United States Department of Agriculture
Forest Service
Nez Perce -Clearwater National Forests
Supervisor's Office
903 3rd Street
Kamiah, ID 83536
208-935-2513
FAX: 208-935-4275

File Code: 1950
Date: January 27, 2016

Dear Interested Party,

The Nez Perce-Clearwater National Forests is preparing Environmental Assessments for the Woodrat Salvage and Upper Lolo Salvage projects to analyze and disclose the effects of proposed salvage harvest in areas that were burned by wildfires in 2015. You are being notified of these proposals because you have expressed interest in projects on the Nez Perce-Clearwater National Forests. I am inviting your comments on these two proposals.

I have requested an Emergency Situation Determination (ESD) for the Woodrat and Upper Lolo projects. Due to rapid deterioration of burned timber, timely implementation to capture economic value is necessary to ensure site preparation, fuel reduction and restorative reforestation objectives are achieved. An ESD is granted by the Chief of the Forest Service and defined in 36 CFR 218.21(b):

> *Emergency situation determination. A situation on National Forest System (NFS) lands for which immediate implementation of a decision is necessary to achieve one or more of the following: Relief from hazards threatening human health and safety; mitigation of threats to natural resources on NFS or adjacent lands; avoiding a loss of commodity value sufficient to jeopardize the agency's ability to accomplish project objectives directly related to resource protection or restoration.*

If the ESD is approved the decisions for these projects will not be subject to the predecisional objection process. Furthermore, the scoping and public comment periods for this project will be combined into one time period. The purpose of this comment period is to allow the public early and meaningful participation on a proposed action prior to a decision being made by the responsible official. We are combining our scoping effort per direction in FSH 1909.15 and the notice, comment, and objection requirements in 36 CFR 218 with this letter.

This may be your only opportunity to provide comments for these proposals.

Background

The 2015 fire season on the Nez Perce-Clearwater National Forests was exceptionally severe. Fuel moistures were low and temperatures were high throughout the spring and early summer. Dry lightning storms started two hundred and fifty fires on National Forest System (NFS) lands between August 9 and 11. Eventually 195,683 acres burned, the majority of these acres being within the roaded "front country" on the Nez Perce-Clearwater National Forests. Over 280,000 acres of private, state, tribal, and federal land were also affected.

The following proposals are two of several projects proposed to address the wildfires of 2015. The forest is also proposing projects that respond to emergency needs within the burned areas (Burned Area Emergency Response or BAER), maintain critical infrastructure and mitigate hazards to the public and forest employees, and restore burned landscapes. In total, less than 3% of the area burned during the summer of 2015 on the Nez Perce-Clearwater National Forests is proposed for harvest, including this proposal as well as the removal of hazard trees.

Project Location

The Woodrat and Upper Lolo projects include 1,864 acres of salvage harvest and reforestation within the Woodrat, Yoosa, Four Bit, Musselshell, Mystery, Dollar, and Eldorado fire areas on the Lochsa Ranger District of the Nez Perce-Clearwater National Forests.

The Woodrat proposed salvage units (466 acres) are located immediately northwest of Syringa, Idaho in Township 33 North, Range 6 East, Boise Meridian.

The Upper Lolo proposed salvage units (1,398 acres) are located approximately 5 to 15 miles north and northeast of Syringa in T35N, R6E, Sections 26, 27, 33, 34, 35; T36N, R7E, Sections 5 and 32; T34N, R7E, Sections 7, 8, 17, 18, 19, and 24; T34N, R7E, Sections 29, 30, and 32.

Purpose and Need for Action

The purpose of the Woodrat and Upper Lolo salvage projects is to protect the health and safety of the public, workers, and private citizens; capture remaining forest product economic value and benefit; maintain existing and develop future wildlife habitat; maintain watersheds and reduce runoff from erosion; and reforest suitable portions of the landscape deforested by the Woodrat, Musselshell, Yoosa, Four Bit, and Mystery fires.

The primary needs for action include reducing hazardous fuels in fire-affected areas to prevent future stand-replacing wildfire events; timely recovery of the economic value of dead and dying trees to assist in offsetting the cost of forest restoration activities, such as planting; reducing hazards to the public and forest workers; and restoring forest ecosystem function and structure through reforestation and other restoration activities, where appropriate. Timely implementation of the project is necessary to achieve the purpose and need for the project. Timber deterioration estimates show a 59% decrease in the merchantable timber volume if the product is not under contract within one year of the fire. Without the commodity value of the product, the ability to prepare the site for reforestation, safely access areas for planting, reduce fuel loading to prevent future re-burn events and mitigate hazards that pose a risk to the public and forest employees may not be possible.

Proposed Actions

The Woodrat and Upper Lolo salvage projects were developed as a means to capture economic value, where appropriate, to offset the costs of restoration projects in fire-affected areas. Treatment units were identified using a coarse filter/fine filter process. "Coarse filters" included designated Wilderness, Idaho Roadless Rule areas, Wild and Scenic River areas, Research Natural Areas (existing and proposed), Lolo National Historic Corridor, Riparian Habitat

Conservation Areas (RHCA's), and landslide-prone areas. All of these areas were excluded from the proposed salvage projects.

The Interdisciplinary Team (IDT) then used the "fine filter" approach to evaluate the remaining burned areas using a restoration-based framework. The IDT identified areas of 50% or greater mortality that could be accessed economically. Areas were dropped from consideration if they had a high potential for mass wasting (such as landslides and unstable slopes) or could contribute to additional unwanted effects if harvested.

The IDT has developed project-specific design criteria to ensure that these projects are consistent with the Clearwater National Forest Land and Resource Management Plan (Forest Plan) (1987) and all laws, regulations, and policies. Implementation of the project design criteria and Best Management Practices (BMP's) will allow the environmental analysis of the two projects described below to be documented using Environmental Assessments and Decision Notices/Findings of No Significant Impacts.

Woodrat Salvage EA

The Lochsa Ranger District is proposing to salvage harvest approximately 466 acres of dead and dying trees within the Woodrat fire perimeter. Preliminary estimates suggest that the harvested timber volume could be about 3.7 MMBF. Ground-based systems would be used to harvest 246 acres, and cable/skyline logging systems would be used on 220 acres (Table 1). Maps are enclosed.

Salvage harvest would occur on lands within Forest Plan Management Areas (MA's) C4 and E1. MA C4 is big game winter and suitable timber-producing land. MA E1 is productive timber land. The 1987 Clearwater Forest Plan, as amended, permits timber removal on these MA's. Funds collected from salvage harvest activities would be used to offset the cost of reforestation on 158 acres of severely burned timber stands and 466 acres of salvage-harvested stands. The attached maps display proposed salvage harvest units and reforestation units.

Fire-killed and fire-injured trees within the fire perimeters where the size or species of timber is sub-merchantable would be treated. In areas that burned at moderate and high severity, where timber does not meet merchantability standards, hazard abatement, fuels reduction, and site preparation for reforestation would be accomplished using biomass removal, mastication, felling and lopping, machine piling and burning, or jackpot burning. Activity-generated fuels would be jackpot burned, or hand or mechanically piled and burned.

The project proposal would include 38 miles of haul road maintenance, including brush removal, clearing culvert inlets, road grading for water flow control, and removing closure barriers as needed. Additional haul routes would include county roads and U.S. and State highways. The proposed action would include 1.5 miles of temporary road construction and the use of approximately 91 new and existing landings.

Ground-based logging systems would be limited to slopes less than 35 percent. Cable-based systems would be used in areas with steeper slopes. Trees would not be removed for commercial purposes in Riparian Habitat Conservation Areas (RHCA's), ground-verified landslide-prone

areas (LSP), stands with verified post-fire old-growth characteristics, or areas where cultural resources are likely to be adversely affected.

Upper Lolo Salvage EA

The Lochsa Ranger District is proposing to salvage harvest approximately 1,398 acres of dead and dying trees within the Musselshell, Yoosa, Four Bit, and Mystery fire perimeters (see Table 2). Maps are enclosed. Preliminary estimates suggest that approximately 12.4 MMBF may be harvested in these areas. Ground-based systems would be used to harvest 540 acres, cable/skyline logging systems would be used on 825 acres, and helicopter logging systems would be used on 30 acres. Salvage harvest would take place only on lands with MA E1 (productive timber land). The 1987 Clearwater Forest Plan, as amended, permits timber removal from MA E1. Funds collected from salvage harvest would be used to offset the cost of reforestation on 117 acres of severely burned timber stands and approximately 1,398 acres of salvage-harvested stands. The attached maps display proposed salvage harvest units and reforestation units.

Fire-killed and fire-injured trees within the fire perimeters where the size or species of timber is sub-merchantable would be treated. In areas that burned at moderate and high severity, where timber does not meet merchantability standards, hazard abatement, fuels reduction, and site preparation for reforestation would be accomplished using biomass removal, mastication, felling and lopping, machine piling and burning, or jackpot burning. Activity-generated fuels would be jackpot burned, or hand or mechanically piled and burned.

The project proposal would include 93 miles of haul road maintenance, including brush removal, clearing culvert inlets, road grading for water flow control, and removing closure barriers as needed. Additional haul routes would include county roads and U.S. and State highways. The proposed action would include 7.6 miles of temporary road construction and the use of approximately 174 new and existing landings. 3.8 miles of road decommissioning are also proposed.

Ground-based logging systems would be limited to slopes less than 35 percent. Cable-based systems would be used in areas with steeper slopes. Commercial removal of trees would not occur in Riparian Habitat Conservation Areas (RHCA's), ground-verified landslide-prone areas (LSP), stands with verified post-fire old-growth characteristics, or areas where cultural resources are likely to be adversely affected. Trees would not be removed for commercial purposes in Riparian Habitat Conservation Areas (RHCA's), ground-verified landslide-prone areas (LSP), stands with verified post-fire old-growth characteristics, or areas where cultural resources are likely to be adversely affected.

Table 1. Woodrat fire proposed salvage units

Fire Name	Total Harvest Acres	Ground-Based/Tractor Logging Acres	Cable-Based/Skyline Logging Acres	Helicopter Acres	Temporary Roads (Miles)
Woodrat	466	246	220	0	1.5

Table 2. Upper Lolo fires proposed salvaged units

Fire Name	Total Harvest Acres	Ground-Based/Tractor Logging Acres	Cable-Based/Skyline Logging Acres	Helicopter Acres	Temporary Roads (Miles)
Musselshell	571	101	439	30	2.3
Yoosa	131	112	18	0	0
Four Bit	502	245	257	0	3.7
Mystery	194	82	112	0	1.6

Potential Effects of the Proposed Action

While analysis is ongoing at this time and will be guided by public scoping, at this time the interdisciplinary teams anticipate the following potential effects as a result of the proposed action:

Woodrat Fire Effects

Soils

In the high burn severity areas, much of the surface vegetation, woody debris, and organic matter that protects soils from erosion were consumed by the fire. Stands with high burn severity are susceptible to accelerated soil erosion, depending on soil type and site-specific conditions. The Woodrat fire project has high severity fire areas, past harvest, and a high proportion of landslide prone terrain. Activities associated with proposed ground-based salvage harvesting might create Detrimental Soil Disturbance (DSD) that exceed Forest Plan standards if no design criteria were applied. However, project design criteria and careful logging systems planning will minimize overall DSD effects, provide protection against soil erosion, and prevent DSD levels from exceeding Forest Plan standards.

Fuel Loadings

The proposed salvage treatments would reduce the high surface woody fuel loadings and the potential for subsequent high severity fires (re-burns) that will have an even greater impact to both soils and vegetation. The result will help modify the fuels profile to reduce future wildfire intensities which will provide initial attack forces the opportunity to engage a future wildfire. Treatments will reduce wildfire intensity and severity while allowing firefighters improved opportunities for safely managing the fire and reducing the potential for damage to private property.

Wildlife

None of the proposed salvage units or activities in the Woodrat fire area occurs in lynx habitat (or found in Lynx Analysis Units or LAUs). The proposed action will generally have no effect on other wildlife species as moderate to severe fire caused losses or reduction in wildlife habitat

where the salvage units are proposed. Proposed reforestation efforts will speed up this natural process by providing structure, cover, and feeding opportunities; where short term forest loss in moderate to high fire severity could have impacts on the ecosystem.

Aquatics/Watershed

There are no fish bearing streams on National Forest System lands within the Woodrat fire perimeter. There are no Threatened or Endangered fish species or their designated critical habitat within the fire perimeter or the Swan, Little Smith, and Big Smith Creek drainages. ESA listed steelhead and their designated critical habitat occur downstream from the project area in the Middle Fork Clearwater River. Designated critical habitat for bull trout and fall chinook also occur in the Middle Fork. There is no known spawning habitat in the Middle Fork adjacent or just downstream from the fire; however the river provides feeding, migration, and overwintering habitat for these species.

The majority of riparian areas within the fire area on federal lands were not burned or experienced only low severity fire. The riparian areas are therefore mostly intact and providing for shade, wood and streambank stability. There would be no difference between the proposed action and no action alternative as a result. These areas would continue to act as filters for overland erosion resulting from either the fire effects or the proposed harvest activities. The existing riparian areas would continue to provide wood, shade and streambank stability to streams within the fire perimeter. The proposed action will mostly likely not affect water yield or measureable increases of sediment. A preliminary effects analysis conducted by the project IDT indicates that the proposed actions are not likely to adversely affect steelhead or their habitat; and for westslope cutthroat trout the proposed action may impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species.

Upper Lolo Fire Recovery Area Effects

Soils

In the high burn severity areas, much of the surface vegetation, woody debris, and organic matter that protects soils from erosion were consumed by the fire. Stands with high burn severity are susceptible to accelerated soil erosion, depending on soil type and site-specific conditions. Fires in the Upper Lolo projects have high severity fire areas, past harvest, and a high proportion of landslide prone terrain. Activities associated with proposed ground-based salvage harvesting might create Detrimental Soil Disturbance (DSD) that exceed Forest Plan standards if no design criteria were applied. However, project design criteria and careful logging systems planning will minimize overall DSD effects, provide protection against soil erosion, and prevent DSD levels from exceeding Forest Plan standards.

Fuel Loading

The proposed salvage treatments would reduce the high surface woody fuel loadings and the potential for subsequent high severity fires (re-burns) that will have an even greater impact to both soils and vegetation. The result will help modify the fuels profile to reduce future wildfire intensities which will provide initial attack forces the opportunity to engage a future wildfire. Treatments will reduce wildfire intensity and severity while allowing firefighters improved opportunities for safely managing the fire and reducing the potential for damage to private property.

Wildlife

None of the proposed salvage units or activities in the Woodrat fire area occurs in lynx habitat (or found in Lynx Analysis Units or LAUs). The proposed action will generally have no effect on other wildlife species as moderate to severe fire caused losses or reduction in wildlife habitat where the salvage units are proposed. Proposed reforestation efforts will speed up this natural process by providing structure, cover, and feeding opportunities; where short term forest loss in moderate to high fire severity could have impacts on the ecosystem.

Aquatics/Watershed

Westslope cutthroat trout, a Region 1 Sensitive Species; and ESA listed steelhead trout and designated critical habitat are present in the project area. The Mystery and Four Bit fires mostly burned with low to moderate severity and burned only small portions of the adjacent riparian areas. Most of the over and understory remains intact for erosion filtering mechanisms from burned areas. The topography in the burned areas are generally low to moderate gradient which minimizes the potential for surface erosion. The Musselshell fire mostly burned with low to moderate severity and did not burn in the adjacent riparian areas leaving them intact and fully functional. The Yoosa fire mostly burned with moderate severity and burn only minimal areas in the adjacent riparian areas leaving them intact and fully functional. The topography in the Four Bit, Musselshell, and Yoosa burned areas are low gradient and low to moderate gradient in the Mystery burned area which minimizes the potential for surface erosion. Thick vegetation and downed wood is abundant and provides filtering mechanisms for surface erosion. A preliminary effects analysis indicates no measurable differences to aquatic habitats or species between the no action and proposed action alternatives are expected as a result. The proposed action will mostly likely not affect water yield or measureable increases of sediment. A preliminary effects analysis conducted by the project IDT indicates that the proposed actions are not likely to adversely affect steelhead or their habitat and no impact to westslope cutthroat trout.

Request for Comments

The proposed projects are activities implementing a land management plan and are subject to 36 CFR 218 regulations (subparts A and B). In accordance with 36 CFR 218.2, specific written comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the responsible official to consider. It is the responsibility of all individuals and organizations to ensure that their comments are received in a timely manner.

The scoping period will be combined with the notice and comment period for the proposed action. To establish standing for objection, comments will be due 30 days after the legal notice is published in the newspaper of record (*The Lewiston Tribune*, Lewiston, Idaho). We anticipate the legal notice will be published in *The Lewiston Tribune* on Friday, January 29, 2016.

Comments may be mailed electronically to: comments-northern-nezperce@fs.fed.us. Acceptable formats are MS Word, RTF, or PDF. The subject line must contain the name of the project for which you are submitting comments: *Upper Lolo Salvage Project* or *Woodrat Salvage Project*. Acceptable formats are MS Word or RTF.

If you choose to comment, please include the following:

(1) Your name, address, phone number, email address, and organization, if any;
(2) Title of project; and,
(3) Specific facts and relevant rationale you feel should be considered.

You may also mail or hand-deliver your comments to Cheryl Probert, Forest Supervisor, Nez Perce-Clearwater National Forest, 903 3rd Street, Kamiah, Idaho 83536. Office hours are 8:00 a.m. to 4:00 p.m. Monday through Friday, except Federal holidays.

