big game. At the same time this would create more productive foraging areas for deer, elk, and moose. Because the north side of the project area is lacking in cover due to heavy private lands timber harvest, tree removal is not likely to benefit big game in this forage rich environment. The proposed selective thinning will take mostly small diameter trees, and leave large healthy trees. Some level of canopy cover will remain and recovery of brush in the understory will not eliminate hiding cover entirely. But there will be a loss in thermal cover for big game animals, which is already in short supply on the north side. Productive winter range here has a reduced value since hiding and thermal cover is in short supply.

In general, elk avoid roads with human activity and avoid disturbances created by active logging operations (Skovlin et. al 2002). Elk avoid areas near roads open to motorized vehicles across a variety of seasons, landscape conditions, and geographic regions. Elk generally avoid habitat adjacent to roads, particularly during calving and hunting seasons and during the rut. Any reduction of open road density in this high density area will be a benefit to big game animals, elk in particular. Ensuring that new and replacement road closures are effective, and the decommissioning of one road should improve security of elk and other big game species during the hunting, calving, and winter seasons.

Habitat improvements and reduction in disturbance to ungulates should indirectly benefit their predators if increases in ungulate numbers are realized. Wolves and other predators of big game such as mountain lion and black bears may find increased numbers of prey or a better hunting environment where cover has been reduced if prey stay in the area and use newly created and rejuvenated forage sites.

Prescribed Burning and Fuels Reduction Treatments

Direct Effects

Activities associated with fuels reduction would include slashing brush and trees smaller than six inches in diameter, constructing fire lines, and prescribed pile burning and broadcast burning. The most significant and direct impact of fuels reduction will be to nesting migratory birds and the northern alligator lizard. If slashing, fire line construction, and burning occur during the nesting season, many birds will lose their nests, eggs, and nestlings. Delaying these activities as much as possible would best protect resident and migratory birds, game birds, and Special Status Species. There are numerous migratory bird species that are not Special Status and would also be impacted. Examples include spotted towhee, ruffed grouse, song sparrow, chipping sparrow, yellow warbler, cedar waxwing, and gray catbird (Kaufman 1996).

Delaying these activities as much as possible would best protect resident and migratory birds, game birds, and Special Status Species. Conducting the above described activities before April 1st and after July 15th (ideally August 1st) would provide the best opportunity for these birds to complete their nesting attempts successfully.

While northern alligator lizards might be able to escape an area during fire line construction, it is unlikely that they would escape broadcast burning or brush field burning. It is reasonable to assume that any lizards onsite during a burning project would be lost to the fire. However, in such a limited area, it is not likely that losses would amount to a significant effect on the north Idaho or area population.

Indirect Effects

On the south side of the Interstate, where forest cover is abundant and forage is lacking, fuels reductions and burning would benefit many wildlife species that prefer brush fields and open forest canopy. Ungulates in particular, will enjoy many benefits from prescribed burning of old decadent brush fields and broadcast burning of the forest understory where canopy cover has been reduced via the proposed silviculture treatments (Innes 2011). Existing brush will have higher forage value once burned. Where the understory has not been vigorous because of shade, burning will induce vigorous growth of the shrub, forb, and grass understory (Innes 2011 and Hooker and Tisdale 1974).

Species that prefer more closed canopy conditions will be negatively affected by canopy reduction and the ensuing broadcast burn. These species would include those addressed above in the discussion of silviculture treatment effects on wildlife. Examples include dusky grouse, fisher, and varied thrush.

On the north side of the road, brush field burning will still result in a rejuvenated and more nutritive forage source for many wildlife species as outlined above. However, the value of the benefits will be somewhat lessened by the over-abundance of forage availability in the area.

No Action

Endangered, Threatened, or Candidate Species

Canada lynx, grizzly bear, and woodland caribou have not been documented in or near the project area. Suitable habitat for woodland caribou is not located in or near the project area. Woodland caribou require high elevation old growth forest and a sufficiently developed lichen community for winter survival (Servheen and Lyon 1989). This area does not hold potential for providing habitat for this species because the elevation and the vegetation community will never progress towards suitable habitat. There will be no effect on this species regardless of which alternative is selected.

Canada lynx are highly associated with both late and early succession forest stands. Early succession, densely stocked stands provide foraging habitat, while mature forest stands act as potential denning habitat (IDFG 2005, Ruggerio 1994). Thinning and burning may promote colonization of an area by snowshoe hare, the primary prey of Canada lynx, or may eliminate them from the area depending on the timing of the action. If the site is already colonized by hares then these actions would be detrimental to lynx foraging areas, but if they are not yet in the area and the stand is greater than 30-40 years old, thinning and burning my make the habitat more agreeable to hares in the long term (10-15 years post implementation) (Ruggerio 1994). Selection of the "no action" alternative would reduce any possibility of temporary disturbance to lynx during implementation. Likewise there would be no changes (positive or negative) in the existing habitat, which appears to be unoccupied.

Of the three listed species, grizzly bear would be the most likely to use or pass through the project area. However, the current project area is less than suitable habitat for grizzlies because of the high level of human presence, development, and disturbance.

The "no action" alternative would eliminate the possibility of any direct effects to grizzly bears in the unlikely event one was in the project area. There would be no additional road building, but neither would the proposed road closure be implemented. If no forest is thinned on the south side of the project area, and no brush fields are burned, ungulates will not benefit from more productive forage on the landscape and grizzly bears would not indirectly benefit from increased ungulate use and possibly increased ungulate numbers. Conversely, not thinning on the north side of the project area and conducting no prescribed burning would not have the negative and positive effects, respectively, that one could expect for ungulates in the area.

Other Special Status Species

Mortality to wildlife due to machinery and tree falling, as well as disturbance from human activity, would not occur under the No Action alternative.

If the No Action alternative is selected, an increase in the number of dead and dying trees is expected. As a result, the likelihood of a stand-replacing fire would also increase. Those wildlife species that require snags, prefer more dense forest stands, and rely on forest insects would be positively affected if this alternative was selected. For example,

black-backed woodpeckers would have a higher density of insect infested trees to forage in, as well as numerous available cavities to choose from. However, this benefit would be negated in the long term for many of these species if a stand- replacing fire were to occur.

On the north side of the Interstate, where this is less forest cover available at the landscape scale, "no action" would most likely be a preferred alternative for those species requiring more forest cover where it is already lacking. Examples include northern goshawk, dusky grouse, great grey owl, Townsend's warbler, and fisher. Conversely, on the south side of the Interstate, a "no action" alternative would continue to support dense forest stands and those species that prefer or depend on them.

Special Status Species that prefer more open stands with a brush understory, brush fields, or the presence of hardwoods would not benefit from selection of the "no action" alternative. Examples include, Olive-sided flycatcher, red-naped sapsucker, flammulated owl, MacGillivray's warbler, and yellow warbler. Some species, such as northern goshawk and great-gray owl would be both negatively and positively affected by no action. On the one hand, they prefer more dense forests for nesting. But they also use forest openings and less dense forest for hunting.

Table 3.2.7c below, illustrates the projected medium to long-term effects on the special status species that would occur if no action is taken. This analysis does not assume that a stand-replacing fire would eventually occur.

Table 3.2.7c

Species	Positive Effect	Neutral or No Effect	Negative Effect
Merlin*		X	
Northern Goshawk*	X		X
Northern pygmy owl*		X	
Flammulated owl			X
Dusky Grouse*	X		
American three-toed woodpecker*		X	
Black-backed woodpecker*		X	
Red-naped sapsucker*			X
Cordilleran flycatcher*		X	
Olive-sided flycatcher*			X
Hammond's Flycatcher	X		
Cassin's finch*		X	
Brown Creeper[M]		X	
Calliope Hummingbird[M]			X
Black-chinned Humminbird		X	
American Dipper[M]		X	
MacGillivray's Warbler[M]			X
Townsend's Warbler[M]	X		
Varied Thrush[M]	X		
Western Tanager[M]		X	
Yellow Warbler[M]			X
Ruffed Grouse[M]		X	

Species	Positive Effect	Neutral or No Effect	Negative Effect
Gray wolf**		X	
Wolverine**	X		
Fisher*	X		
Canada lynx**		X	
Fringed Myotis*		X	
Townsend's big-eared bat*		X	
Long-eared myotis*		X	
California myotis*		X	
Long-legged myotis*		X	
Western small-footed myotis*		X	
Pygmy shrew*		X	
Red-tailed chipmunk*		X	
Common garter snake*		X	
Northern alligator lizard*		X	
Coeur d' Alene Salamander*		X	
Idaho giant salamander*		X	

*Special Status Species, ** Threatened, Endangered, Proposed, or Candidate Species

If the "no action" alternative is selected, none of the negative or positive effects described above would influence ungulate habitat. The north side of the project area would maintain what little cover it has until dying trees fall or burn and open the canopy. Brush fields would not be invigorated and the nutritional value of the forage would remain the same. There would be no increase in ungulate forage on the south side of the project area where it is lacking.

Cumulative Impacts

The cumulative impacts analysis area for wildlife is the same as that area used to assess effects to ungulates (see Maps K and L). This area encompasses 1,136 square miles and was selected to incorporate the large ranges of big game species and carnivores, without being so large as to dwarf potential impacts to species with very small ranges like song birds, reptiles and amphibians.

The north side of the project area and vicinity represent a highly disturbed and significantly modified landscape. Aggressive logging on private lands, mining activities, and the human activity associated with the town of Mullan have resulted in significant disturbance to and modification of habitat. Historic and continuing activities in the action area that have impacted wildlife populations include logging and forest health projects, wildfires, forest pathogens, prescribed fires, mining, recreation (consumptive and non consumptive), road and trail building, rural and urban development along the Interstate near the town of Mullan. All of these activities have the potential to negatively affect wildlife species. Some of these actions have positively benefited wildlife species.

Mining activities increase human access and disturbance in some areas. Logging and forest health projects temporarily increase disturbance and may permanently increase access to hunters and recreationists. These projects have the potential to both positively and/or negatively affect wildlife species depending on their habitat requirements. For

example, fisher would be negatively impacted by aggressive tree cutting in a dense forest stand, whereas big game animals and olive-sided flycatchers would benefit from opening the forest canopy.

Reasonably foreseeable actions in the analysis area include possible timber harvest and on the south side of the project area where merchantable timber remains, forest health projects, and mining activities. Mining activities can also be expected to continue within the area at the levels currently occurring. Consumptive and non-consumptive recreation can be expected to continue at similar levels occurring today and a low level of human development is likely to continue in the Mullan area and the Interstate 90 corridor. Forest insects and disease will continue to cause tree mortality in the analysis area. If no action is taken, these trees will eventually fall and regeneration of early seral species would be expected.

In general, the loss of interior forested habitat is a concern for species like fisher and boreal owl. On the north side where much of the forest cover has been removed on private lands, this is particularly disconcerting, but moot at this point. The south side, however, still contains dense forest stands that provide preferred habitat for some of these interior species. However, because this project proposes to remove dead and dying trees that will eventually reduce forest cover as they fall and decay, much of the current cover will likely be lost to time or fire as dying trees fall. Additionally, if a catastrophic fire is avoided because of the reduction of dead and dying fuel, the benefit of the project should outweigh the reduction in cover. The reduction in cover will be far less than a reduction seen after a forest fire. If a reduction of pathogens is realized as a part of the project, the long term benefit to many wildlife species will be greater than if the current tree losses to insects and disease continue and the fire risk continues to increase. Species that prefer a more open forest stand are likely to increase in the analysis area because of continued forest projects that reduce the canopy and the eventual loss of trees due to insects and disease.

The small scale of the project, coupled with the already disturbed landscape to the north and the relatively undisturbed landscape to the south should have no significant effect on Special Status wildlife populations in or around the project area. In fact some species such as olive-sided flycatcher will benefit and find more suitable habitat on the southern portion of the analysis area if the proposed action is implemented. No reasonably foreseeable actions should have significant impacts on interior forest species that may be present on the south side of the project area. Proposed treatments are not large enough to have significant effects on populations of Special Status Species like fisher or dusky grouse. Impacts of the above activities, paired with the proposed project are not expected to contribute to cumulative effects on any Special Status wildlife species populations.

3.2.8 Fisheries, Including Special Status Fish Species

Affected Environment

The project area is located in the South Fork Coeur d'Alene River (South Fork) watershed. Streams in the project area include Mill Creek, Gold Hunter Gulch, Deadman Gulch and Gentle Annie Gulch which flow into the South Fork from the north, and Boulder Creek which flows into the South Fork from the south. The South Fork and many of its tributaries contain westslope cutthroat trout, *Oncorhynchus clarki lewisi*, a BLM sensitive species. In the summer of 2006, the BLM and Idaho Department of Fish and Game conducted a snorkel survey of the South Fork Coeur d'Alene River from the town of Wallace downstream to the mouth. In addition to westslope cutthroat trout, rainbow trout, O. mykiss, brook trout, *Salvelinus fontinalis*, and mountain whitefish, *Prosopium williamsoni*, were observed. Brook trout are an introduced species, and the rainbow trout are likely to be introduced also, given that they have been stocked in the past. Other native species known to inhabit the South Fork Coeur d'Alene River and tributaries include shorthead sculpin, *Cottus confuses*, and torrent sculpin, *C. rhotheus*. Bull trout, *S. confluentus*, are found in parts of the Coeur d'Alene River and Lake Coeur d'Alene, but are no longer known to inhabit the South Fork Coeur d'Alene River or any of its tributaries. No part of the South Fork watershed is designated critical habitat for bull trout. No bull trout were detected during the 2006 snorkel survey of the South Fork Coeur d'Alene River.