Comments received in response to this solicitation, including names and addresses of those who comment, will be considered part of the public record for these proposed actions and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the commenter with standing to object to the draft decision.

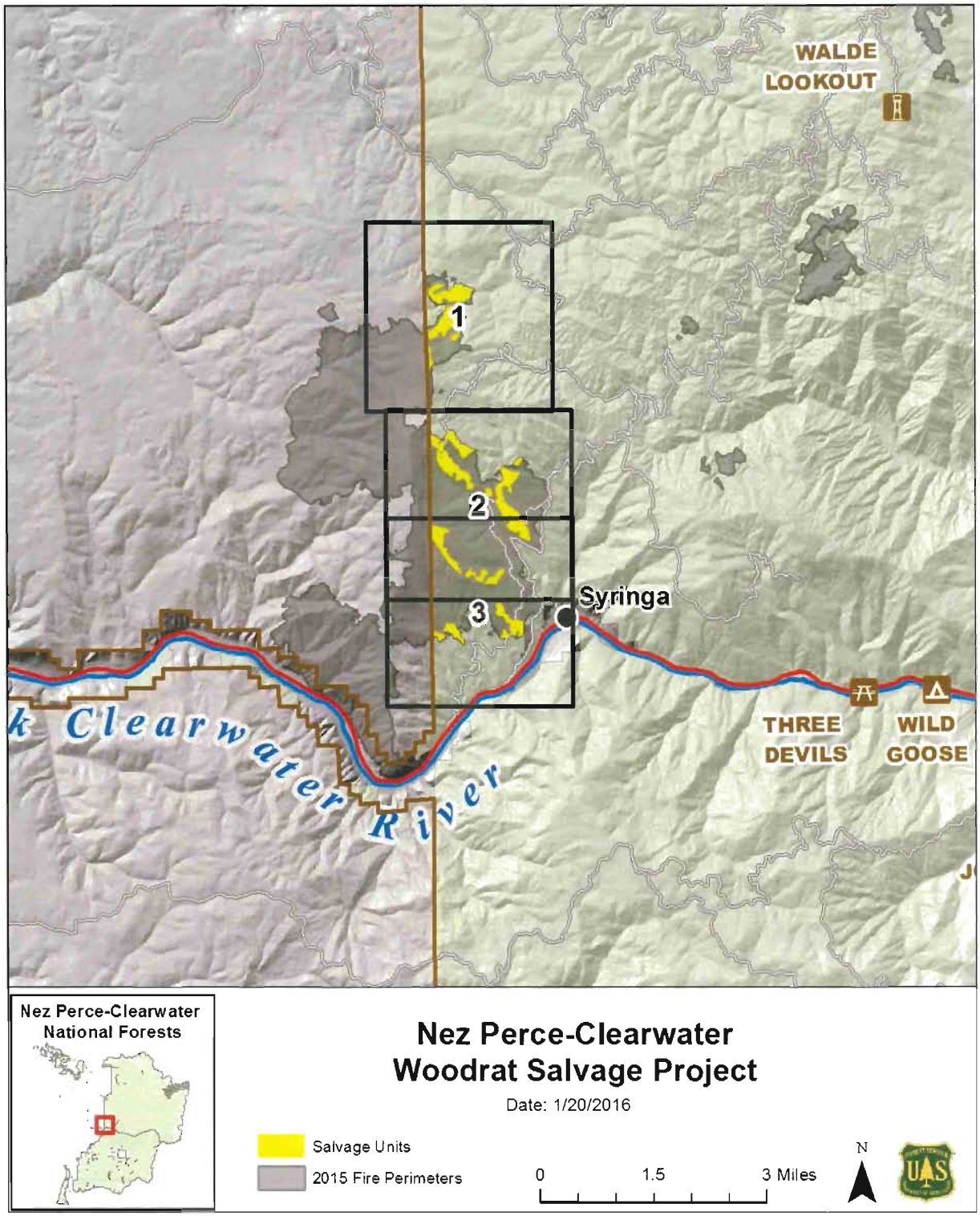
Only those who respond to this request for comments will remain on the mailing list for this project. An objection period, if required, will follow the regulations found in 36 CFR 218.7. For objection eligibility (218.5), only those who have submitted timely, specific written comments during any designated opportunity for public comment may file an objection. Issues to be raised in objections must be based on previously submitted specific written comments regarding the proposed project and attributed to the objector, unless the issue is based on new information that arose after a designated opportunity to comment [218.8(c)].

Project documents will be available electronically on the Nez Perce-Clearwater National Forest webpage at: http://prdp2fs.ess.usda.gov/projects/nezperceclearwater/landmanagement/projects . If you have any questions please contact Zach Peterson, Forest Planner, by telephone (208-935-4239) or email zacharypeterson@fs.fed.us.

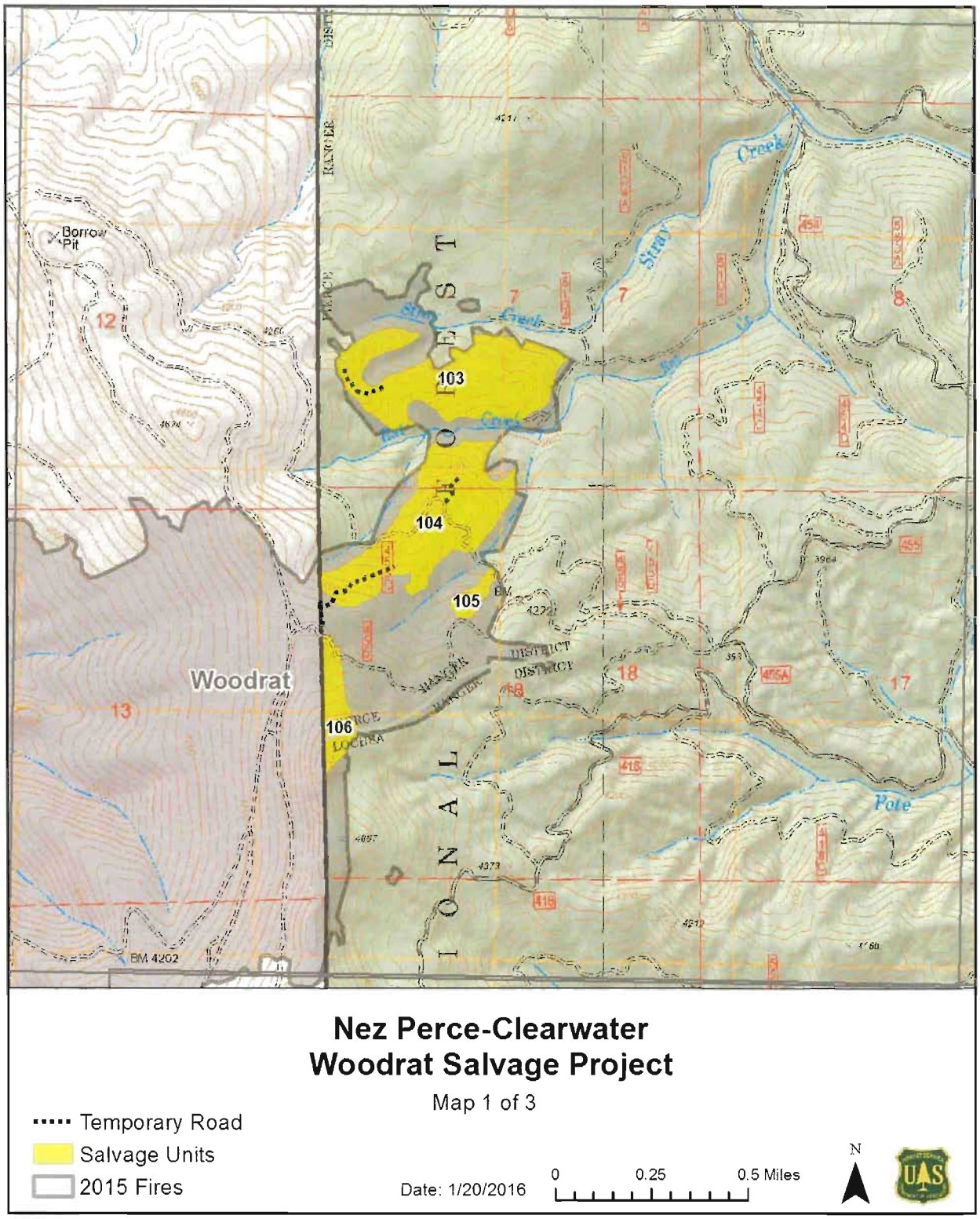
Sincerely,

For Bob Fairbanks
CHERYL F. PROBERT
Forest Supervisor

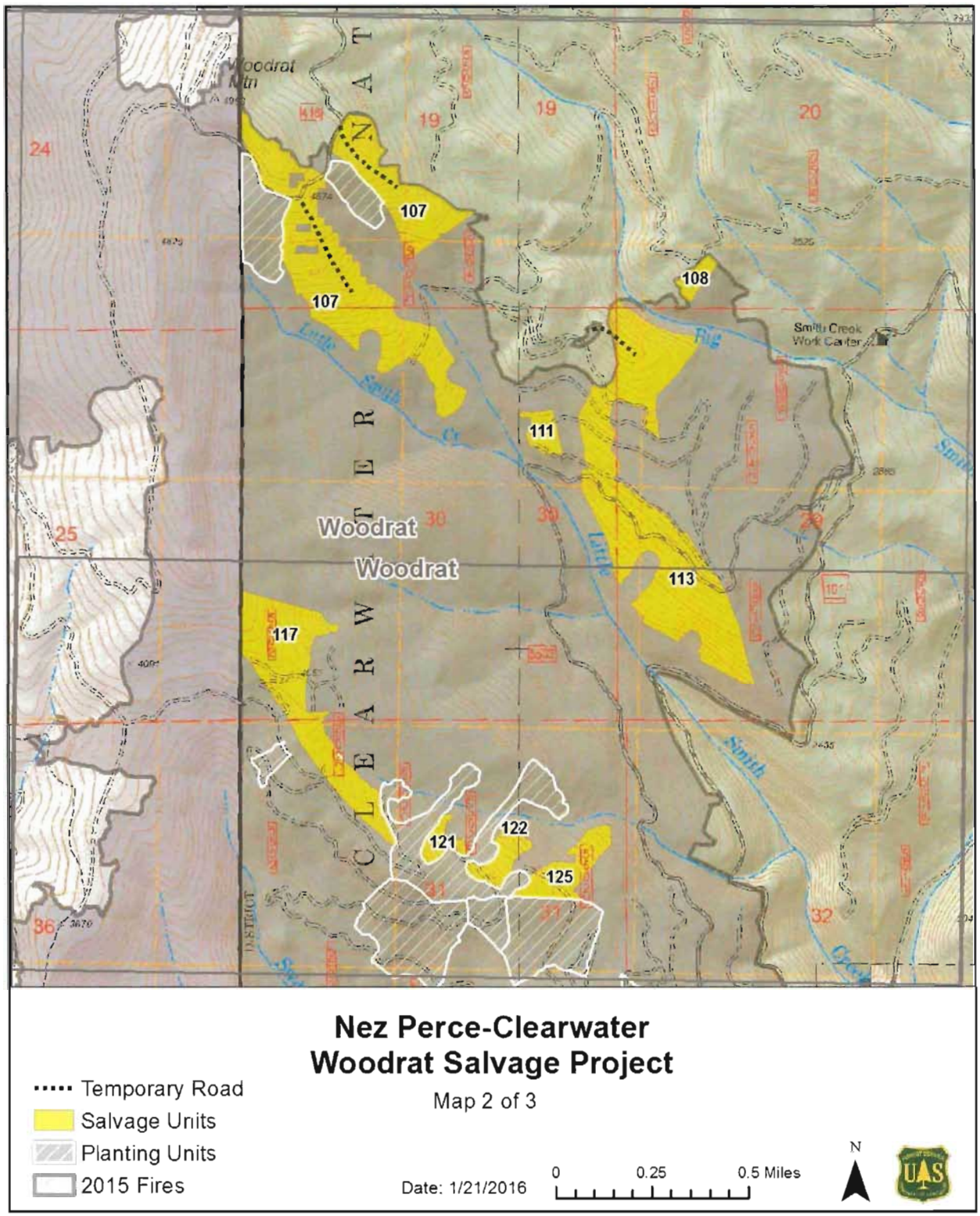
Enclosures:
Woodrat Project Maps
Upper Lolo Project Maps



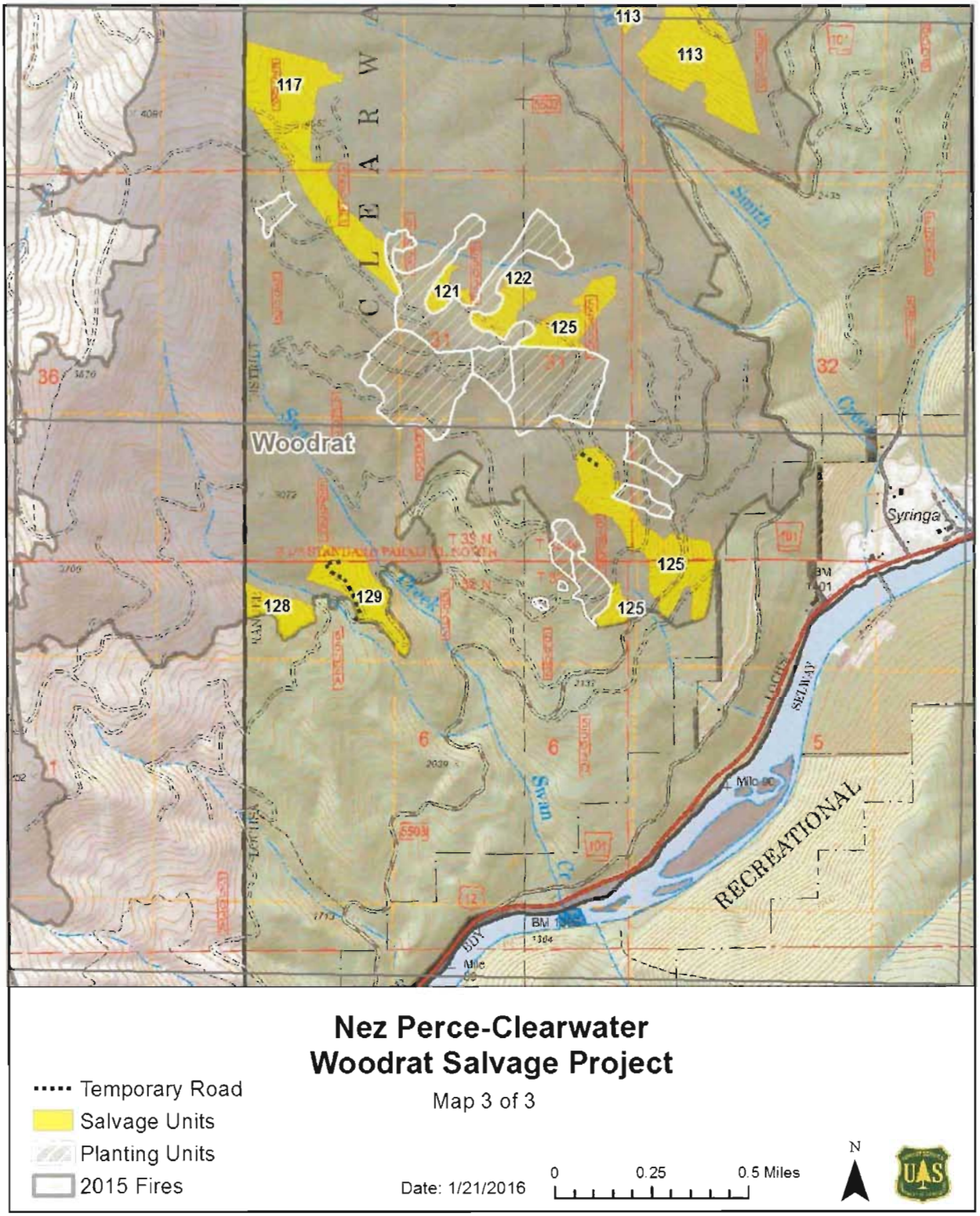
Woodrat Fire area and salvage/reforestation units