According to the Streamnet database, Mill Creek, Gentle Annie Gulch, and Boulder Creek all contain westslope cutthroat trout. Westslope cutthroat trout spawn mainly in small tributaries from March through July, when water temperatures warm to about 50°F. Westslope cutthroat trout stocks in the Coeur d'Alene Basin exist at a fraction of historic levels due to habitat degradation from activities such as mining, logging, development, and highway construction. Fishing pressure and introduction of non-native fish species has also contributed to reducing cutthroat numbers (USDI Fish and Wildlife Service 1999; DuPont and Horner 2003). Due to low numbers, the current fishing regulations for westslope cutthroat trout are catch-and-release in the entire Spokane River drainage, which includes the Spokane River above Post Falls Dam, Coeur d'Alene Lake and all tributary streams (Idaho Fish and Game website).

Direct and Indirect Effects of Alternatives

Proposed Action

The analysis area for fisheries and aquatic habitat is the Mill Creek, Gold Hunter Gulch, Deadman Gulch, Gentle Annie Gulch and Boulder Creek watersheds. Fisheries discussions include the South Fork Coeur d'Alene River for context; however impacts would not be expected outside the Placer and Printer Creek watersheds.

The primary impacts from timber and fuels management activities and associated roads on fish habitat come from an increase in sediment and temperature in streams, and a decrease in the amount of large downed wood in the stream channel and adjacent riparian floodplain (Chamberlain et al. 1991; Everest et al. 1985). Elevated water temperature can cause physiological stress in fish, reducing overall health and survival. Excess sediment

in streams reduces spawning and pool habitat, and may decrease food supply by altering the aquatic macroinvertebrate composition (Chamberlain et al. 1991; Everest et al.1985).

Increase in stream temperature is likely to occur if trees that provide shade to the stream channel are removed. Roads can cause an increase in sediment input to streams (Furniss et al. 1991), as can soil disturbance caused by yarding and skidding of logs (Chamberlain et al. 1991). Sediment input to streams can also be caused by removal of trees adjacent to the stream channel, as this can cause bank instability and removes the ability of the riparian area to stop the sediment before it enters the stream (Chamberlain et al. 1991; Everest et al. 1985). Large wood is often recruited to the stream channel from the adjacent riparian and upslope areas, thus removing adjacent trees would reduce future inputs of large wood (Murphy and Koski 1989; May and Gresswell 2003).

Wildfire, prescribed fire and other types of fuels treatments can also impact fish and aquatic habitat. Fires can increase erosion and sediment input to streams, alter water chemistry, and cause increases in water temperature (Benda et al. 2003; Rieman et al. 2003; Wondzell and King 2003). Effects can even be beneficial, such as increase in large wood input to the stream channel (Bisson et al. 2003), and even a pulsed sediment input to a stream may help increase aquatic habitat complexity (Benda et al. 2003). The extent of impacts from fires can vary greatly depending on fire patchiness and intensity, the preexisting conditions of the watershed and riparian communities, potential for recolonization of fish and other aquatic fauna, and the nature of fire suppression and post fire management (Rieman et al. 2003; Dunham et al. 2003; Gresswell 1999). Mechanical fuels treatments would have similar impact to those caused by timber harvest activities.

Riparian Conservation Areas (RCAs) are lands that are likely to affect the condition and/or function of aquatic habitat, and are usually adjacent to streams, ponds, lakes and wetlands. In RCAs, riparian-dependent resources receive primary emphasis, and management activities are subject to specific guidelines. The RCAs within the project area are defined as follows, in accordance with the Coeur d'Alene Native Fish Strategy in the CDA RMP: Mill Creek, Gentle Annie Gulch, and Boulder Creek would have a RCA of at least 300 feet on either side of and including the stream channel, and Gold Hunter Gulch and Deadman Gulch would have a RCA of 150 feet on either side of and including the stream channel.

Proposed permanent roads would be located in areas where sediment from road construction and use would not enter intermittent or permanent streams. Roads would be designed so that any point source for sediment is minimized. Roads would be constructed when the ground is dry and low water crossing would be installed when constructing the road. Work on the project area would be accomplished with care to ensure that no oil, diesel, gas or other harmful materials foul the soil or enter any stream. Work on existing roads to prevent erosion and culvert replacements will help improve fish passage and reduce sediment input to streams. Proposed road closures would result in an overall reduction in road density within the project area, which would benefit westslope cutthroat trout and other fish and aquatic habitat.

The potential for sediment to reach any streams from all activities other than culvert replacement would be negligible due to very limited activities occurring with the RCAs. The culvert replacements in Mill Creek are expected to cause some sediment to enter the stream channel and create some amount of turbidity within the water column. However, culverts would be installed when the stream is at low flow, and a temporary stream by-pass would be required to protect water quality. Any effect from sediment would be short-term and the long-term benefits of replacing the stream crossings to improve fish passage and better accommodate water flows would outweigh any short-term impacts.

Other than the culvert replacements, no activities would take place within RCAs except some handwork to reduce fuels. Little to no reduction in shading of the stream would occur; thus no impact on stream temperature is anticipated. No sediment movement is anticipated from the fuels reduction work inside RCAs. Timber harvest and mechanical treatment of fuels would occur only outside RCAs. If prescribed fire is used to treat fuels, the areas targeted for treatment would be outside of RCA. It is possible that fire may burn inside the RCA; however the relatively low intensity of a prescribed burn would limit the potential for negative impacts. The potential for sediment movement to the streams and impacts to fish, including westslope cutthroat trout and aquatic habitat is negligible.

Past activities within these watersheds have mainly been timber harvest on private, state, Forest Service, and BLM lands. Other past actions include mining, road building, tree planting, and recreation including OHV use. Impacts from the earliest activities were likely to have had the most impact because streams and fish habitat were often not taken into consideration. Even if fisheries habitat was considered, the impacts of roads, vegetation removal and other aspects of timber harvest were not fully understood. In the 1970s, guidelines on forest practices began to be used, including streamside buffers, and these guidelines have continued to evolve (Chamberlin et al 1991). Current timber management activities are implemented to minimizes impacts to fish and aquatic habitats, though rules vary among land ownerships with some being more protective than others. In general, the oldest of the past activities probably would have had the greatest impact on fish and aquatic habitat, but the streams have also had several decades to recover from these early impacts.

Ongoing and future actions in the analysis area include timber harvest, recreation including OHV use, road maintenance, and fuels management efforts. Future timber harvest and fuels management activities include the current BLM proposal and activities on Forest Service, private and State land. The proposed BLM project has RCAs incorporated into the project design and will maintain the riparian area and ensure sediment movement into streams and impacts to fish or aquatic habitat are negligible. In addition, the stream crossing replacements and slight road density reduction will have long term benefits to the watershed. Any Forest Service projects would incorporate riparian buffers similar to the BLM RCAs and will likely also include aquatic habitat restoration components. If the proposed action is implemented, no long-term impacts are anticipated that would alter the viability of fish species or quality of aquatic habitat.

No Action

No timber harvest or fuels treatments would occur, therefore aquatic habitat conditions would remain in their current condition. Under this alternative there is a greater possibility of a large stand replacing fire occurring, which could have harmful effects to fish and aquatic habitat (impacts of fire are discussed above). If extreme impacts occurred to the watersheds either due to immediate direct effects of the fire (such as temperatures reaching lethal levels for fish), or indirect effects (erosion and high levels of sediment moving into the stream), it is possible that the fish population in Mill, Boulder and/or Gentle Annie Gulch creeks, including westslope cutthroat trout, would be reduced.

Cumulative Impacts

Past activities within these watersheds have mainly been timber harvest on private, state, Forest Service, and BLM lands. Other past actions include mining, road building, tree planting, and recreation including OHV use. Impacts from the earliest activities were likely to have had the most impact because streams and fish habitat were often not taken into consideration. Even if fisheries habitat was considered, the impacts of roads, vegetation removal and other aspects of timber harvest were not fully understood. In the 1970s, guidelines on forest practices began to be used, including streamside buffers, and these guidelines have continued to evolve to the present (Chamberlin et al 1991). Current timber management activities are implemented in a manner that minimizes impacts to fish and aquatic habitats, though rules vary among land ownerships with some being more protective than others. In general, the oldest of the past activities probably would have had the greatest impact on fish and aquatic habitat, but the streams have also had a relatively long time to recover from these early impacts.

No action would occur on BLM land, and the recent past and ongoing Forest Service projects incorporate RCAs similar to those on BLM land, which will maintain the riparian areas and ensure sediment movement into streams and impacts to fish or aquatic habitat are negligible. If the action alternative is not implemented, potential adverse impacts would be avoided; however no long-term impacts that would alter the viability of fish species or quality of aquatic habitat were anticipated. The beneficial effects of the stream crossing replacements on Mill Creek and the slight reduction in road density also would not occur. The possibility of a large stand replacing fire occurring is increased under this alternative, which could affect both fish and aquatic habitat, with the possibility of at least some of the fish being eliminated. The fish species occurring within the project area, including westslope cutthroat trout, are also found in the South Fork Coeur d'Alene River and its other tributaries. Westslope cutthroat trout are found throughout much of northern and central Idaho and western Montana. Reduction or elimination of the native fish populations within the project area would not impact these species throughout their range.

3.2.9 Vegetation/Special Status Plants

Affected Environment

Threatened and Endangered Species

The Idaho Natural Heritage Program rare species database was searched for known occurrences of rare plants in the vicinity of Mullan, Idaho, and fieldwork has been done in the project area.

No water howellia (threatened) individuals, populations, or potential habitat occur in the project area. Although suitable habitat for Spalding's catchfly (threatened) occurs in a few of the south-facing, grass- or shrub-dominated areas, site inventories found no individuals or populations.

BLM Sensitive Species

Bank monkeyflower is restricted to a very specific set of habitat parameters. Plants typically occur in open pockets of moist, exposed mineral soil created by natural disturbances such as erosion or big-game activity, or human-created disturbances such as road cuts. This species is almost exclusively found on southern exposures (southeast, south, southwest) with steep slopes (generally > 60%) in microhabitats that hold moisture during the spring. Most bank monkeyflower populations in northern Idaho occur in Douglas-fir/Idaho fescue, Douglas-fir/ninebark, and grand fir/ninebark habitat types (Cooper et al.1991).

Bank monkeyflower populations and potential habitat are present in all prescribed burn units north of I-90. This species is a spring-flowering annual, with the number of flowering individuals in any particular growing season highly correlated with annual weather conditions, in this case the amount of spring moisture. Flowering begins in late May or early June and continues to mid-July, with plants reproducing solely by seeds. It is suspected that pollination is by ants, which may be attracted to the sweet, musky odor of the glandular hairs covering the plant (Lorain 1991).

No clustered lady's-slipper, Constance's bittercress, deerfern, Idaho barren strawberry, rare moonworts, nail lichen, pine broomrape, or short-spored jelly lichen (all BLM Sensitive) individuals or populations were found during inventory of the project area, though potential habitat for these species is present.

Direct and Indirect Effects of Alternatives

Proposed Action

Threatened and Endangered Species

The proposed action would have no effect on water howellia or its habitat, nor any direct effect on Spalding's catchfly individuals or populations. A limited amount of suitable habitat for Spalding's catchfly would be burned, and if the fire remains low in intensity, then the treatment likely would be beneficial to this plant community by removing plant litter accumulations and stimulating new growth of native species. However, weeds such as spotted knapweed (noxious), Dalmatian toadflax (noxious), hound's-tongue (noxious), common St. John's-wort, and cheatgrass are well-established in or very near most of the burn units and tend to be quite competitive following disturbance. These introduced species degrade native plant communities (Abella and MacDonald, 2000; BLM 2007; USDA Forest Service 2009), including suitable habitat for a listed species.

BLM Sensitive Species

According to Lorain (1991, 1992), both natural and human-caused factors play a role in threatening and/or eliminating populations of bank monkeyflower. Natural threats include large-scale erosion and the process of natural succession. A certain amount of erosion or soil disturbance from animal movement appears to be necessary to create patches of exposed mineral soil; however, large-scale erosion could eliminate populations. The process of natural succession can increase shading and result in soil stabilization, factors that do not favor the growth of this species. Since the proposed prescribed burning would reset ecological succession and reduce shading, it would benefit shade-intolerant plant species such as bank monkeyflower, which may have less competition for sunlight, water, nutrients, or pollinators. Burning would also stimulate new shrub growth that would attract wildlife and increase their use of the units, which would maintain or create habitat for bank monkeyflower along game trails. Unfortunately, wildlife also have helped transport highly competitive weeds including spotted knapweed, Dalmatian toadflax, hounds tongue, common St. John's-wort and cheatgrass along the game trails from roads and ATV trails into existing monkeyflower populations or potential habitat.