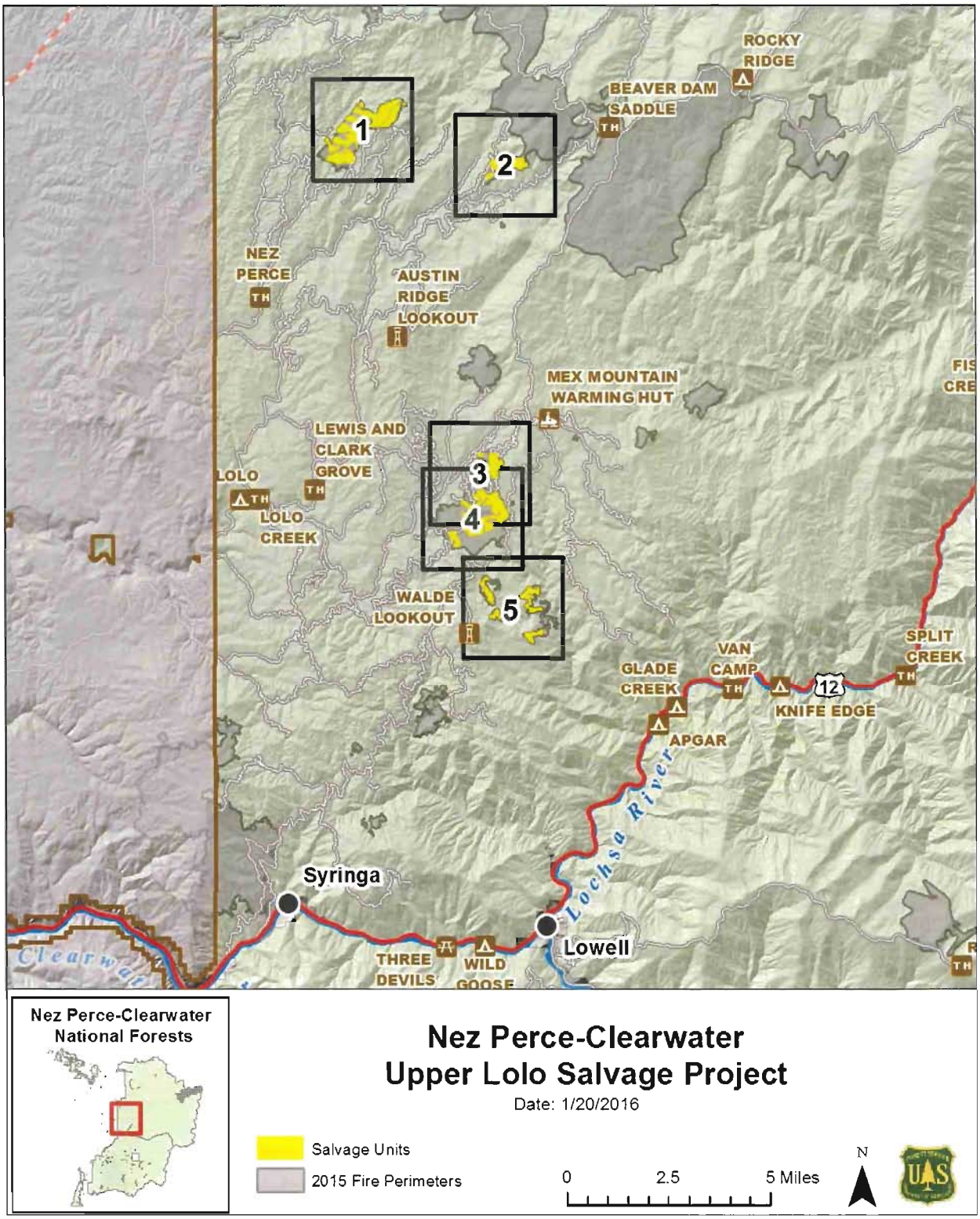
Map 1 of Woodrat Fire area and salvage/reforestation units



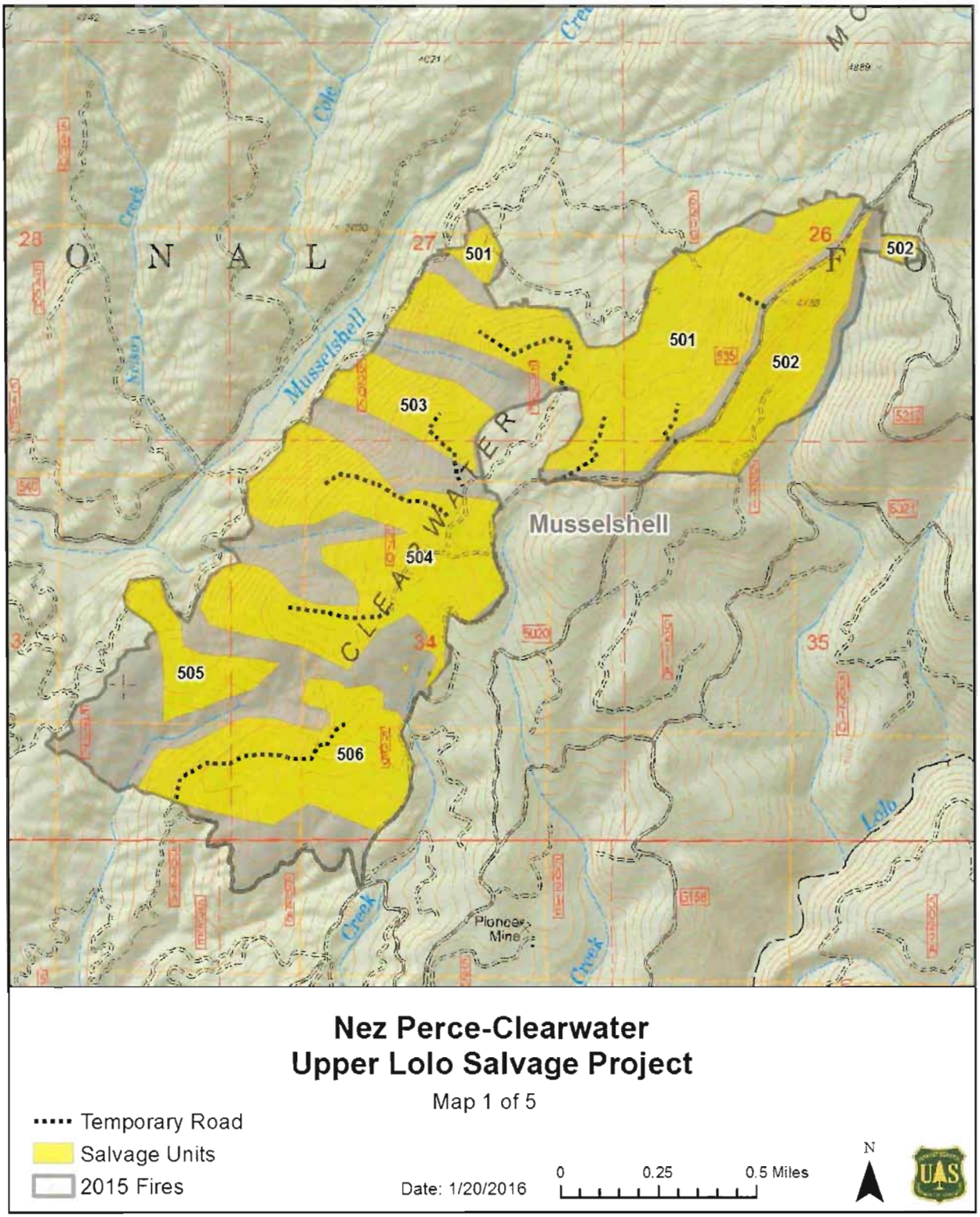
Map 2 of Woodrat Fire Area and Salvage/Reforestation Units.



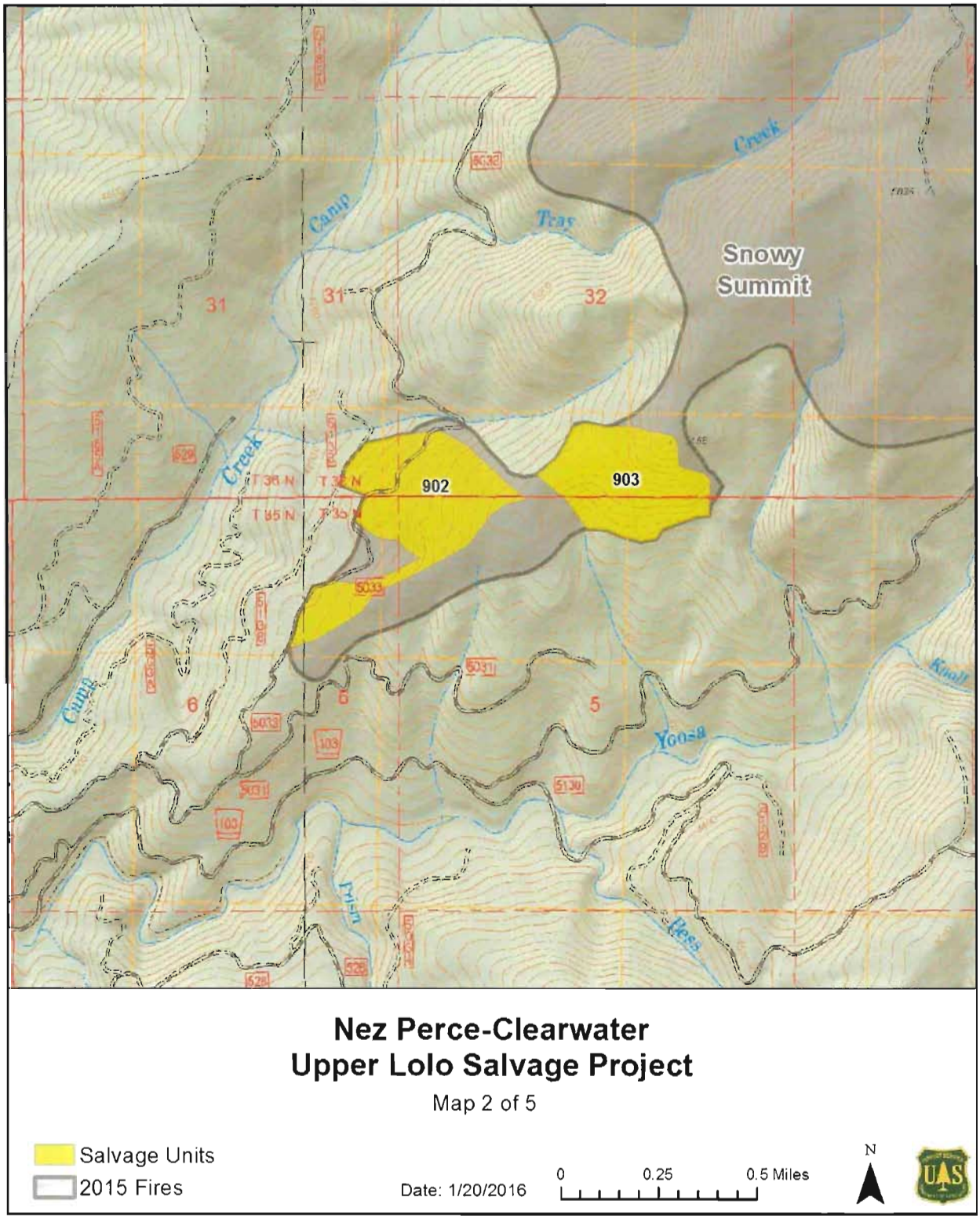
Map 3 of Woodrat Fire Area and Salvage/Reforestation Units.



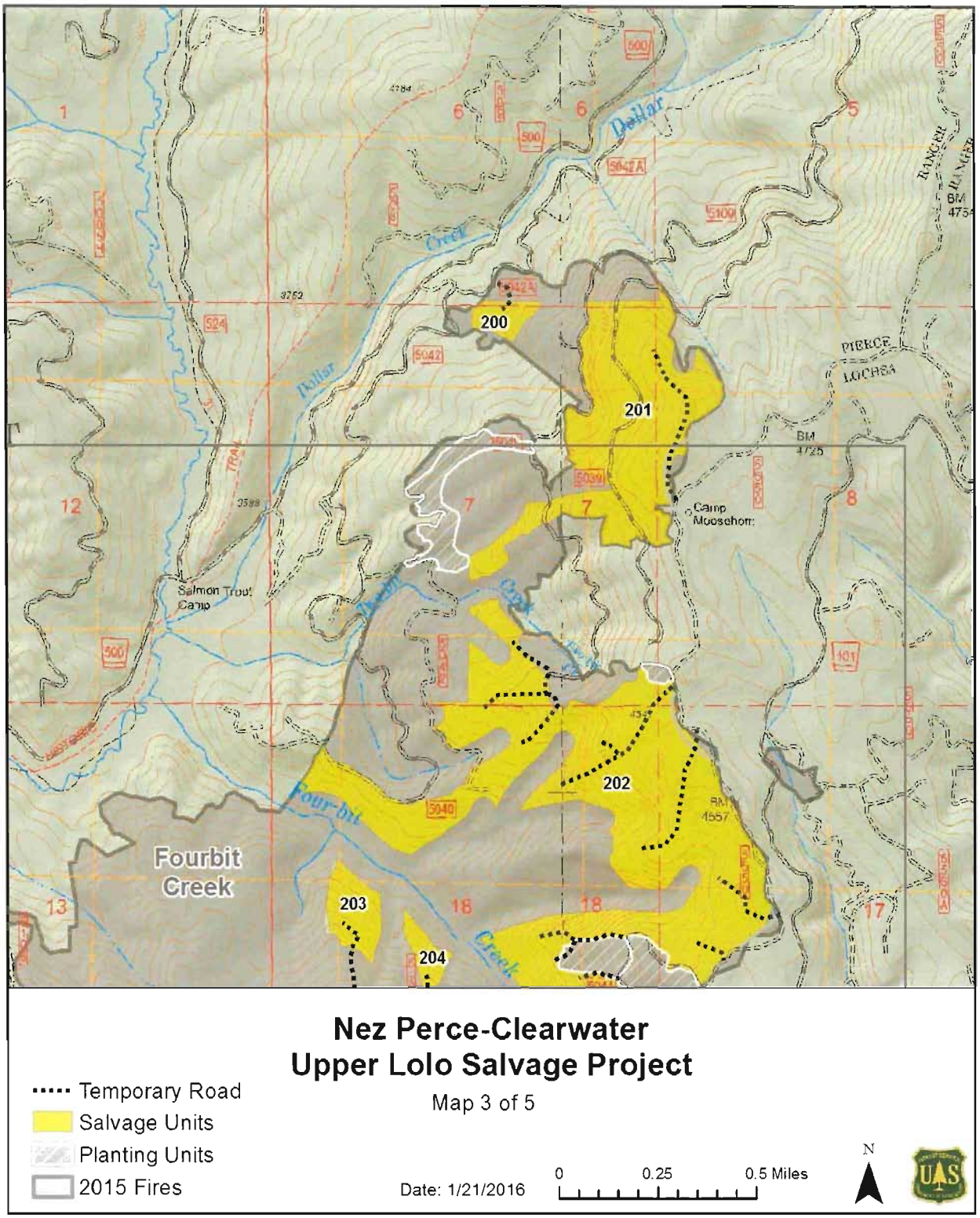
Upper Lolo Fires and Salvage/Reforestation Units.



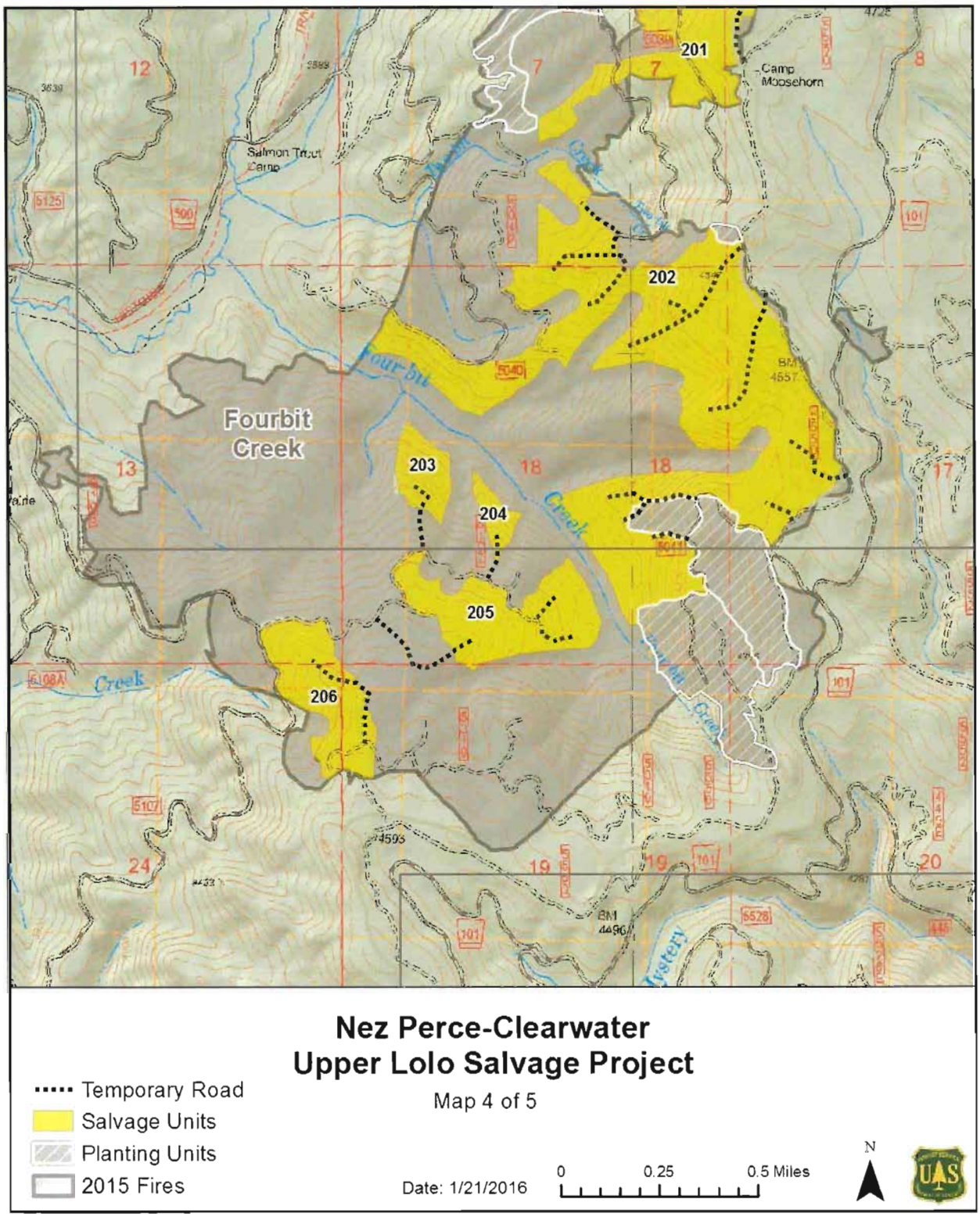
Map 1 of Upper Lolo Fires. Musselshell fire area and salvage/reforestation units