In the project area, the primary human-caused threats to bank monkeyflower are introduction or spread of weeds by vehicles and ATVs via road and trail networks, and, if selected, subsequent chemical control measures following prescribed burns. The disappearance of many historical monkeyflower sites can be directly attributable to road construction and use followed by the invasion of exotic weeds (Caicco 1988; Lorain and Moseley 1989). The proposed road closure on the west side of Mill Creek would decrease motorized traffic and weed transport into an existing bank monkeyflower population. Chemical methods used to control weeds after burning may pose a further threat (Caicco 1987) because non-target vegetation such as bank monkeyflower may be injured or killed. Existing bio-control options may be useful on the specific weeds that are present; in fact, released insects were found in the project area during field work.

In conclusion, bank monkeyflower appears to tolerate and potentially benefit from certain natural or human-caused activities, including prescribed fire, which may create suitable habitat for future populations and help to disperse seed. While prescribed fire can be used as a management tool on some sites in an effort to restore historic fire regimes and promote desirable species, the disturbance created by fire may favor many invasive species. (USDA Forest Service 2009) Invasive vegetation and noxious weeds are highly

competitive and can often out-compete native vegetation, especially on recently disturbed sites. (BLM 2007) However, proposed post-burn monitoring and treatment may reduce the impacts of weedy species in the units, though no specific design features are currently proposed to protect bank monkeyflower from chemical control methods.

The proposed action would not affect clustered lady's-slipper, Constance's bittercress, deerfern, Idaho barren strawberry, rare moonworts, nail lichen, pine broomrape, or short-spored jelly lichen individuals or populations, though potential habitat for each of the BLM Sensitive species would be disturbed by the various treatments. Effects to potential habitat would vary according to individual species' ecological requirements. For example, certain moonwort species which need very shady growing conditions would not necessarily be benefitted by a project that "opens up" a forest stand. In contrast, clustered lady's-slipper may be able to survive a certain level of plant community canopy removal.

No Action

Threatened and Endangered Plant Species
Suitable grassland habitat for Spalding's catchfly would persist in the project area until plant succession introduced more shrub or tree canopy into areas capable of supporting these other plant lifeforms. Compared to the proposed action, however, this suitable habitat could be burned over by a more intense wildfire, which might negatively affect suitable habitat features such as species composition, primarily by opening even more areas to invasion and/or expansion by weedy species such as spotted knapweed or Dalmatian toadflax.

BLM Sensitive Species
At bank monkeyflower locations, plant succession would continue toward the potential natural community, where possible. Over a period of years, sites in the area capable of supporting more dense forest vegetation would become dominated by shade-tolerant species, which would not favor this particular species. A future disturbance such as timber harvest; wildfire; insect or disease outbreak; or weather event that creates openings in the vegetation would re-create conditions capable of supporting bank monkeyflower. Compared to the proposed action, existing populations or potential habitat could be burned over by a more intense wildfire, which might negatively affect this species' habitat requirements such as composition and structure, by opening more areas to weed invasion and/or expansion.

This alternative would have no direct effect on clustered lady's-slipper, Constance's bittercress, deerfern, Idaho barren strawberry, rare moonworts, nail lichen, pine broomrape, or short-spored jelly lichen individuals or populations. Potential habitat for each of these species would persist in the project area unless plant succession or another type of disturbance creates conditions unsuitable for species' survival. Compared to the proposed action, however, the potential habitat could be burned over by a more intense wildfire, which might negatively affect species' habitat requirements such as composition and structure, as well as open more areas to weed invasion and/or expansion.

Cumulative Impacts

Proposed Action
The analysis area is located north of I-90, from Grouse Gulch east to Gentle Annie Gulch, upslope to the South Fork Coeur d'Alene River and Canyon Creek drainage divide. A population of bank monkeyflower was found in Slaughterhouse Gulch on the west side of Mullan in 2003.

As summarized in Section 3.1.2, past land use practices and natural disturbances in the analysis area have influenced the composition, vertical structure, and density of existing plant communities. Invasive or seeded, introduced herbaceous species have established in the analysis area. Currently, various stages of ecological succession are present due to past disturbances.

Present activities and natural disturbances in the analysis area include road building, use, and maintenance; mining; fire activity; insect and disease outbreaks; and ATV trail development, use, and maintenance.

Reasonably foreseeable future actions and natural disturbances in the analysis area include road building, use, and maintenance; mining; fire activity; insect and disease outbreaks; ATV trail development, use, and maintenance.

Ongoing and future vegetation-disturbing activities in the analysis area would continue to promote a mosaic of plant communities in various stages of ecological succession, including early successional habitats favored by bank monkeyflower. Ecological succession would proceed where vegetation is left undisturbed and would influence vegetation species composition, vertical structure, and density. Plant communities that revert to earlier ecological succession stages due to disturbance such as timber harvest, insect infestation, or disease would begin the process of maturing all over again and include habitat characteristics favorable for bank monkeyflower. Ongoing and proposed activities that impact vegetation would open up sites favorable to weed invasion due to ground disturbance and/or reduction of tree canopy cover but may also favor bank monkeyflower. Where left untreated, though, weeds would continue to threaten this BLM Sensitive plant species.

The proposed action would burn approximately 143 of 1,275 acres of vegetation in the analysis area; therefore, this project is unlikely to contribute cumulative effects to bank monkeyflower or other special status plant species, due to the relatively small level of disturbance and its projected timing of implementation, when compared to the overall analysis area.

3.2.10 Invasive, Nonnative Species (Weeds)

Affected Environment

Invasive weeds threaten our public lands by outcompeting native vegetation and adversely affecting wildland plant and animal communities, damaging watersheds, and increasing soil erosion. Plant communities in the proposed action area have been affected by prior disturbances such as fire, timber harvesting, road building, mining activities, recreation activities, and firewood cutting.

Many weed species have invaded the proposed project area. Roads and ATV trails throughout the project area have populations of spotted knapweed (*Centaurea maculosa*), meadow hawkweed (*Hieracium pratense*), orange hawkweed (*Hieracium aurantium*), St. Johnswort (*Hypericum perforatum*), oxeye daisy (*Chyrysanthemum leucanthemum*), Canada thistle (*Cirsium arvense*), and bull thistle (*Cirsium vulgare*). Localized populations of common mullein (*Verbascum thapsis*), common tansy (*Tanacetum vulgare*), Dalmatian toadflax (*Linaria genistifolia*), and houndstongue (*Cynglossum officinale*) have been identified in the project area.

While the BLM has treated weed populations on roads and trails and successfully reduced these weed populations, some weeds have persisted and spread into forested areas. A major component of this weed spread results from weed populations on adjacent private lands. Private lands adjacent to the BLM land in the project area have been heavily logged. These areas are infested with populations of the weeds listed above and provide a continuing source of weed seed.

Direct and Indirect Effects of Alternatives

Proposed Action

Road construction, landing construction, helipad construction, and skid trails would disturb existing vegetation and soils. Weed seeds and plant parts may be transported along these disturbed areas by vehicles during construction, maintenance activities, and logging operations. Sources of weeds may be from existing project area weed populations and/or offsite weed populations, potentially introducing weed species new to the site.

Logging activities including tractor yarding, skylining, slash reduction, and prescribed burning would increase the risk of weed expansion into forest areas. These activities would remove existing vegetation, disturb soils, increase light to the forest floor, and potentially provide transport of weed seeds and plant parts. Weed species are often better adapted to colonizing newly disturbed areas than native species.

No Action

No management activities would result in current population of weeds continuing to expand along roads and ATV trails. In dry conifer forests weeds can expand from existing populations into forested areas often spread by wildlife. In wet warm conifer

areas, assuming little to no disturbance, expansion of weed populations into forested areas is unlikely due to low light levels reaching the forest floor.

No management activities in the project area would result in increased fuel loading and with it increased risk of severe fire. A severe fire would remove competing vegetation and subsequent soil exposure leaves a burned area primed for noxious weed invasion. Private lands adjacent to the project area are heavily infested with noxious weeds and would likely provide a weed seed source and increase the likelihood of weed establishment. The increased fuel loading and untreated weed populations combine to create a potential for weed infestation of burned areas following a fire event.

Cumulative Impacts

There are many factors in the analysis area that contribute to the spread of noxious weeds including: logging, transportation, wildlife, wildland fires, recreation and other uses.

Noxious weed control efforts in the project area would be conducted as part of the Inland Empire Cooperative Weed Management Area (IECWMA). These cooperators have noxious weed control responsibilities and interests on adjacent and co-mingled lands in the area. Uncontrolled weed populations in one jurisdiction greatly affect the ability of other land managers to control weeds on lands they administer. The IECWMA promotes an integrated weed management program throughout the area that includes public relations, education and training in the noxious weed arena, along with coordination of weed control efforts and methods, and sharing of resources.

Past events such as road-building and use; logging; mining; fire; and OHV activity have contributed to weed invasion on BLM and non-BLM lands. Where left untreated, these weeds may have persisted and continued to threaten native plant communities; although in areas where plant canopy has provided sufficiently shaded conditions, weeds may have not established or decreased in extent over time. Where effective treatment has occurred, weeds have been either eradicated or their spread into native vegetation has been curtailed. Ongoing and reasonably foreseeable actions on non-BLM land which would increase the threat of weed invasion into native plant communities include road-building and use; logging; fire; wildlife, and OHV activity.

The short term effects of the proposed action may result in increased weed establishment and spread in areas of ground disturbance. Over the long term, the reduction in threat of wildfire in the analysis area along with weed control activities undertaken by BLM on public lands would contribute positive cumulative effects on noxious weeds through participation in the IECWMA and implementation of the proposed action.

3.2.11 Soil and Water Resources

Affected Environment

Soil Resources

Soils on the north side of the project area, in the Mill Creek and Deadman Gulch drainages, are primarily classified as gravelly silt loams of the Ahrs-Pinecreek association. They are very deep, well drained and intermixed with areas of rock outcrop.

On the south side of project, soils within the units are primarily silt loams of the Honeyjones-Ahrs association. These soils are also very deep and well drained, with a moderate erosion hazard. (NRCS, 2008).

Water Resources

Watersheds on the north side of I-90 (Mill Creek and Deadman Gulch) have been heavily impacted by logging, mining, channelization, road construction and wildfires. The terrain is steep and runoff is rapid. On the south side of the freeway, impacts to watersheds include logging, road construction and channelization, but to a much lower extent.

The Mill Creek drainage basin has an area of 2.63 square miles. It receives a mean annual precipitation of 42.8 inches. Elevations range from 3,470 feet to 6,300 feet, with a mean basin elevation of 4,880 feet. About 40% of the drainage lies below 4,500 feet and is subject to rain-on-snow storms. About 60% of the drainage has been logged, where the majority of the trees were harvested. Boulder Creek is a steep, fish- bearing stream that runs through the south portion of the project with a drainage area of approximately 3 square miles. At the lower end Boulder Creek flows through Mullan and is conveyed under Interstate 90 to its confluence with the South Fork Coeur d'Alene River. This perennial stream shall be protected from disturbance by a buffer of at least 380 feet where motorized equipment is not allowed, except for the existing trail that provides access to Copper Creek, where a cemetery irrigation system water intake is located. This trail continues along Boulder Creek to the ridgeline east of Stevens Peak, providing access for ATV riders.

An un-named intermittent stream located south of Mullan would have a low-water ford installed in it under the proposed action. The drainage is 0.3 square miles in size. It receives an annual precipitation of 41.5 inches. Elevations range from 3,980 feet to 5,950 feet, with a mean basin elevation of 4,960 feet. About 70% of the drainage lies below 4,500 feet and is subject to rain-on-snow events. About 5% of the drainage has been logged, where the majority of the trees were harvested. The predicted 100 year flood event would be 25 cubic feet a second (USGS Stream Stats, (http://waterdata.usgs.gov).

Direct and Indirect Effects of Alternatives

Proposed Action

Soil

There will be a short term increase in sediment production from soil disturbance associated with construction of the temporary and permanent roads. The increase

sediment production from the temporary roads will recover to near background levels if properly reclaimed and re-vegetated. The permanent roads are assumed to continue to produce sediment above natural background levels, though delivery to channels can be mitigated by factors such as design measures and location.

Water Resources

Impacts to water resources will be similar to those described for soil above.

No Action

Soil

The risk of wide-spread, high severity fire would be greater when compared to the proposed action because a fire of this type would damage soils, increase surface run-off, and increase sediment into the South Fork tributaries.

Water

There would be no aquatic restoration activities such as culvert replacements or improvements to road drainage, so the net associated risk of sediment delivery would remain at the current level. Drainage crossings currently at risk would likely fail in the event of a large stand-replacing fire followed by a high intensity rain or rain-on-snow event. This could have a detrimental effect on water quality impacting beneficial uses.