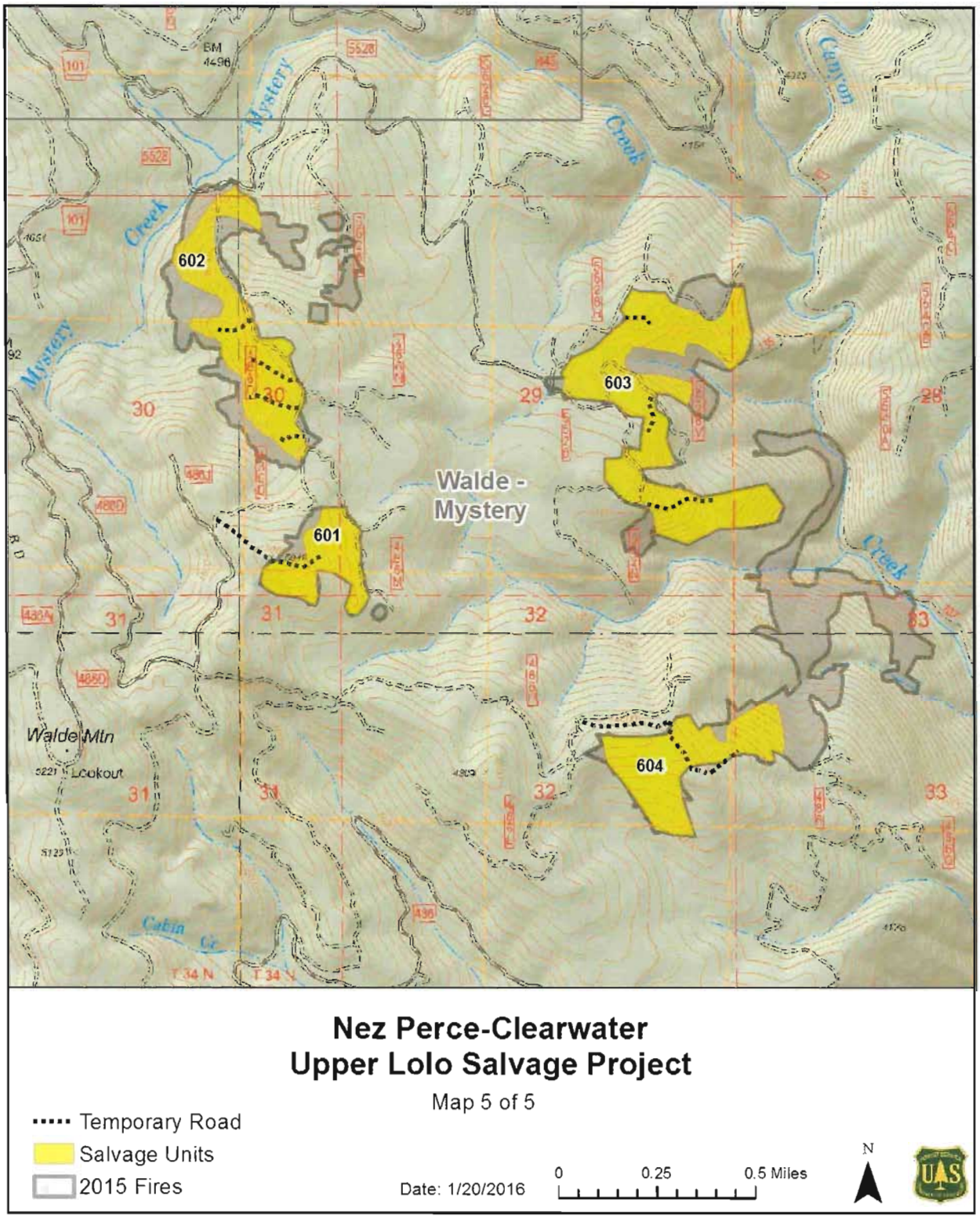
Map 2 of Upper Lolo Fires. Yoosa Fire Area and Salvage/Reforestation Units.



Map 3 of Upper Lolo Fires. Four Bit Fire Area and Salvage/Reforestation Units.

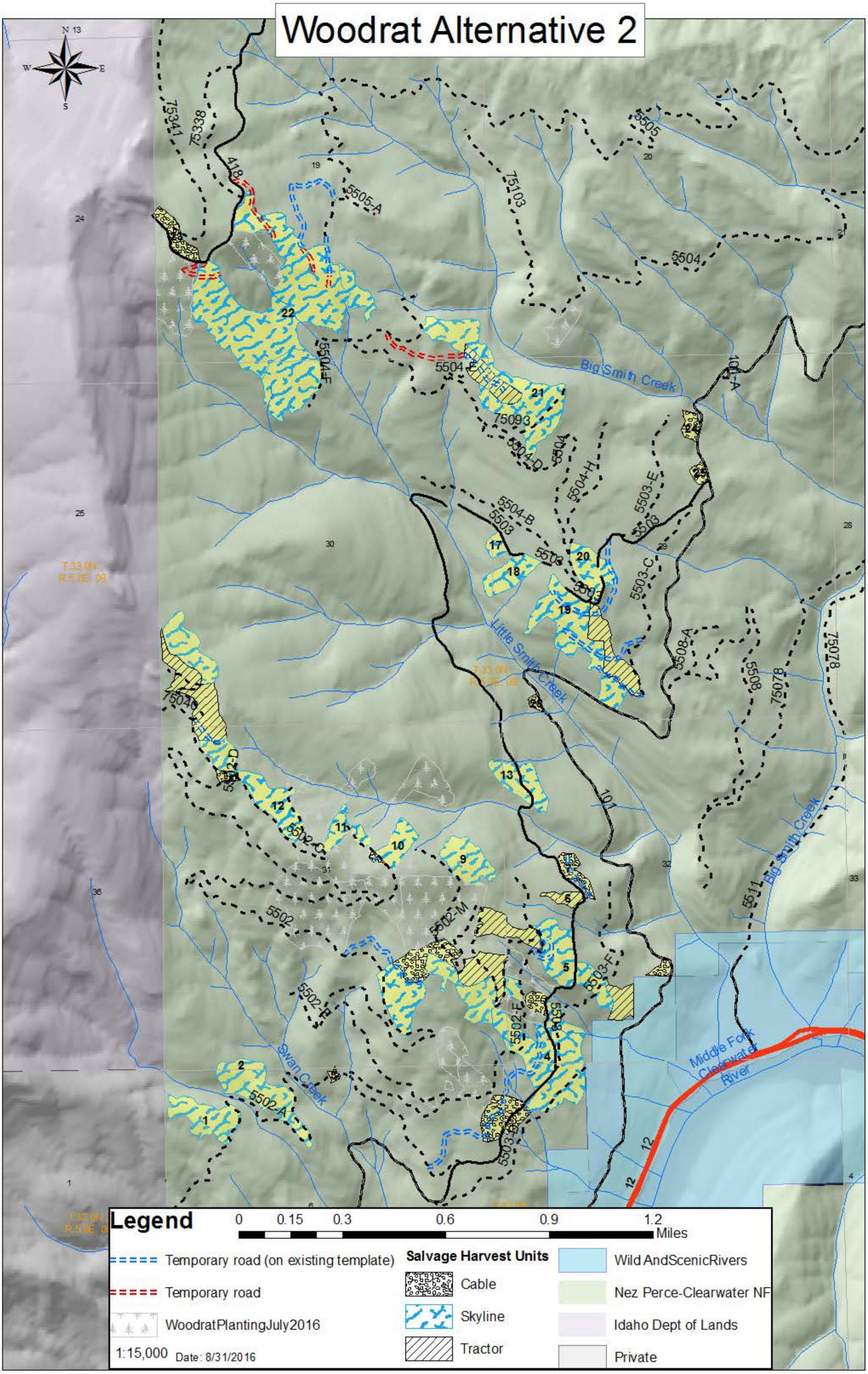


Map 4 of Upper Lolo Fires. Four Bit fire Area and Salvage/Reforestation Units.



Map 5 of Upper Lolo Fires. Walde-Mystery Bit fires area and Salvage/reforestation units

Woodrat Alternative 2



The Woodrat Salvage project proposes to harvest and/or reforest approximately 536 acres of dead and dying trees within the 2015 Woodrat fire perimeter.

Location Summary

The proposed Woodrat salvage units are located immediately northwest of Syringa, Idaho in Township 33 North, Range 6 East; Sections 19, 20, 29, 30, and 31; Boise Meridian

District: Lochsa Ranger District

Project Documents

	Date Published
Scoping	
160127_InterestedPartyScopingLetterWithMaps_Signed (PDF 6015kb)	***01-29-2016***
20160129ULS_W_Scoping30DayCommentLegalNotice_LMT (PDF 339kb)	***01-29-2016***
Analysis	
20160503 DRAFT Woodrat Salvage EA (PDF 10432kb)	***05-03-2016***
Preliminary Woodrat Salvage EA 20160902 (PDF 5544kb)	***09-02-2016***
Preliminary Woodrat Salvage EA Alternative 2 map 20160902 (PDF 594kb)	***09-02-2016***
160902Woodrat EA Legal Notice (002) (PDF 39kb)	***09-02-2016***
Preliminary Woodrat Salvage EA Legal Notice Lewiston Morning Tribune 160902 (PDF 1446kb)	***09-08-2016***
Preliminary Woodrat Salvage EA Alternative 2 map 20160902 (PDF 241kb)	***09-08-2016***
Final Woodrat Salvage Environmental Assessment 20161202 (PDF 5188kb)	***12-02-2016***
Decision	
Woodrat Salvage Draft DN/FONSI 20161202 (PDF 1551kb)	***12-02-2016***
Woodrat Salvage Draft DN Legal Notice Lewiston Morning Tribune 20161202 (PDF 493kb)	***12-02-2016***

United States
Department of
Agriculture

Forest
Service

**Northern
Region**

Draft Decision Notice and Finding of No Significant Impact

Woodrat Salvage Project

Lochsa-Powell Ranger District, Nez Perce-Clearwater National Forests

Idaho County, Idaho

for the greatest good

Draft Decision Notice and Finding of No Significant Impact Woodrat Salvage Project

Nez Perce-Clearwater National Forests
Lochsa-Powell Ranger District
Idaho County, Idaho

Lead Agency:	USDA Forest Service
Responsible Official:	Cheryl F. Probert Forest Supervisor Nez Perce-Clearwater National Forests 903 3rd Street Kamiah, ID 83536
For Information Contact:	Brandon Knapton District Ranger Lochsa-Powell Ranger District 502 Lowry Street Kooskia, ID 83539 (208) 926-6400

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A. Introduction

The Woodrat Salvage Project Final Environmental Assessment (FEA) is incorporated by reference and documents and analyzes a proposal to salvage harvest, reforest, and implement associated road activities within the approximate 2,505-acre Woodrat Salvage project area.[1] Lands treated will meet the criteria disclosed within the FEA; approximately 15 percent of the project area will receive salvage harvest treatments and up to approximately 23 percent of the project area will receive fuel treatments to prepare sites for reforestation (these areas overlap).

This decision notice and finding of no significant impact (DN/FONSI) is based on a review of the Woodrat Salvage Project FEA, specialist reports, and related scientific literature, the Clearwater National Forest Land and Resource Management Plan (Forest Plan) (USDA Forest Service 1987), as amended, the response to public comments received during the January/February 2016 combined scoping and 30-day comment period, and the response to public comments received during the September 2016 30-day comment period on the preliminary Woodrat Salvage Project EA. The Woodrat Salvage FEA is available for public review at the at the Lochsa-Powell Ranger District Office located in Kooskia, Idaho, and on the Nez Perce-Clearwater National Forests' website at: http://www.fs.usda.gov/project/?project=48651. The project record is available upon request, and contains information considered in the analysis and decision. The project record includes the Clearwater Forest Plan, specialist reports, and other applicable guidance, data, and information.

The Woodrat fire started on August 11, 2015 on the Nez Perce-Clearwater National Forests, approximately10 miles east of Kooskia, Idaho. The Woodrat fire burned approximately 6,472 acres of private, Idaho Department of Lands, and National Forest System (NFS) lands within the Middle Lolo Creek, Pete King Creek, Big Smith Creek – Middle Fork Clearwater River, Suttler Creek – Middle Fork Clearwater River, and Maggie Creek subwatersheds. Approximately 2,505 acres of NFS lands burned within the Middle Lolo Creek, Pete King Creek, Big Smith Creek – Middle Fork Clearwater River subwatersheds. The Clearwater Forest Plan land management allocation within the fire perimeter is C4 – big game winter and suitable timber-producing land and E1 – productive timber land. The Woodrat Salvage project is located in the moderately warm and dry and moist mixed conifer types at elevations ranging from about 2,000 feet to 4,000 feet.

The Woodrat Salvage project is one of several projects developed to address the wildfires of 2015. The Forests are also proposing projects that respond to emergency needs within the burned areas (Burned Area Emergency Response or BAER), maintain critical infrastructure and mitigate hazards to the public and Forest employees, and restore burned landscapes. In total, less than 3 percent of the area burned during the summer of 2015 on the Nez Perce-Clearwater National Forests is proposed for harvest or hazard tree removal, including this proposal.

During the late summer and fall of 2015, Nez Perce-Clearwater National Forests staff and resource specialists met and initiated a rapid assessment to help guide the Forests' post-fire recovery and to identify needed restoration activities and salvage opportunities across the Forests from the 250 fire events described above. The purpose of the rapid assessment salvage strategy was to identify the process and necessary steps for timber salvage opportunities following the 2015 fires.

Phase I of the rapid assessment process was a broad level review (coarse filter) and screening process using sideboards/criteria to identify any obvious problematic resource issues within or adjacent to the

[1] The Woodrat Salvage project area is the entire Woodrat fire perimter that burned on National Forest System lands.

affected areas. The Woodrat fire cleared the coarse filter screening process and was brought forward as a salvage opportunity. Sideboards/criteria that were **not present** within the Woodrat fire perimeter were:

- Idaho Roadless Areas,
- Designated wilderness areas,
- Culturally significant areas,
- Research Natural Areas,
- and Botanical Areas.

Sideboards/criteria that were present within the Woodrat fire perimeter and were eliminated from timber salvage opportunities included:

- The Middle Fork Clearwater Wild and Scenic River corridor,
- Riparian Habitat Conservation Areas (RHCAs), and
- Areas with old growth characteristic after the fire.

Geographic Information System (GIS) identified potential land slide prone (LSP) areas were not excluded from consideration for salvage opportunities pending field verification. There would be no harvest on soils that were field verified as landslide prone. Subsequently, this potential salvage area within the Woodrat fire was then looked at through a fine filter for vegetative and landscape characteristics.

Field verification/validation was conducted under Phase 2 (fine filter screening) of the rapid assessment process. Interdisciplinary team members considered the following sideboards/criteria for the fine filter screening process of the Woodrat fire:

- No Forest Plan amendments,
- No new permanent road construction,
- Minimize new temporary road construction,
- No harvest on soils field verified as landslide prone,
- Validate threatened, endangered, and sensitive species habitat and significant impacts to species,
- Avoid cultural sites, and
- Address logging system feasibility and access.

Based on the two phases of the rapid assessment process described above, areas initially excluded within the Woodrat fire perimeter for potential salvage included burned areas within the Middle Fork Clearwater Wild and Scenic River corridor, RHCAs, and areas of old growth; no wilderness areas, Idaho Roadless areas, culturally significant areas, Research Natural Areas, Botanical Areas, and known critical threatened, endangered, or sensitive species habitat were burned by this fire. Approximately 6 acres of the Woodrat fire burned National Forest System lands within the Middle Fork Clearwater Wild and Scenic River corridor. Stands selected for treatment were not included within the burned portions of the Middle Fork Clearwater Wild and Scenic River corridor. The results of the coarse and fine filters left 2,276 acres that were potentially suitable for salvage harvest within the Woodrat fire area.

The interdisciplinary team determined that approximately 450 acres of dead and dying trees would be available for economically viable ground-based and cable system salvage harvest within the Woodrat fire area. This is 18% of National Forest System lands that burned within the Woodrat fire perimeter. These acres were further reduced after public involvement and additional post-fire field data collection to 378 acres. Additional information and meeting notes supporting the assessments are located in the project record.

The interdisciplinary team designed the Proposed Action, including project design features, after application of the rapid assessment process. Post fire assessments were conducted on the ground and field visits were made by members of the interdisciplinary team to determine vegetation burn severity, tree

mortality, species composition, merchantability, and access feasibility to determine units to propose for salvage harvest. The interdisciplinary team analyzed these assessments and determined that approximately 378 acres of dead and dying trees would be available for economically viable ground-based and cable system salvage harvest. This is 15% of the total area of National Forest System lands that burned within the Woodrat fire perimeter. Additional information and meeting notes supporting the rapid assessment and post fire assessments are located in the project record.

All units proposed for salvage harvest are within burned areas. Green trees that do not meet the Nez Perce-Clearwater National Forests hazard tree and mortality guidelines will not be removed. These guidelines have been developed through research and guidance from various scientific sources such as Scott et al. 2002, Region 1 (R1) Forest Health Protection Fire Survivability report, and others. Supporting documentation used in the development of the Nez Perce-Clearwater hazard tree and mortality guidelines are in the project record (Wendover and Trap fire salvage and tree mortality monitoring).

The Woodrat Salvage Project DN/FONSI and Final Environmental Assessment (FEA) are in compliance with the National Environmental Policy Act (NEPA). All project activities were analyzed in the FEA to disclose the cumulative effects of the activities. I am utilizing these two tools to implement salvage harvest, reforestation, and associated road activities within the Woodrat Salvage project area. I have reviewed the FEA and related materials, including the analysis file and all public comments to the preliminary EA. I base my decision upon that review.

B. Project Location

The Woodrat Salvage project is located on the Lochsa-Powell Ranger District within the Nez Perce-Clearwater National Forests. The project area is located in Idaho County approximately 10 air miles east of Kooskia, Idaho and immediately northwest of the town of Syringa, Idaho. The main road access is via Forest Service Roads 101 and 5503 off US Highway 12 from the south of the area. The legal description for the project area is (township, range, sections): Township 33 North, Range 6 East, sec. 19, 20, and 29-32; T. 32 N., R. 6 E., sec. 5-6, Boise Meridian (Appendix A, Figure 1).

C. Purpose and Need

The purpose of the project is to protect the health and safety of public, workers, and private citizens, capture remaining forest product economic value and benefit, maintain existing and develop future wildlife habitat, maintain watersheds and reduce runoff from erosion, and reforest suitable portions of the landscape deforested by the Woodrat Fire.

The primary needs for action include reducing hazardous fuels in fire-affected areas to prevent future stand-replacing wildfire events; timely recovery of the economic value of dead and dying trees to assist in offsetting the cost of forest restoration activities, such as planting; reducing hazards to the public and forest workers; and restoring forest ecosystem function and structure through reforestation and other restoration activities, where appropriate. Timely implementation of the project is necessary to achieve the purpose and need for the project. Timber deterioration estimates show a 60 percent decrease in the merchantable timber volume if the product is not under contract within one year of the fire. Without the commodity value of the product, the ability to prepare the site for reforestation, safely access areas for planting, reduce fuel loading to reduce the potential for severe future re-burn events, and mitigate hazards that pose a risk to the public and forest employees may not be possible.

Stands of economically valued species such as ponderosa pine, Douglas-fir, and grand fir were burned in the Woodrat fire area. As time progresses these fire-killed trees lose economic value because of staining, insects, and checking (cracks in the wood that occur as the burned wood dried). Currently (fall of 2016), up to 60% of the economic value of these trees may already be lost. There is a need to expeditiously

salvage fire killed trees. The action would provide funding to provide reforestation in the project area and help support the forest products industry and local economy.

It is possible that many of the stands that experienced stand replacement fire will not have an adequate natural seed source to regenerate the forest to the desired future conditions. In these situations, there is a need to plant trees in order to restore the desired forest conditions.

D. Decision

This decision notice and finding of no significant impact (DN/FONSI) documents my decision and rationale in the selection of management activities for the Woodrat fire area as described in the *Woodrat Salvage Project* Final Environmental Assessment (FEA). The scope of my decision includes the specific salvage harvest treatments, reforestation, and associated road activities described in the Woodrat Salvage FEA and this DN/FONSI. The project works toward meeting Clearwater Forest Plan goals and objectives by providing timber that is cost efficient and protects soil and water resources (Forest Plan Goal 9, Timber Objective 8, Standard (timber) 7)), provides for the safety of forest workers and the public, and provides incremental progress toward forest restoration. This decision does not preclude the need for future decisions to help meet the desired conditions for the Woodrat fire area.

Based on my review of the Woodrat Salvage FEA, which includes the proposed action and no-action alternatives, I have decided to authorize with this decision all components of the proposed action (Alternative 2). This decision will implement several resource management activities including: salvage harvest treatments, reforestation, and associated road activities. Alternative 2 best meets the purpose and need for action by providing for the current and future safety of forest workers and the public from falling snags and potential future severe wildfire, makes available approximately 7.6 million board feet (MMBF) of fire-killed timber to the local and regional economies through a limited amount of salvage harvest in units that can be accessed by the existing road system and temporary roads, and accelerates forest restoration to provide wildlife habitat, watershed function, and forest health into the future. Timely implementation is necessary to achieve the restoration needed for the project area. Without the commodity value of the product, the ability to prepare the site for reforestation may not be possible. Many of the stands may have experienced stand replacement fire will not have an adequate natural seed source to regenerate the forest to the desired future conditions. In these situations there is a need to plant trees in order to restore the desired forest conditions (FEA page 26). Stands of economically valued species were burned in the Woodrat fire area. As time progresses these fire-killed trees lose economic value because of staining, insects, and checking (cracks in the wood that occur as the burned wood dried). By the late spring or early summer of 2016 up to 60% of the economic value of these trees may have already been lost.

Alternative 2 was designed to protect and conserve resources while providing for economic outputs, provide for a margin of safety for forest workers and the public, and offset the cost of forest restoration to meet Forest Plan goals and objectives. My conclusion is based on a review of the record that shows a thorough analysis of relevant scientific information, as well as the acknowledgement of incomplete or unavailable information.

1. Specifics of the Decision

Alternative 2 is described on pages 12-18 in the FEA, and displayed in maps attached to this Decision Notice (Appendix A).

A. Salvage Harvest

My decision will provide for the harvest of dead and dying trees from approximately 378 acres located in 22 harvest units within the Woodrat fire perimeter (Appendix A, Figure 2). Incidental live trees may need

to be felled for construction of landings, temporary roads or skid trails; therefore the number of actual live trees is anticipated to be very low. Dead and dying trees for removal will be determined using the Nez Perce-Clearwater Mortality Guidelines. No green healthy trees will be harvested. Ground-based harvest systems would be used to harvest 48 acres, and cable/skyline harvest systems would be used on 330 acres. Ground-based harvest systems would be limited to slopes less than 35 percent. Cable-based systems would be used in areas with steeper slopes. Swing trails and skid trails would be located on low-gradient, dry ridges, or upper slopes away from water and stream crossings; thus are not expected to contribute sediment to streams. Swing and skid trails would be managed while in use to minimize disturbance, and would be decompacted and stabilized as described in the project design criteria following use.

Trees would not be removed for commercial purposes in Riparian Habitat Conservation Areas (RHCAs), ground-verified landslide-prone areas (LSP), stands with verified post-fire old-growth characteristics, or areas where cultural resources are likely to be adversely affected.

Nez Perce-Clearwater National Forests Tree Mortality and Hazard Tree Guidelines

Burned areas selected for salvage harvest would use the Nez Perce-Clearwater National Forests Tree Mortality and Hazard Tree Guidelines. Only those trees meeting the criteria of the guidelines in Table 1 are considered dead and would be removed; all live trees would be retained.

Table 1. Nez Perce-Clearwater Tree Mortality Guidelines and Hazard Tree Criteria

Species	Dead Tree Selection Criteria
	Two criteria must be met in order to be considered dead.
Douglas-fir	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch. 3. 50% or more of the area under tree crown has had duff removed by fire.
Grand fir	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch 3. 50% or more of the area under tree crown has had duff removed by fire.
	One criteria must be met in order to be considered dead.
Western red cedar and Engelmann spruce	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch. 3. 50% or more of the area under tree crown has had duff removed by fire.

All western larch, western white pine, and ponderosa pine would be left uncut, regardless of whether or not the tree is dead; therefore no specifications are given here for determining whether these species are dead.

In order to provide structure for wildlife and to function as a source of future coarse woody debris (which would help maintain soil productivity), trees in addition to western larch, western white pine, and ponderosa pine would be left uncut within proposed harvest units as follows. In addition to all live trees and all western larch, western white pine, and ponderosa pine being left uncut, grand fir that have a stump diameter greater than or equal to 37” and western red cedar that have a stump diameter great than or equal to 40” would be left uncut. The target number of retained snags and snag replacements (live trees that would eventually become snags) would be an average of 14 trees per acre. If the combined total of all trees meeting the above criteria averages less than this target, additional groups of 10-30 grand fir, Douglas-fir, and western red cedar would be retained in order to reach an average of 14 trees per acre. No area greater than 2 acres would be void of leave trees.

B. Site Preparation and Reforestation

Funds collected from salvage harvest activities would be used to offset the cost of reforestation on 158 acres of severely burned timber stands and 378 acres of salvage-harvested stands. Post fire assessments have determined areas of reforestation based on the burn severity where natural regeneration may not occur. In these areas that burned at moderate and high severity, where timber does not meet merchantability standards or hazard abatement; fuels reduction and site preparation for reforestation will be accomplished using mastication, machine piling and burning, or jackpot burning (FEA page 14).

Following removal of dead and dying trees, fuel treatments would be performed to remove fuels (unusable portions of trees) left on the site from harvest activities. The purpose of these fuel treatments would be to reduce fuels on the site and to prepare the site for planting. These activity-generated fuels will include machine piling and burning, or mastication on slopes less than 35% and on ground that is not machine operable, and jackpot burning would be utilized as well. Burning and/or mechanical treatments would reduce fuel loading to about 7-33 tons of coarse woody debris (greater than 3” diameter) per acre, depending on the site recommendations given by Graham et al (1994) (FEA pages 14 and 17).

When fuels treatments have been completed, restocking the harvest units would occur through utilizing natural regeneration and planting native tree species where planting is needed. Tree species anticipated for planting include western white pine, western larch, and ponderosa pine, but other tree species may be used as individual site conditions indicate needs for different native tree species (FEA page 15).

C. Associated Road Activities

Temporary Roads and Road Maintenance

The following road activities will occur in support of implementing salvage harvest (Appendix A, Figure 2, and Figure 3).

3.7 miles of temporary roads: Temporary roads are necessary to access 9 units. Existing road templates of non-system roads will serve as the road prism for 2.9 miles of proposed temporary roads; the remaining 0.8 miles of temporary road would be new temporary road construction. New temporary road construction would be located on low-gradient, dry ridges, or upper slopes away from water and stream crossings and are not expected to contribute to sediment. All temporary roads would be obliterated after use; including the 2.9 miles of existing road prisms used as temporary roads. Obliteration would eliminate future use of the road with the objective of restoring hydrological function. Temporary roads would be restored to ensure that the road has adequate drainage and ground cover to prevent erosion, soil productivity is restored, and where the road is no longer drivable or highly visible (FEA, page 15).

In some parts of the project area, there are no existing roads that can provide access to these units. The locations of temporary roads were selected to minimize impacts to soils and water quality. Temporary roads will be closed and obliterated following project activities (FEA, pages 15, 17).

9.6 miles of road maintenance for log haul: Approximately 9.6 miles of roads will be maintained to facilitate management activities described above, which meets the intent of these roads’ management level designation. Standard mainenance consists of activities such as road blading, brushing, removal of small cutslope failures, applying rock in wet areas and removal of obstructions such as rocks and trees. Maintenance also includes replacement of existing culverts (FEA pages 14-17 and FEA Appendix A).

25.9 miles of road reconstruction for log haul: Segments within 25.9 miles of roads will be reconstructed to facilitate management activities described above, which meets the intent of these roads’ management level designation. Road reconstruction includes replacing and installing new culverts for cross drains and live water culverts, placement of rock surfacing, placement of roadway fill and installation of new signs or gates. Other activities include installation of drainage dips, road blading, brushing and removal of obstructions (FEA pages 14-17 and FEA Appendix A).

1.2 miles of road stabilization: Road stabilization is required on approximately 1.2 miles of roads needing permanent erosion control measures after hauling and administration is complete. Stabilization practices vary depending on the road location and the risk of road failure. Examples of stabilization work includes culvert removal at streams and cross drains, water bar installation, road decompaction and road out sloping or recontouring. Roads that have moderate to high risk of failure will receive more work (FEA page 16 and FEA Appendix A).

All of the work needed on proposed haul routes inside and outside of the project area is defined as maintenance under 36 CFR 212.1.

2. Project Design Features

Project design features were developed by the interdisciplinary team with prominent consideration to resource conditions found in the project area. The project was designed to avoid undesirable cause-effect relationships and potential effects to resource conditions; and ensure that these projects are consistent with the Clearwater National Forest Land and Resource Management Plans, including the 1995 PACFISH amendment; and all laws, regulations, and policies such as Idaho Forest Practices Act, Clean Water Act, and Idaho State Water Quality Standards (Table 2). These design features were developed from past projects, have been verified by field surveys, and will be used to limit possible adverse effects to soils, water quality, fish and wildlife habitat, and culturally significant areas.

Best Management Practices (BMPs) would be followed for Alternative 2 as stipulated by the Idaho Forest Practices Act. Idaho water quality standards regulate non-point source pollution from timber management and road reconstruction activities through the application of BMPs. The Clearwater National Forest has an excellent record of successful implementation of BMPs. Between 1990 and 2002, the Forest had a BMP implementation rate of 98% and a 97.8% rate of effectiveness (Clearwater National Forest, 2003). Survey results from 2004 through 2008 indicate implementation and effectiveness rates of 98% or greater. The same BMPs would be applied to the Woodrat Salvage project and are expected to have similar results (EA page 75).

Table 2. Woodrat Salvage project design features

		Minimize/Reduce Impact
Soil Resources, Water Quality and Fish Habitat		
1.	Directionally fell trees to facilitate efficient removal along pre-designated yarding patterns with the least number of passes and the least amount of disturbed area.	Soil disturbance
2.	No ground based skidding would be allowed on continuous slopes over 35%.	Soil disturbance and compaction
3.	Limit operating periods to avoid saturated soils and prevent resource damage (indicators include excessive rutting, soil displacement and erosion).	Soil disturbance
4.	Limit tractor crossings over ditchlines where possible. As needed, install temporary culverts (or crossing logs) to limit damage to ditchlines at tractor crossings. Post-harvest, reconstruct ditch crossings, cut slopes, and fill slopes to standard.	Sediment
5.	If practicable, temporary roads would be constructed, used, and obliterated within the same operating season. If roads are to be overwintered, they would be water-barred and placed into a hydrologically stable condition to minimize surface erosion potential.	Erosion and sediment

		Minimize/Reduce Impact
6.	Locate and design skid trails, landings and yarding corridors prior to harvest activities to minimize the area of detrimental soil effects. Space tractor skid trails to a minimum of 80 feet apart, except where converging, and reuse existing skid trails where practicable, to reduce the area of detrimental soil disturbance. This does not preclude the use of feller bunchers if soil impacts can remain within standards.	Soil disturbance
7.	Recontour excavated skid trails and landings to restore slope hydrology and soil productivity. Scarcify excavated skid trails and landings that are compacted or entrenched 3 inches or more. Scarcify to a depth of 6 to 14 inches but avoid bringing up unfavorable subsoil material. The use of excavated skid trails and landings will be minimized. Where skid trails and landings are constructed on moderate to severely burned slopes, construction would occur only during a period when soils are dry and recontouring and replacement of at least 50% cover would occur immediately after use. Erosion control measures would be implemented on scarified surfaces (per timber sale contract standard provisions).	Erosion and soil productivity
8.	Retain 7-33 tons per acre of coarse woody debris (greater than or equal to 8 inches in diameter) following completion of activities. Drier Sites would retain 7 to 12 tons per acre and moister sites would retain 12-33 tons per acre of coarse woody debris. Reference "Coarse Woody Debris, Snag and Green Tree Retention Guidelines" (USDA 2008).	Soil organic matter and bare ground
9.	In units with high burn severity, trees would be processed on-site and activity generated slash (tops and limbs) would be scattered on-site. These areas would not be eligible for broadcast burn post-harvest.	Soil organic matter and bare ground
10.	PACFISH default buffers would be used to define salvage sale unit boundaries. No harvest would occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 100 feet of intermittent streams, and 100-foot slope distance from the edge of wetlands larger than one acre or verified landslide prone areas.	Sediment and fish habitat
11.	In harvest units adjacent to high fire severity/intensity-affected RHCAs, default RHCA buffer widths would be increased, as needed, to protect RMOs and maintain function of the RHCA (PACFISH, 1995).	Sediment and fish habitat
12.	Cross drains will be installed and spaced no more than 100 feet on either side of stream crossings where necessary prior to other road work and haul to reduce road drainage area to streams.	Sediment
13.	Equipment and fueling will be staged outside of RHCAs (PACFISH, 1995).	Fish habitat and water quality
14.	There will be no road construction in RHCAs and roads will be located to avoid adverse effects to soil, water quality, and riparian resources.	Soils, sediment, water quality, and riparian resources
15.	Sediment control devices will be installed to minimize sediment to streams during instream culvert work.	Sediment
16.	Ditches and catch basins will only be cleaned as needed to function.	Sediment
Botany and Invasive Species		
17.	Use Forest Service approved native plant species/seed or non-native annual species/seed to meet erosion control needs and other management objectives. Apply only certified weed-free seed and mulch. (Timber Sale Contract Provision, currently C6.601)	Invasive species expansion