Cumulative Impacts

Cumulatively, the ongoing and reasonably foreseeable activities would not have any significant effect on sediment yield, water temperature, stream channel morphology, or fisheries populations or habitat. Therefore this project would not impair beneficial uses within the project area watersheds or downstream in the South Fork Coeur d'Alene River.

3.2.12 Cultural Resources

Affected Environment

An on-the-ground inventory was completed in the area of potential effects and consultation with the Idaho State Historic Preservation Office completed. Six historic properties were located; several are in areas with no planned ground disturbing activities. All historic properties are associated with historic mining. 10SE277and CDA-469 are a scatter of historic artifacts and features; CDA-470 is a wooden stave pipe; 10SE1302 consists of an adit, standing cabins, mine features including a ditch; 10SE1332 is an adit and mine features; and CDA-474 is a recent partially constructed structure. CDA-474 is not considered eligible to the National Register of Historic Places.

Direct and Indirect Effects of Alternatives

Proposed Action

There will be no effect to significant historic properties from the proposed action. 10SE0277 and CDA-469 are outside the treatment units and within a riparian buffer so there will be no effect to these resources. 10SE1332 is located just northeast of a burn unit. It is outside the treatment unit and should not be affected.

The wooden stave pipe line (CDA-470), used to transport water to a mine mill site, was recorded. About 80 percent of the length of the pipeline is covered with soil leaving about 20 percent exposed in one area. The vegetation treatment unit adjacent to the wooden pipeline is identified for prescribed burning. Since most of the pipeline is covered with soil it will be protected. In the area where 20 percent of the line is exposed a fire fighting engine and crew will be deployed to protect the pipeline. They will use water or foam to spray the wood to dampen it and then monitor the fire to ensure it does not reach the pipeline. This is incorporated into the project as a design feature. There will be no effect to this historic property. Burning the built-up vegetative fuels and reducing the fuel load north of the wooden stave pipeline should be a beneficial effect since it may protect this historic property in the future if a wildland fire were to erupt.

The modern cabin, CDA-474, is in a harvest unit. It is not eligible to the National Register of Historic Places and no mitigation is planned for the trespass cabin. It is believed to be a recent partially built hunting structure that was never completed.

The previously recorded Vindicator mine site (10SE1302) was updated. The vegetative treatment unit excludes the main features of the Vindicator Mine. A mine ditch/road is the northern boundary of the historic property. This ditch/road is proposed to be used as the southern fireline for the proposed prescribed burn in Unit D. The ditch/road loses its definite form, probably from erosion. A fireline will be scratched out along the ditch to catch any rolling debris i.e. burning pine cones, etc. from the fire above the Vindicator. Scratching out the fireline will not impact the qualities of the ditch. The ditch is in poor condition from erosion and the entire length of the ditch cannot even be followed. The Vindicator is primarily eligible to the National Register of Historic Places because of the buildings and the buried artifacts around the buildings. The ditch does not contribute to the eligibility. There will be no effect to the historic property. To protect the mine buildings from the fire, if it crosses the fireline, a fire engine and crew will be stationed by the buildings to protect them during the burn event. This is incorporated as a design feature in the project. Burning the built-up vegetative fuels and reducing the fuel load north of the Vindicator should be a beneficial effect since it may protect this historic property in the future if a wildland fire were to erupt.

No Action

The No Action Alternative will maintain or increase the undesirable current fuel condition class. This may lead to a stand replacing fire that could have an adverse effect

to historic properties. This alternative provides the least protection for historic properties from wildland fire or potential wildland fire suppression activities.

Cumulative Impacts

Agents of deterioration to historic properties are from recreation use, vandalism, or inadvertent effects from use of trails or unauthorized off-road vehicle use. With no change of fire condition class there is an increased opportunity for wildland fire effects to historic properties. This, in combination with other impacts, could lead to more historic properties being affected.

3.3 Cumulative Impacts

All resource values have been evaluated for cumulative impacts. It has been determined that no adverse cumulative effects would result from implementation of the Proposed Action.

3.4 Mitigation and Monitoring

This section describes:

- mitigation measure(s) that BLM specialists recommend to avoid or reduce a negative impact, monitoring and/or reporting requirements suggested to evaluate the effectiveness of the mitigation measure; and
- residual impacts that could remain following application of the mitigation measure.

Vegetation/Special Status Plants

Ponderosa pine, western larch and western redcedar trees >21 inches dbh are present and should be retained (mitigation) because of their ecological value and potential to become future old growth (residual effect).

Invasive, Nonnative Species (Weeds)

Treating pre-existing weed populations prior to project activities will reduce sources of seed and/or plant parts and minimize risk of spreading existing infestations.

Preventing any new weeds species from entering the project area is the highest priority for protecting the area from weed invasion. Pre-harvest measures would include removing all mud, dirt, and plant parts from all off-road vehicles and off-road equipment before entering BLM lands. Cleaning must occur off BLM lands. (Cleaning requirements do not apply to vehicles that would stay on the established roadway and use the constructed landing.)

Reduce opportunities for weed invasion in disturbed sites by seeding all disturbed soil (except the travel way on surfaced roads) in a manner that optimizes plant establishment for that specific site. Use a certified weed-free seed mix that includes fast-growing, early season species to provide quick, dense revegetation.

Post harvest activities would employ an integrated weed control strategy of: monitoring and treatment of weed infestations on ATV trails, roads, landings, skid trails, and treatment areas. Weed treatments will use biological controls, mechanical removal, and/or herbicides after considering the effectiveness of all potential methods and combination of methods.

The BLM has no additional mitigation and monitoring recommendations.

4 CONSULTATION AND COORDINATION

4.1 Persons, Groups or Agencies Consulted

Development of this project has been ongoing since March 2011 through the Shoshone County Forest Health Collaborative which includes representatives from the City of Mullan, Shoshone County, environmental groups, interested citizens, Idaho Department of Lands and Avista Corp. Listed below is a chronology of the collaboration and public outreach activities for this Mullan Forest Health Project:

March 14, 2011	Mullan City Council Meeting
April 7, 2011	Shoshone County Forest Health Collaborative Meeting
September 13, 2011	Shoshone County Forest Health Collaborative Meeting
January 30, 2012	Shoshone County Forest Health Collaborative Meeting
March 27, 2012	Shoshone County Forest Health Collaborative Meeting
June 11, 2012	EA scoping, as part of the Mullan City Council public meeting

BLM initiated a formal public scoping period requesting input for this EA on June 1, 2011, with a request for written comments by July 31, 2012.

During the scoping process the following issues were identified.

Wildland Fire: Prevent and suppress all wildland fires adjacent to the town of Mullan.