		Minimize/Reduce Impact
18.	Remove all mud, soil, and plant parts from off road equipment and equipment being used for road maintenance before moving into project area to limit the spread of noxious weeds. Conduct cleaning off National Forest lands (Timber Sale Contract Provision, currently B6.35).	Invasive species expansion
19.	Protect TES plant species and/or potential habitat identified at any point during planning or implementation as recommended by the unit botanist and approved by the appropriate line officer (Timber Sale Contract Provision, currently B6.24).	TES plants
Wildlife		
20.	Stands meeting old growth criteria post fire will not be harvested.	Old growth habitat
21.	Northern Goshawk – maintain a minimum 40-acre yearlong no treatment buffer (no ground disturbing activities) around occupied goshawk nest trees. Additionally, no ground disturbing activities shall be allowed inside known occupied post-fledgling areas (PFAs) from 15 April to 15 August.	Gowhawks and PFAs
22.	Maintain snags in accordance with Forest Plan standards including snag density and the scale at which those densities apply, preferably retaining larger diameter snags.	Snag habitat
Cultural Resources		
23.	Halt ground-disturbing activities if cultural resources are discovered until an approved Archaeologist can properly evaluate and document the resources in compliance with 36 CFR 800 (Timber Sale Contract Provision, currently B6.24).	Cultural resource sites
Air Quality		
24.	Coordinate with the North Idaho/Montana Airshed Group when prescribed fires are scheduled to ensure compliance with the Clear Air Act.	Air quality
Visuals		
25.	Within all viewsheds, created openings within treatment units should not be symmetrical in shape. Straight lines and right angles should be avoided. Created openings should resemble the size and shape of those found in the surrounding natural landscape. Treatments should follow natural topographic breaks and changes in vegetation if possible.	Scenery
26.	Within all viewsheds, where the unit is adjacent to denser forest, the percent of thinning within the transition zone will be progressively reduced toward the outside edge of the unit. In addition, vary the width of the transition zone.	Scenery
27.	Within all viewsheds where skyline harvest methods are used, minimize the number of skyline corridors in visually sensitive areas.	Scenery
28.	Within retention viewsheds, harvest areas within 300 feet of the viewing platform, (i.e., road, recreation sites, or administrative site), stumps should be cut to 8 inches or less in height.	Scenery
29.	Within retention viewsheds, landing areas within 300 feet of the viewing platform (i.e., road, recreation sites, or administrative sites) slash, root wads, and other debris should be removed, burned, chipped or lopped to a height of 2 feet or less.	Scenery and Wild and Scenic ORV

		Minimize/Reduce Impact
Access Management and Public Safety		
30.	Dust abatement would be used as needed on major haul routes to provide for public safety by protecting the road surface and to reduce sediment input to streams from log hauling activities. Methods used would be either chemical (MgCl) or water and would be applied to limit introduction into streams.	Public safety, sediment, air quality

3. Monitoring

Please see page 18 of the FEA for the monitoring that will be accomplished as part of this project.

E. Rationale for the Decision

Alternative 2 in the Woodrat Salvage Project FEA was developed and refined during interdisciplinary meetings and field visits, and in consideration of the purpose and need for action within the area burned in the 2015 Woodrat fire. Forests staff also thoroughly addressed issues and project design through the rapid assessment process described in the Introduction and Chapter 1 of the FEA. Throughout the analysis process I considered several alternatives to the proposed action. A total of 5 alternatives to the proposed action were considered but eliminated from detailed study or dropped from consideration. The rationale for eliminating these alternatives can be found in the FEA on pages 19 and 20.

In making my decision for the Woodrat Salvage project I evaluated all of the environmental consequences of the alternatives considered and the vast amount of science referenced in the analysis. I considered how each alternative meets the stated purpose and need for action and complies with applicable laws, regulations, and policies. Best Management Practices (BMPs) would be followed as stipulated by the Idaho Forest Practices Act. The Clearwater National Forest has an excellent record of successful implementation of BMPs. The same BMPs that have an implementation rate of 98% and 97.8% to 98% and greater rate of effectiveness would be applied to the Woodrat Salvage project and are expected to have similar results (Clearwater National Forest, 2003). I also considered the range of public input received on the project throughout the planning process.

Due to the urgent nature of this project and the danger associated within areas located inside the Woodrat fire perimeter, I have limited the number of employees being on the ground to reduce employee exposure to hazardous field conditions and risks of injury or death. As such, alternate methods of analysis were used in some cases to reduce exposure of Forest workers to risks to life or safety. The alternate methods include the use of LiDAR, existing data, BAER assessments, and professional judgement based upon field review of conditions on the ground within burned areas across the project area and Forests.

In making my decision I have tried to balance multiple views and needs to increase the safety of forest workers, recreationists, and the public, provide for forest restoration, and maintain and improve watershed health and function as well as wildlife habitat while allowing for the recovery of the economic value of dead and dying trees. My primary considerations in making this decision include meeting the purpose and need for action, ensuring public, partner, tribal, and participating agency input and comments were considered, and any issues raised in the scoping process were adequately addressed to assure that an informed decision would result from the analysis. This is a summary of my decision and thought process that went into making this decision.

My decision is guided largely by the project design features of Alternative 2. The project was specifically designed to address the purpose and need and avoid adverse effects to resources of concern in the project area (FEA pages 17-19, 50, 62, 74, 75, and 130-133). While minimization or elimination of resource impacts was a major consideration, my decision also was influenced by the degree to which an alternative

would result in indirect benefits to the public and resources through providing a source of non-appropriated (non-taxpayer dollars generated through the sale of fire-killed timber) funding for forest management activities important to the local and regional visitors to the forest such as reforestation, fuels treatments, and road and access maintenance and improvement. The project provides for the removal of fire-killed trees to recover economic value that will facilitate the improvement of safety within the area and fund forest restoration (replanting desirable early seral species for increased resistance and resiliency of forest vegetation as well as provide for maintenance of watershed function and wildlife habitat) for multiple resource and social benefits into the future.

In the development of the analysis, an emerging issue developed concerning the Outstandingly Remarkable Values (ORVs) of the Designated Middle Fork Clearwater Wild and Scenic River. In response, staff conducted additional field visits to evaluate the visual resources and also reviewed resource data to specifically address any potential impacts to the ORVs. While there are no harvest units located in the Middle Fork Clearwater River Wild and Scenic Corridor (FEA pages 1, 2, 10, and 120-124), and any potential impact on the ORVs were analyzed and found to protect and enhance (Wild and Scenic Rivers Act (1968), section 10) the ORVs, I have considered the information in the relevant resource reports and the FEA to assure the management of National Forest System lands outside of the boundary support current and future protection and enhancement of these ORVs. Project design features to protect wildlife habitat, soils and watershed resources, and meet Forest Plan standards are incorporated into Alternative 2 (FEA pages 17-19). I believe this careful attention to the design of the project contributed substantially to the finding of no significant impact documented in this Decision Notice.

My decision gives attention to wildlife habitat, primarily snags, which will remain after salvage harvest and will meet the Forest Plan standard (FEA page 115). All live trees will be retained and all trees that meet the Nez Perce-Clearwater tree mortality guidelines will be removed; although all western larch, western white pine, and ponderosa pine would be left uncut, regardless of whether or not the tree is dead. Grand fir that have a stump diameter greater than or equal to 37” and western redcedar that have a stump diameter great than or equal to 40” would be left uncut. The target number of retained snags and snag replacements (live trees that would eventually become snags) would be an average of 14 trees per acre. If the combined total of all trees meeting the above criteria averages less than this target, additional groups of 10-30” grand fir, Douglas-fir, and western redcedar would be retained in order to reach an average of 14 trees per acre. In addition to retaining all live trees, varying amounts of snags will be retained to provide benefits to wildlife. Snags will be retained individually and in groups and the quantity of snags will be in accordance with the recommendations made by Bollenbacher et al (2009). A minimum of fourteen snags per acre greater than 15 inches DBH will be retained; preferentially retaining the largest snags. These minimums will be retained for the treatment units as a whole; this number of snags would not be retained on every acre, but would be the average retained across a treatment unit; however, no area greater than 2 acres would be without some snags. The purpose of snags not being retained on every acre is specifically to follow the Forest Plan recommendation of clumping snags and is consistent with recommendations made by Bollenbacher et al. (2009). These snag recommendations also give the ability to retain snags in areas that are precluded from harvest for other purposes such as areas that are designated as field verified landslide prone or RHCAs. Forest Plan standards will be met and the best available science will be utilized by incorporating Bollenbacher et al. (2009) snag recommendations as part of the project design to avoid adverse effects to wildlife habitat. Stands that meet old growth criteria will not be harvested. These guidelines minimize effects to habitat for species such as black-backed woodpeckers, pileated woodpeckers, and bat species (FEA pages 89-91, 95-97, and 104-106).

1. Meeting the Purpose and Need for Action

Timely implementation is necessary to achieve the purpose and need for the project. Forest workers and the public continue to access the burned areas for recreation, wood gathering, and transit through the forest for management activities, placing themselves at risk of injury from potential windfall.

Additionally, timber deterioration estimates show a 60% decrease in the merchantable timber volume if the product is not under contract within one year of the fire. Without the commodity value of the product, the ability to prepare the site for reforestation, safely access areas for planting, reduce fuel loading to prevent future re-burn events, and mitigate hazards that pose a risk to the public and forest employees may not be possible. A small percentage of the area that burned in 2015 will experience salvage activities, resulting in a greater level of safety and restoration in an environmentally responsible manner.

Many of the stands may have experienced stand replacement fire will not have an adequate natural seed source to regenerate the forest to the desired future conditions. In these situations there is a need to plant trees in order to restore the desired forest conditions (FEA page 26). While many trees were killed as a direct result of wildfire, many more trees were intolerably stressed and will die over a period of several years. Secondary effects of the wildfires, including increases in insect and disease activity within burned stands of timber, will continue to increase for a period of several years, resulting in ongoing threats to human safety and safe access.

Stands of economically valued species such as western red cedar, ponderosa pine, Douglas-fir, and grand fir were burned in the Woodrat fire area. As time progresses these fire-killed trees lose economic value because of staining, insects, and checking (cracks in the wood that occur as the burned wood dries). By the late spring or early summer of 2016 up to 60% of the economic value of these trees may have already been lost. There is a need to expeditiously salvage fire killed trees if the economic value of the trees is to be recovered (FEA pages 138-140). The action would help support local jobs and provide funding to help meet reforestation and fuel reduction objectives (FEA pages 24-26, 31, 33-36, and 138-140). Despite a year having lapsed, current salvage timber values still support the recovery of the value in the project area sufficient to meet the needs and purpose for the project economically.

2. Consideration of Public and Other Agency Comments

A summary of comments that were received for the project and my responses to those comments can be found in Woodrat Salvage Project FEA Appendix D, Woodrat Salvage Project preliminary EA, and in the project record. The original comment letters are included in the project record. The comment period for the preliminary Woodrat Salvage Project EA ended in September 2016. I considered these comments when making my decision, and I find that the selected alternative responds to the issues and concerns that were brought forward by the public and other agencies.

Comments received during the formal combined scoping/30-day comment period in January/February 2016 were used to modify the proposed action and develop alternatives that were included in the preliminary Woodrat Salvage Project EA.

On May 3, 2016 I provided a draft of the Woodrat Salvage Project EA to all that commented during the combined scoping/30-day comment period including individuals, organizations, industry, and the Nez Perce Tribe; to further inform the public of the proposal in light of the pending request for an Emergency Situation Determination by the Chief of the Forest Service, which reduced opportunities for public participation in the planning and decision process. I encouraged feedback to let me know if there was any important and/or relevant information that needed to be considered in the project analysis. Two commenters provided feedback concerning the use of best available science, a general opposition of post-fire harvest, and whether stands of old growth identified before the Woodrat fire are within salvage harvest units and are located in the project record. I considered comments from the formal comment period and any feedback received when making my decision, and I find that the selected alternative responds to the issues and concerns that were brought forward by the public and other agencies.

3. Consideration of Issues and Concerns

Issues were generated internally, by the interdisciplinary team, and externally, through public comments and feedback. Involvement of interested individuals, businesses, organizations, and county, state, and

federal agencies, and the Nez Perce Tribe was sought to provide detailed information for defining the issues, concerns, mitigations, and treatment options. Public comments were carefully considered during analysis. My decision is responsive to these as it is important to me to show the public how I considered their comments and how those comments made a difference in my decision. The major themes identified in the comments received during the comment period opportunities described above are summarized below. A complete summary of issues identified is in the project record files, including issues eliminated from detailed study and the rationale for their elimination.

Economics/Resource Protection/ESD

Several commenters wanted to see resource protection prioritized over the economic value of the project. Commenters were also concerned about the use of an Emergency Situation Determination (ESD). Capturing economic value is only one component of the purpose and need for the salvage project. The project complies with Forest Plan direction to develop cost-effective projects; the National Forest Management Act (NFMA) by emphasizing resource management over timber volume output; and the harvest systems are based on ground-truthed silvicultural practices to achieve desired long-term forest and access needs, and not on the highest dollar return.

In response to public comments as the project was being analyzed, the ESD request was withdrawn on July 15, 2016 to allow for the objection process and to allow interested parties to object. The scoping and public comment periods for the Woodrat Salvage project was combined into one time period initially, per direction in FSH 1909.15 and the notice, comment, and objection requirements in 36 CFR 218.

Salvage Harvest and Associated Road Activities

Several commenters wanted to see no mitigation of the natural process of wildfires. More specifically, the comments claimed that salvage harvesting does not restore ecosystem function and structure, dead trees should be left to deteriorate and replenish organic material, and it is unnecessary to reduce fuel loadings and salvage where standing dead trees do not pose a safety hazard. Commenters were also concerned about the amount of associated road activities (road maintenance, reconstruction, and stabilization).

Post-fire harvest serves as an effective tool for managing fuel loadings in the Woodrat Salvage project area. Post-fire harvest will reduce woody fuels and help reduce threats to human health, property, and ecosystem services from unacceptable future wildfire behavior and effects by strategically applying and varying post-fire harvest. Consideration of BMPs, potential environmental impacts, and resource and management objectives lends to the conclusion that post-fire harvest serves as an effective option to manage fuels and more quickly facilitate the restoration of ecological function for a more resistant and resilient forest. Salvage harvest by mechanical thinning, prescribed fire, and managing low to mixed severity wildfires will reduce fuels and restore low and mixed severity fire regimes in the Woodrat Salvage project area (Petersen et al. 2015).

Coarse woody debris is also known as heavy fuels. No treatment generally leads to fuel levels of 45-250 tons per acre, which is categorized as fuels with a “high resistance to control.” With high fuel levels such as these, the longer a fire burns the more risk there is for accidents and extended timeframes of fire suppression deplete firefighting resources. The risk to firefighters increases because fatigue and complacency can create unsafe working environments for fire fighters. The longer the fire burns, the greater the risk that winds will pick up and create a severe burn (Brown et. al, 2003) with negative effects.

When there is high resistance to control, the fire burns longer and does more damage to natural resources. High fire intensity can negatively affect soil productivity. Allowing conditions to develop that would reduce the ecological productivity of the soil and the sustainability of the local community is contrary to the Multiple Use Sustained Yield Act and is not the most judicious use of the land.

The associated road activities consists of 35.5 miles of haul roads of 18 different road segments. The majority of these segments are behind road closures, and are in a low maintenance need condition. Using a timber sale to do maintenance work to control water issues is a very cost effective economic approach where timber stumpage is used to pay for the work instead of tax dollars.

Road improvements are designed to place roads into good condition prior to log hauling operations for safety reasons, to protect the road infrastructure, and to limit sediment delivery to streams from the roads. As noted in the FEA, pages 75 and 76, the addition of cross drains where they currently do not exist would be beneficial to streams when compared to the existing condition. The stabilization of Road 5502-A after project activities would leave this road in a better condition than it currently exists. The road improvements conducted under the Woodrat Salvage project should also reduce the amount of maintenance required in the future.

Temporary Roads

Several commenters were concerned about the design features of temporary roads. All temporary roads constructed to facilitate harvest would be located along ridges with no stream crossings and would be hydrologically disconnected from any stream network. Also, they would be obliterated following completion of salvage activities (FEA Chapter 2 pages 15 and 17). Project design features were developed to minimize effects to soil, watershed, fisheries resources, and noxious weed expansion. The same standards and work requirements would be implemented as those prescribed to minimize or eliminate resource impacts.

Invasive Species

Several commenters were concerned about the establishment and expansion of invasive species, because of the post-fire conditions and salvage harvest operations. Invasive species inventories were conducted during the Woodrat Fire Burned Area Emergency Response (BAER) assessments in the fall of 2015. Invasive species control with herbicides was recommended and funded for weed populations within and adjacent to the fire areas in 2016. Invasive species treatments were completed the summer of 2016 on roaded portions of the project areas. BAER funded invasive species treatments, combined with annual weed spraying program along system roads, will contain and suppress existing infestations and reduce seed availability for spread. The project area is also within the area to be treated through the 2007 Lochsa Weeds DN.

Ground disturbing activities on already burned surfaces could increase invasive species expansion risk. Project design features were developed to minimize the establishment and expansion of invasive species (FEA Chapter 2, page 18). Weed treatment response on the Forest is prioritized according to the greatest resource need and opportunities for success. The response in the project area will be addressed and prioritized in accordance with the Forest's weed program. Appropriate seed mixes will be applied to exposed areas to provide ground cover and lower the probability of weed establishment. The seed mix currently being used to revegetate exposed areas includes Idaho fescue, a native species. Seed mixes composed entirely of native species do not result in adequate ground cover.

Soils

Several commenters were concerned about the condition of soil in burned areas and the effects that ground based salvage harvest may have on these soils. All field-verified landslide prone areas will be excluded from harvest during layout, and only 48 of the total 378 acres proposed for salvage harvest will be ground based. To mitigate the impacts of the salvage harvest operations to soil resources, design features to reduce soil impacts applicable to all salvage harvest units were developed that reflect the best available science and management practices as detailed in Wagenbrenner et al. 2015 along with other research (FEA pages 50-54).

Consistency with R1 Soil Quality Standards and Forest Plan Standards are disclosed in the soils analysis in Chapter 3 of the FEA. Implementation of project design features and BMPs will reduce DSD, and the decommissioning of skid trails, landings, and temporary roads estimated final DSD will be 14% or less (FEA pages 52-53).

All proposed salvage projects are designed to comply with Forest Plan Standards. Calculations for existing and predicted Detrimental Soil Disturbance (DSD) are a part of the analysis. During project implementation, project design features will minimize erosion by preventing increases in DSD beyond Forest Plan thresholds and will provide for long-term improvement in soil quality. Clearwater Forest Plan Annual Monitoring Reports reflect a high level of compliance with Idaho Forest Practices Act and BMPs with an effectiveness rating of 100% (2009).

Watershed Conditions/Fisheries Habitat

Commenters were concerned with salvage harvest effects to hydrophobic soils, watershed conditions, and fish habitat. Project design features and Best Management Practices, such as PACFISH buffers, will be applied to address water quality protection objectives and demonstrate a knowledgeable and reasonable effort to minimize potential adverse water quality impacts. Forest Plan water quality standards would be met through the retention of PACFISH buffers, other project design features that limit erosion in harvested areas, and through road improvement (reconstruction/maintenance) and dust abatement activities. Project design features have been shown to be effective in limiting sediment delivery to streams (FEA pages 74-75).

The Clearwater Forest Plan was amended in 1995 by PACFISH. Management direction: includes Riparian Habitat Conservation Areas (RHCA), riparian management objectives (RMOs) and guidelines for management activities. Default RHCAs would be implemented as described in project design features. PACFISH standards require that projects do not to adversely affect RMOs (pool frequency, water temperature, woody material, bank stability, and width/depth ratio.)

No salvage activities are planned within RHCAs which are well vegetated, and for the most part did not burn. Their filtering capabilities, via plants and down wood, are therefore intact and expected to continue to filter sediment from upslope eroding areas. Due to the PACFISH buffer retentions, project activities would not increase water temperature, reduce woody debris recruitment, pool frequency, or width to depth ratios (FEA page 80).

All proposed salvage projects are designed to comply with Forest Plan Standards. Forest Plan water quality standards are found in the Clearwater National Forest Plan on pages II-27 through II-29 (USDA 1987). Appendix K lists Fish/Water Quality standards for several streams in the project area. In addition, the projects have been designed to cause no measurable increase in sediment as per the 1993 Forest Plan Lawsuit Stipulation of Dismissal (FEA pages 67-68 and 82).

There are no fish bearing streams within the Woodrat fire perimeter area but do occur downstream. The effects on aquatic species from proposed activities have been analyzed in the EA and Biological Assessment. The project has been designed to have no adverse effects on fish habitat primarily through PACFISH buffer retention. Road improvement activities would be beneficial over the long term by greatly reducing sediment delivery to streams and improving habitat for fish spawning, incubation, and rearing which could lead to increased survival and production (FEA pages 76-77).

Wildlife

Several commenters raised concerns that I consider the environmental effects of the project to a wide range of wildlife species. The following species were analyzed in detail for direct, indirect, and

cumulative effects of the Woodrat Salvage project: black-backed woodpecker, flammulated owl, fringed myotis, long-eared myotis, long-legged myotis, American marten, northern goshawk, pileated woodpecker, Rocky Mountain elk, and neotropical birds (FEA pages 90-114). The project wildlife biologist modeled the availability and distribution of preferred habitat for species such as black-backed woodpeckers, using wildfire acreages and insect and disease (bark beetles) surveys from 2009 to 2015 on the Nez Perce-Clearwater National Forests. This modeling indicates approximately 241,664 acres of burned/insect diseased habitat within the Forests boundaries. Approximately 45% falls within Wilderness or Idaho Roadless Rule (excluding Back-Country Restoration), all of which are outside the project area. Of the acreage that falls within the "Roaded Front Country" all post-fire projects across the Forests represent approximately 0.8% of the preferred habitat available; and 0.4% of all suitable habitat across the Nez Perce-Clearwater National Forests. This represents an insignificant amount of habitat loss which would not lead to a loss of viability in the planning area, nor cause a trend to federal listing or a loss of species viability range-wide given the larger acreage distributed across the forest.

As for the analysis for the Woodrat Salvage project, snag habitat was analyzed at the Clearwater National Forest level, in order to capture the quantity and size of disturbances from wildfires across the landscape. A forest-wide VMap model was used with the following attributes: all tree species greater than 5" dbh in size, and canopy cover greater than or equal to 10%. The size class and broad canopy cover would capture snag habitats used by the following species analyzed: black-backed woodpecker, myotis bats, pileated woodpecker, and other snag dependent neotropical birds.

The next step was to exhibit all areas affected by wildfires that burned in the past 6 years. This is a time frame that would capture the peak of potential insect activity on decayed wood, and an optimum foraging period for many woodpecker or other insectivore species (bats for instance). Some of these species (black-backed, three-toed, downy and pileated woodpeckers) would nest and reproduce in these areas during that period.

Results of the analysis show over 70 fires created approximately 82,200 acres of potential snag habitat on the CNF from 2009 through 2015. Over 49,000 acres of these acres were burned on the Clearwater National Forest in 2015. Salvage harvests between 2009 and 2014 were minimal, with about 66 acres affected on the Clearwater National Forest (FEA pages 83-84). The proposed salvage harvests in the fires of 2015 on the CNF total about 2,500 acres by the Forest Service and 2,616 acres by the Idaho Department of Lands. The combined Forest Service salvage (past and proposed) of 2,566 acres (out of the 82,200 acres burned forest-wide in the past 6 years) would affect about 3% of the potential snag habitat on the Forest. Therefore, the remaining 97% of habitat for snag-dependent species is well above the objective of 40% recommended by the Forest Plan (FEA pages 84, 85, 93, 99, 108, and 116).

All live trees will be retained and all trees that meet the Nez Perce-Clearwater tree mortality guidelines will be removed; although all western larch, western white pine, and ponderosa pine would be left uncut, regardless of whether or not the tree is dead. Grand fir that have a stump diameter greater than or equal to 37" and western red cedar that have a stump diameter great than or equal to 40" would be left uncut. The target number of retained snags and snag replacements (live trees that would eventually become snags) would be an average of 14 trees per acre. If the combined total of all trees meeting the above criteria averages less than this target, additional groups of 10-30 grand fir, Douglas-fir, and western red cedar would be retained in order to reach an average of 14 trees per acre. Snag retention guidelines are included in the proposed action to provide benefits to wildlife. These guidelines are based upon Bollenbacher et al (2009) recommendations to retain structure to benefit wildlife. A minimum of fourteen snags per acre greater than 15 inches DBH will be retained; preferentially retaining the largest snags. Snags will be retained individually and in groups and the quantity of snags will be in accordance with the recommendations made by Bollenbacher. Snags will be retained for the treatment units as a whole; snags will not be retained on every acre, but will be averaged across a treatment unit where no area greater than 2 acres would be without some snags. This design follows the Forest Plan recommendation of clumping snags and is consistent with recommendations made by Bollenbacher et al. (2009). The recommendations

also allow for the snags to be retained in areas that are precluded from harvest for other purposes such as areas that are designated as field verified landslide prone or RHCAs. As discussed above, Forest Plan standards for snag retention will be met. The best available science is utilized by incorporating Bollenbacher as part of the project design to avoid adverse effects to wildlife habitat.

The wildfires disrupted contiguous patches of live trees. Areas burned at moderate to high severities will host a large number of dead or dying trees. These areas may be patches or connected bands of similar disturbance. The proposed salvage harvests would create openings in patches of standing dead or dying trees. These openings would naturally occur over time, as weather and decay would topple the dead trees. In summary, the salvage sales would not create a loss in habitat connectivity, as the wildfire events are the factor that created the open canopy. Post fire habitat connectivity would be preserved through retention of no-harvest RHCAs and no harvest in stands of old growth that retain old growth characteristics post-fire.

Effects of activities analyzed for cumulative effects include the Road, Administrative, and Recreation Site Maintenance project, 2009-2015 Clearwater National Forest post fire salvage harvest, Idaho Department of Lands Woodrat salvage harvest, firewood gathering, fire suppression, precommerical thinning, and reforestation. Cumulatively, effects of the past, present, and reasonably foreseeable projects listed above will reduce habitat for some species, disturb individuals, and provide future habitat; whereas habitat retention recommendations and/or Forest Plan standards/thresholds will still be met (FEA pages 93, 96, 99, 102, 104, 107-108, 111, 113-114, and 116).

Old Growth

Commenters raised concerns about burned old growth stands needing to be retained for wildlife habitat even if these stands no longer met Forest Plan old growth definitions. Salvage harvest would not be permitted where stands are currently meeting old growth criteria. Prior to the fire, about 578 acres within the Woodrat fire perimeter were classified as old growth. Of these acres, 202 acres have now been field verified to no longer meet the old growth criteria set forth by Green et al (1992) and are proposed for salvage harvest (post fire assessments are located in the project record).

These stands that were previously classified as “old growth” burned, causing excessive tree mortality and resulting in the stands no longer functioning as old growth. Nyland (2002) and Oliver and Larson (1996) argue that following a major disturbance (i.e. stand replacing event), the successional stage of a stand reverts to a “stand initiation” or non-old growth stage. Therefore, if old growth is defined by these ecological attributes, and these attributes are no longer present, these stands are no longer providing the biological diversity they would provide as “old growth.” Since this benefit is no longer realized, avoiding salvage harvest in them for the sake of retaining old growth would not accomplish the Forest Service’s objectives for retention of old growth. However, the retention of large diameter snags is needed for structural diversity and snags would be left in treatment units, as described in the Project Design Features.

Wild and Scenic River

A portion of the proposed activities border and/or are visible from the designated boundaries of the Middle Fork Clearwater Wild and Scenic River Corridor. The outstandingly remarkable values (ORVs) of the Middle Fork Clearwater River are stated in the Middle Fork River Resource Assessment and Lochsa River Resource Assessment (both February 14, 2002) as Scenery, Recreation, Fish, Water Quality, Wildlife, Vegetation/Botany, Prehistory, History, and Traditional Use, Cultural.

No salvage harvest, temporary road construction, or reforestation (including site preparation) activities will take place within the designated Middle Fork Clearwater River Wild and Scenic boundary. Approximately 2 miles of existing road within the river corridor will be treated to provide for safe haul routes that meet forest standards. This includes reconstruction of the first 0.6 miles of the Swan Creek Road (Road 5503) adjacent to Highway 12; and maintenance of 1.6 miles of the Smith Creek Road (Road

101) road. These minor activities to stabilize existing road segments to provide for safe haul routes will have no adverse effects on the ORVs. Project design features have been developed to minimize effects to soil resources, hydrologic functions, and aquatic habitat (Soils, Hydrology, Aquatics, Visual resources, Cultural resources, and Recreation reports; Project Design Features). Although there will be salvage harvest, reforestation (including site preparation), and associated road activities that border and/or are visible from within the Wild and Scenic River boundary; the Woodrat Salvage project will not invade the Middle Fork Clearwater River Wild and Scenic River Corridor. The proposed action will not unreasonably diminish the scenic, recreational, fish or wildlife values (Project Design Features and no effects as documented in corresponding resource reports and FEA pages 10-12, 120-124). The Woodrat Salvage project also will have no adverse effect on the conditions of free-flow and will protect and enhance the ORVs in the Middle Fork Clearwater Wild and Scenic River (Scenic Quality, Recreation, Aquatics, Hydrology, Wildlife, Forest Vegetation, Rare Plants/Botany, and Cultural Resources specialist Reports, FEA pages 10-12, 120-124).

The most prominent views of the proposed salvage harvest activities are from viewpoints along U.S. Highway 12 (west bound) and from the Middle Fork Clearwater River looking downriver of units 4, 5 and 22. Unit 4 is the most visible unit in the middleground viewing zone, and is visible from most viewpoints, especially close to the community of Syringa. Design features used to meet VQOs of *Partial Retention* would include feathering unit edges so that they blend with existing vegetation, designing openings so that geometric patterns and straight lines are not evident, and the use of skyline harvest methods that minimize visual impacts. When completed, the area will appear more open than it currently is, but the size and shape of the openings and the appearance of the harvest would emulate the effects seen after a fire (FEA page 130). Overall the areas affected by wildfires of 2014 and 2015 will be evident throughout the Middle Fork Clearwater River corridor. Given design features developed for all Forest Service actions, the openings created by harvest would emulate the natural openings that are the result of natural forest process after a severe fire event.

The openings created by proposed harvest and planting, when combined with unharvested burned areas, topographic screening, natural regrowth of vegetation, and design feature implementation would appear as an area that has experienced a natural process rather than the man-made geometric openings of the past harvest in the area. The area would appear different that it did prior to the fire, but man-made activities would not dominate the landscape as viewed from the Middle Fork Clearwater Wild and Scenic River corridor. Areas that are harvested and then replanted with seedlings would revegetate more quickly with coniferous species, shortening the time that it takes to develop the vegetative cover of the recent past (FEA pages 132-133).

Climate Change

Commenters raised the concern about the effects the project may have on climate change. My decision will have very minor effects related to climate change under Alternative 2 (FEA pages 142-143). A project of this magnitude would contribute minimally to regional greenhouse gases, because it is of a short duration and it would promote reforestation to capture greenhouse gases currently not being absorbed by the dead trees. Furthermore, at the global scale, the direct and indirect effects of Alternative 2 that contribute to climate change would be negligible, and therefore the cumulative effects on greenhouse gasses and climate change would also be negligible. Removal of dead and dying trees would reduce onsite carbon stores (FEA page 143). Reforestation of drought resistant species including Ponderosa pine, Western larch, and Douglas-fir are providing a change in species composition for more resilient and resistant ecosystems. Reforestation of Western white pine supports maintaining and restoring diversity of native species (which is recommended for resiliency by Swanston et al 2016) since western white pine is shown to be currently underrepresented on the landscape relative to historic conditions. Also, this native species is expected to adapt well to future climate change conditions (Hines 2014), and “favor[ing] or restore[ing] native species that are expected to be adapted to future conditions is also recommended by

Swanston et al (2016) to create resilient landscapes. The proposed reforestation activities would help ensure these forest stands return to a carbon sink function as quickly as possible. As the stands continue to develop, the strength of the carbon sink would increase then gradually decline, but remain positive (Pregitzer and Euskirchen 2004). Carbon stocks would continue to accumulate, although at a declining rate, until impacted by future disturbances (FEA page 143).

Cumulative Effects

Many commenters were concerned about the cumulative effects of projects that overlap the Woodrat Salvage project in space and/or time. This includes the Road, Recreation Site, and Administrative Site Maintenance project, fire suppression activities, and BAER activities. The effects analysis in Chapter 3 of the FEA considered cumulative effects of the 2015 fires, the Road, Administrative, and Recreation Site Maintenance project, past present, and reasonably foreseeable management actions, and adjacent state and private land where relevant to each resource (See Appendix C of the FEA for a list of Activities that May Contribute to Cumulative Effects). Effects of the Road, Administrative, and Recreation Site Maintenance project have been considered where project effects overlapped in time and space with those of the Woodrat Salvage project. Spatial and temporal boundaries for cumulative effects were identified and effect from projects within those boundaries analyzed by each resource specialist (FEA Chapter 3 and Resource reports in the in project record).

Cumulative effects from the Idaho Department of Lands (IDL) salvage harvest and reforestation are minor to none. Effects of these IDL activities analyzed may reduce habitat for some wildlife species, disturb individuals, and provide future habitat; whereas habitat retention recommendations and/or Forest Plan standards/thresholds will still be met (FEA pages 93, 96, 99, 101, 102, 104, 107-108, 111, 113-114, and 116). Reforestation of the salvage harvest IDL lands will contribute to the cover type of the species composition of the area (FEA pages 26-27). No measureable cumulative effects to water yield or aquatic habitat are expected and the majority of the IDL harvest areas are screened by topography and vegetation from the Middle Fork Clearwater Wild and Scenic River viewing areas (FEA pages 65 and 79). Two units are visible from the Middle Fork Clearwater River looking downriver. These units are found along the ridgeline above the community of Syringa. Additional IDL harvesting is visible looking upriver from the Suttler Creek area outside of the Nez Perce – Clearwater National Forest boundary. IDL harvest units would minimally impact the overall scenic quality for the area as they are mostly screened by topography from critical viewing corridors and viewpoints. Cumulatively, the openings would not dominate the landscape character as viewed from the Middle Fork Clearwater River and U.S. Highway 12 (FEA page 132-133).