Scenic Quality: The Mullan City Council requests a selective harvest, similar to the work conducted on City-owned land south of Interstate 90 to be done on public lands. The council also requested that the proposed timber harvest blend into existing harvested areas by scalloping and feathering edges to reduce straight line effects. Several public opinion surveys favored the retention of large mature trees (dark green colored landscape) versus the retention of young immature trees which were somewhat favored (light green colored landscape) or large regeneration clearcuts (light brown colored landscape) which were not favored at all (see Photo 5).

Recreation Access: Retain all ATV loop trails.

Mill Creek Stream Crossings: Two structurally deficient Mill Creek crossings need to be replaced. One sub-standard wooden bridge and one undersized culvert located on public land need to be replaced so fire trucks can safely use the road.

Electric Power Lines: Hecla Mining Company's Lucky Friday Mine power is supplied by an Avista transmission line which traverses overstocked forests on public land. Another power line, located along Mill Creek, supplies power to the East Shoshone Water District treatment facility located on private land due north of the BLM property line.

Domestic Water Supply: Two municipal water tanks located on public land in the Mill Creek drainage are threatened by fire from the surrounding trees. Three private property owners have domestic water intakes located on public land.

Road Access: Construct a permanent road south of Interstate 90 to provide access for fire suppression.

Road Density: Reduce the road density in the project area wherever possible.

Biomass: Use biomass beneficially for either the community (Kellogg's Fuels for Schools Project) or the environment.

Prescribed Burning: Smoke inversions to town and Interstate 90 are not acceptable.

4.1.1 Coordination with Other Groups or Agencies

United States Forest Service

Kimberly Johnson, Deputy District Ranger, Coeur d'Alene River Ranger District
Sarah Jerome, Fuels AFMO, Coeur d'Alene River Ranger District

The USFS is a partner in the project. To ensure that scenic quality objectives could be met, a seamless implementation of the treatments across administrative boundaries would be done.

Idaho Department of Lands (IDL)

Bob Burke, Kingston Manager

IDL is the primary wildland fire fighting organization in the Mullan area. They are assisted by the local municipal fire department, because of their faster response time. Discussions at the collaborative meetings focused on the need for a road south of Interstate 90, how many roads were needed and where to locate them. IDL requested a new road between the Mullan Cemetery and Willow Creek for fire fighter access. IDL also requested that the road be constructed in a manner that municipal fire trucks could use, i.e. no grades over 20%, no tight switchbacks or creek crossing that could not support a loaded water tanker. IDL also stated that it was easier to fight a fire on timber sale areas, like the City of Mullan's timber sale, rather than the existing forest because there is no crown fire danger.

Shoshone County Commissioners

Vince Rinaldi, District 1
Larry Yergler, District 2
Jon Cantamessa, District 3

The County Commissioners were instrumental in the development of the project. This is the first project that the Shoshone County Forest Health Collaborative undertook. The chairman of the Collaborative is Commissioner Cantamessa. The Collaborative held

several meetings with the public and field tours to reach a consensus and formulate its recommendation that resulted in the proposed action alternative.

City of Mullan

Mayor Mike Dunnigan
Council Members

The City Council's following suggestions were incorporated in the design of the project;

- Invite the USFS to be a partner in the project so that a seamless implementation of treatments could be performed across the landscape, regardless of ownership boundaries.
- Replace the existing Mill Creek culvert and wooden bridge because of their questionable structural integrity.
- Reduce the fire hazard adjacent to their municipal water storage tanks located on Mill Creek (Unit A).
- Recommend the BLM perform treatments on public lands similar to how the city logged their land.

Shoshone County FireWise and Fire Mitigation Program

Henry Nipp

Mr. Nipp requested a shaded fuel break (Unit B) be constructed to dove-tail into existing fuel hazard reduction work the County's FireWise Program has done to the north of Unit B.

Avista Utlities Company

Sharon Vore

Avista representative, Ms. Vore, requested BLM to harvest trees on Unit 7 because trees are growing into powerline cables. They also support the decision to selectively thin the forest adjacent to the powerline (Units 2, 3 & 5).

Hecla Limited

Stephen M Petroni, Manager – Silver Valley Exploration
Ann Robison, Property and Contract Coordinator

Both Mr. Petroni and Ms. Robison support BLM's proposal to reduce the threat of fire to their facility (Lucky Friday Mine) and the powerline supplying energy to the mine (Avista Powerline).

Idaho Conservation League (ICL)

Susan Drumheller, North Idaho Associate
Brad Smith, North Idaho Associate

Brad Smith, a member of the Shoshone County Forest Health Collaborative, requested BLM to not follow rigid tree spacing guidelines, but use a diameter limit cut to achieve a

more natural looking landscape that incorporates more clumps of trees and small open openings.

Kootenai Environmental Alliance
Terry Harris

As an attendee of the Shoshone County Forest Health Collaborative meetings, Terry was briefed on the proposed project from its conception, and was encouraged by the Chairmen of the Collaborative to offer suggestions for improving the project.

4.2 Preparers

Name	Specialty
Larry Kaiser	Forester/Project Lead
Lonnie Newton	Fire Ecologist
Carrie Hugo	Wildlife Biologist
Kurt Pindel	Visual Resources
Kurt Pindel	Recreation
LeAnn Abell	Botanist
Mike Stevenson	Hydrologist
David Sisson	Archeologist
Cindy Weston	Fisheries Biologist
Janna Paronto	Realty Specialist
Doug Evans	Weeds, Natural Resource Specialist
Lorrie West	Planning & Environmental Coordinator

4.3 Distribution

This EA will be available from the Idaho BLM public internet site at:
http://www.blm.gov/id/st/en/info/nepa.html

Copies may be requested by calling or visiting the BLM office in Coeur d'Alene (208-769-5000).

A notice of availability or copy of this EA will be sent to the following interested entities that have commented during scoping and/or requested one.

Individuals
Mr. & Mrs. Kent Davis
Mr. & Mrs. Keith Jutila

Businesses
Ann Robison, Hecla Limited
Sharon Vore, Avista Utilities

Non-Governmental Organizations
Brad Smith, Idaho Conservation League
Terry Harris, Kootenai Environmental Alliance

Tribes
Coeur d'Alene Tribe

State and Local Governmental Agencies
Bob Burke, Idaho Department of Lands, Kingston Office Manager

Local Elected Officials
Vince Rinaldi, Shoshone County District 1
Larry Yergler, Shoshone County District 2
Jon Cantamessa, Shoshone County District 3
Mike Dunnigan, Mayor of Mullan

Federal Elected Officials
Honorable Congressman Raul Labrador
Honorable Senator James Risch
Honorable Senator Michael Crapo

Federal Agencies
BLM Idaho State Office, Boise ID

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