Woodrat fire suppression activities included the use of existing roads as well as machine constructed firelines. Machine firelines do not overlap with proposed salvage units with the exception of one obliterated line in Unit 2 of the area. Post-fire rehabilitation efforts on the majority of these roads included the installation of waterbars and drivable dips to divert road-related sediment away from streams. These activities were completed by November 2015. Machine constructed firelines (not on roads) were constructed on or near ridgetops with no stream crossings and all were obliterated by November 2015. The condition of fire lines would continue to improve as vegetation recovers on these obliterated lines. Fire line construction from suppression efforts for the 2015 fires have no effects on instream sediment.

Connected Actions and Similar Actions

Many commenters expressed concerns about the post-fire project on the Forests and question if they were connected actions. Under 40 CFR 1508.25, “connected actions” are connected if they automatically trigger other actions; cannot or will not proceed unless other actions are taken; and are interdependent parts of a larger and depend on the larger action for their justification. Each of the categorically excluded fire recovery projects from the 2015 wildfires (Boulder, Snowy Summit/Lost Hat, and Deadwood) and the

Road, Administrative, and Recreation Site Maintenance project will proceed regardless of whether or not the other ones proceed; each individual categorically excluded (CE) post fire project is not an interdependent part of a larger action and do not depend upon the larger action for its justification; and each individual categorically excluded fire recovery project does not automatically trigger other actions. Each of the individual categorically excluded fire recovery CE projects are not "connected actions"; the purpose and need of the Road, Administrative, and Recreation Site Maintenance project is different; therefore, all do not require analysis in the same NEPA document. The purpose and need statement for the Road, Administrative, and Recreation Site Maintenance project and Woodrat salvage project are also different. The Road, Recreation Site, and Administrative Site Maintenance project will provide for long-term public and employee safety, particularly in those places of relatively high public use or concentrated administrative use by Forest Service employees.

Each of the post-fire projects was developed to respond to an individual fire event or events. Each project looked at actions necessary to meet the purpose and need for that project. Field reconnaissance and analysis was conducted to develop the proposed action for each fire and/or project. The Woodrat Salvage project was developed as an individual project because it had its own unique geographic location and resource characteristics. The Road, Administrative, and Recreation Site Maintenance project was approved adjacent to the Woodrat project and has been sold as a separate sale in order to mitigate the roadside hazard as soon as possible. Actions for each of the post-fire projects were developed separately and all included the use of best available scientific information. This led to many consistent attributes and actions between the projects. For instance, the scientific and peer reviewed hazard tree guidelines and mortality guidelines were used for each of the projects. Design features that were found in the past to have been successful at reducing negative impacts were brought forward for each of the proposed projects. However each project was designed as a unique project and any site-specific modification needed to best reduce impacts were considered and adopted. Each post-fire project was developed individually and assessed separately.

Best Available Science

The interdisciplinary team considered best available science when developing the project proposal. Regional guidance also include best available science and changes in science. Ecological Considerations for Post-Fire Management (Reilly et al., 2015) considers more than 30 scientific papers and focuses on key findings and uncertainties. Reilly et al. recommend promoting natural recovery; retaining old, large trees and snags; protecting soils against compaction and erosion; protecting ecological sensitive areas such as reserves, steep slopes, and fragile soils; rehabilitating roads and fire lines and avoiding the creation of new roads; limiting reseeding and replanting; and avoiding new in-stream structures; etc. The design features developed by the IDT further reflect resource protection measures recommended in the best science currently available. This science was specifically incorporated to provide resource protection while allowing for taking action responsibly. The interdisciplinary team also considered principles and recommendations made in various literature on post-fire salvage harvest. The literature provided was reviewed by staff to identify if the science was applicable to the Woodrat Fire area, would better inform the basis of the decision to be made, or brought into question the validity of the literature used to provide a rational, informed basis for the actions and alternatives considered to meet the purpose and need. Staff considered Beschta et al. 1995, Donato et al. 2006, Johnson et al. 2007, Karr et al. 2004, Lindenmayer et al. 2004, Noss et al. 2006, and "Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging", in addition to the literature cited and utilized in the development of the FEA analysis. Furthermore, the IDT considered other science documents submitted by the public and these considerations are documented in the project record. Some of the literature is consistent with the analysis, some is not peer-reviewed, has methodology flaws, or does not support the purpose and need of the project.

4. Forest Plan Consistency and Regulatory Compliance

I have reviewed the Clearwater National Forest Land and Resource Management Plan (Clearwater Forest Plan) (USDA Forest Service 1987), as amended, as well as the Final Environmental Impact Statement and Record of Decision (USDA Forest Service 1987). Implementing the selected alternative is consistent with the intent of the Clearwater Forest Plan goals and objectives listed on pages II-1 to II-14 and complies with the Forest Plan standards and guidelines which is described in the FEA (Chapter 3).

The selected alternative is consistent with applicable statutory laws, policies, and regulations (FEA Chapter 3) including:

National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality (CEQ) implementing regulations under 40 CFR 1500-1508 (FEA page 9):

- The National Environmental Policy Act (NEPA) establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The National Forest Management Act (NFMA) requires that projects and activities be consistent with the governing Forest Plan (16 USC 1604(i)). Title I of NEPA contains a Declaration of National Environmental Policy that requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony. NEPA section 102 requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. This document and the project record demonstrate that the Woodrat Salvage project is consistent with the Clearwater Forest Plan, including all applicable standards and guidelines.

National Forest Management Act (NFMA) 1976 (FEA pages 8, 9, 26, 55, 115, and 141):

- This project is in compliance with NFMA in that the purpose of artificial regeneration (i.e. planting) following salvage harvest is to provide assurance that lands will be adequately restocked following harvest. NFMA also includes a provision for opening size limitations created by timber harvest. However, the opening size limitations do not apply to “areas that are harvested as a result of natural catastrophic conditions such as fire…”
- Planting in areas where no timber harvest occurs would also be in compliance with NFMA, as NFMA states that “all forested lands in the National Forest System shall be maintained in appropriate forest cover with species of trees, degree of stocking…and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans.”
- The Woodrat Salvage project was designed to meet the standards set forth in NFMA (16 USC 1604(g)(3)(i)) where the “fundamental need to protect and where appropriate, improve the quality of soil, water, and air resources.” NFMA directs management of soil and land productivity to avoid “substantial and permanent impairment of the productivity of the land …. And … to maintain or improve soil quality”, and to “insure that timber will be harvested from National Forest System lands only where…. soil, slope, or other watershed conditions will not be irreversibly damaged”.
- NFMA requires the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives [16 USC 1604(g)(3)(B)]. The Agency’s focus for meeting the requirement of NFMA and implementing its regulations is based on assessing habitat to provide for diversity of species. The Woodrat Salvage project would be consistent with NFMA direction for diversity of animal communities. Although the proposed action analyzed in the project may impact individual animals, Alternative 2 would not affect the viability of any wildlife species across its range.
- NFMA requires that a sale “consider the economic stability of communities whose economies are dependent on such national forest materials, or achieve such other objectives as the Secretary

deems necessary" (NFMA Section 14, e,1,c). The NFMA also requires that "the harvesting system to be used is not selected primarily because it would give the greatest dollar return or the greatest unit output of timber" (NFMA, Section 6, g,3,E,iv). The proposed project would meet the requirements of the NFMA by considering economic community stability through this analysis. The harvest systems selected for the implementation of this project would be based on field-verified silvicultural practices designed to achieve desired long-term forest and ecological considerations rather than on achieving the highest dollar return.

Wild and Scenic Rivers Act of 1968, Section 7(a), 2004 (FEA pages 10-11, 120-124, and Wild and Scenic River Act determination in the project record):

- A portion of the proposed activities border and/or are visible from the designated boundaries of the Middle Fork Clearwater Wild and Scenic River Corridor. The Wild and Scenic Rivers Act requires that the designated river be managed to protect its free-flowing condition and other values of the designated river, water quality, and outstandingly remarkable values. The outstandingly remarkable values (ORVs) of the Middle Fork Clearwater River are stated in the Middle Fork River Resource Assessment and Lochsa River Resource Assessment (both February 14, 2002) as Scenery, Recreation, Fish, Water Quality, Wildlife, Vegetation/Botany, Prehistory, History, and Traditional Use, Cultural. Woodrat Salvage project Environmental Assessment and resource reports evaluates the effects to the ORVs identified above and documents that no salvage harvest activities will take place within the designated Middle Fork Clearwater River Wild and Scenic boundary. Although there will be project activities that border and are visible from within the Wild and Scenic River boundary; the Woodrat Salvage project will not invade the Middle Fork Clearwater River Wild and Scenic River Corridor. The proposed action will not unreasonably diminish the scenic, recreational, fish or wildlife values and will protect and enhance the ORVs as a result of Alternative 2 (Project Design Features and no effects as documented below and in corresponding resource reports). The Woodrat Salvage project will have no adverse effect on the conditions of free-flow or on the ORVs in the Middle Fork Clearwater Wild and Scenic River.

Clean Air Act of 1990 and Clean Air Act 1977, as amended (FEA pages 8 and 37):

- The Woodrat Salvage project would adhere to the Clean Air Act and all post activity fuel reduction treatments would adhere to the requirements of the Montana/North Idaho Smoke management guidelines and the recently implemented Idaho emergency episode rule.

Clean Water Act of 1987 (FEA pages 56, 66, and 81):

- The Woodrat Salvage project complies with all Federal, state, interstate and local requirements, administrative authority, and process and sanctions with respect to control and abatement of water pollution. Alternative 2 is consistent with the Clean Water Act and Idaho Water Quality standards in that it will maintain beneficial uses within the project area through RHCA retention, BMP implementation and road improvement activities.

Floodplains and Wetlands (Executive Orders 11988 & 11990) (FEA page 66):

- These orders provide for protection and management of floodplains and wetlands. There are no floodplains for wetlands in the Woodrat Salvage project area.

Environmental Justice (Executive Order 12898) (FEA pages 141-142 and 146):

- Executive Order 12898 requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories. The Woodrat Salvage project analysis did not reveal any disproportionately high or adverse effects to minority and low-income populations.

USDA Civil Rights Policy, Departmental Regulation 4300-4 (FEA page 146):

- Effects on civil rights, including those of minorities and women, would be minimal. Activities associated with the proposed action would be governed by Forest Service contracts, which are awarded to qualified purchasers regardless of race, color, sex, religion, etc. Such contracts also contain nondiscrimination requirements. While the Woodrat Salvage activities would create jobs and timber harvest would provide consumer goods, no quantitative output, lack of output, or timing of output associated with these projects would affect the civil rights, privileges, or status quo of consumers, minority groups, or women.

Migratory Bird Treaty Act of 1918 (FEA pages 115):

- The Forest Service recognizes the scales and diversity of habitat conditions for neotropical migratory birds and addresses such when planning for land management activities. The determination of effects for Alternative 2 is *some impacts may occur to individuals or their habitat, but is not expected to result in a loss of species viability in the Planning Area, nor cause a trend toward federal listing*.

National Historic Preservation Act (NHPA) of 1966 (FEA pages 8 and 135-136):

- The USDA Forest Service is mandated to comply with the National Historic Preservation Act of 1966 [Public Law 89-665] and its amendments. Historic properties are identified by a cultural resource inventory and are determined to be either eligible or not eligible by the cultural resource specialist in consultation with the State Historic Preservation Office (SHPO). Sites that are determined to be eligible are then either protected in-place or adverse impacts must be mitigated (Project Design Features).

Endangered Species Act (EAS) of 1973, as amended (FEA pages 8, 46, 80-81, 83, and 114-115):

- Four plants listed as Threatened occur in Idaho and are addressed under the ESA. The Threatened plants are Macfarlane's four-o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and Spalding's catchfly (*Silene spaldingii*). According to the current U.S. Fish and Wildlife Service list, no federally listed species occur in Idaho County. Whitebark pine (*Pinus albicaulis*) is listed as a Candidate for federal listing. The affected elevations in the project area do not reach high enough for this species to likely occur in the project area.
- The following listed fish species were identified in Idaho County: fall Chinook salmon, steelhead trout and bull trout, all of which are listed as threatened. None are known to occur within Swan, Little Smith or Big Smith Creeks. All three species occur within the Middle Fork Clearwater River mainstem as does their designated critical habitat which acts primarily as a feeding, migratory or overwinter rearing habitat. The mainstem also contains Essential Fish Habitat (EFH) for spring Chinook and coho salmon. The project would not adversely affect steelhead trout, bull trout, fall chinook salmon or Essential Fish Habitat for salmon within the Middle Fork Clearwater River or steelhead critical habitat in Pete King Creek. Although the projects could result in local short term increases in sediment yield in the tributary drainages, this sediment is not of a magnitude that it would result in measurable increases downstream in the mainstem river or Pete King Creek.
- Two terrestrial species that may occur on the forest are the Canada lynx and North American wolverine. The lynx was listed as "threatened" in April 2000, and was on the latest list of threatened and endangered species (12/17/2015). The Woodrat Fire did not burn in a Lynx Analysis Area (LAU) or in any potential lynx habitat. The project would have "*No Effect*" to the Canada lynx. The Action Alternative is consistent with the Northern Rockies Lynx Management Direction (USDA Forest Service 2007) and is in compliance with the ESA and FSM 2670. There have been no sightings or records of wolverine in the project area. Regional model shows no primary habitat found in the area; none of the proposed activities are considered a threat to the distinct population segment (DPS), and the project's cumulative effects would not result in

barriers to dispersing individuals. The project would "*Not likely Jeopardize*" the continued existence of the DPS of the North American wolverine.

Executive Order 13112 (FEA page 41):

- Project Design Features and required Best Management Practices (BMPs) have been developed to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts. The Woodrat Salvage project area is also within the area to be treated through the 2007 Lochsa Weeds DN.

Idaho Forest Practices Act of 1974 and Idaho Forestry Best Management Practices (FEA pages 8, 55, 66, and 82):

- Forest practices on National Forest lands must adhere to the rules pertaining to water quality (IDAPA 20.02.01); the Woodrat Salvage project was designed to meet these standards.

Idaho Water Quality Standards (FEA pages 8, 66, and 82):

- Beneficial uses and water quality criteria and standards are identified in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements. The designated beneficial uses for the Middle Fork Clearwater River and Yakus Creeks are cold-water aquatic life, primary contact recreation, domestic water supply, and special resource waters. IDEQ (2014) has determined that the Middle Fork Clearwater and Yakus fully supports their beneficial uses. Big Smith, Little Smith and Swan Creeks were not assessed.

Idaho Stream Channel Protection Act of 1971 (FEA pages 8, 66, and 82):

- This legislation regulates stream channel alterations between mean high water marks on perennial streams in Idaho. Instream activities on NFS lands must adhere to the rules pertaining to the Idaho Stream Channel Protection Act (IDAPA 37.03.07). These rules are also incorporated as BMPs in the Idaho Water Quality Standards described above.

F. Alternatives Considered

I considered a range of alternatives for this project in the Woodrat Salvage FEA, including the no action alternative (Alternative 1), proposed action (Alternative 2), and 5 alternatives or elements which were considered and analyzed or eliminated from detailed study (FEA pages 18-19).

1. No-Action Alternative (Alternative 1)

Alternative 1 is designed to represent the existing condition and projected future conditions if current forest management continues. The no action alternative is based on the assumption that ecosystems undergo change, even in the absence of active management. It serves as a baseline to compare and describe the differences and effects between taking no action and implementing an action alternative.

I did not select this alternative because it would not fully meet any of the purpose and need items for the Woodrat Salvage project. Specifically, Alternative 1 would not protect the health and safety of public, workers, and private citizens; capture remaining forest product economic value and benefit; maintain existing and develop future wildlife habitat; maintain watersheds and reduce runoff from erosion; or reforest suitable portions of the landscape deforested by the Woodrat fire. Given no action:

- The public and forest workers working or visiting the burned area would be substantially exposed to dangers and risk of injury or death from falling snags and debris.
- Reforestation of 536 acres would not occur, therefore early seral, more fire tolerant species such as ponderosa pine, western larch, and western white pine would not increase (FEA page 24). Reforestation would not occur to recover forest vegetation for wildlife cover, future nesting sites, or denning, foraging, and resting habitat for various wildlife species and the recovery of greenhouses gases (FEA pages 90, 93, 102, 105, 109, and 111).

- Hazardous fuels in fire-affected areas to prevent future heavy surface fuel loadings would not be reduced. Studies have shown that there is a strong positive relationship between initial fire severity and severity of a subsequent reburn (e.g. Holden et al. 2010; Thompson and Spies 2010; Van Wagtendonk et. al. 2012; Parks et al. 2014). Results suggest that high to moderate severity fire in an initial fire can lead to an increase in standing snags and shrub vegetation, which in combination with severe fire weather, can promote high severity fire in the subsequent reburn of an area. The window of low reburn potential can close relatively quickly (5 to 10 years) as regenerating vegetation and litter accumulates on the surface (Donato et al. 2013). This time also allows for enough smaller surface fuels and ladder fuels in the form of regeneration to accumulate to actively carry the next fire and become established in the heavier fuel loadings that are amassing as snags fall. This increase in large heavier fuel accumulations also hampers fire suppression as these areas are difficult to walk through and chainsaws are needed to remove layers of logs in order to dig fireline. Fireline production can be very slow which may limit the success of initial attack (FEA page 29).
- Timely recovery of the economic value of dead and dying trees would not occur (FEA pages 133-134).
- Wood products would not be generated or support employment opportunities (FEA, pages 133-134).
- Associated road activities, specifically, road maintenance and reconstruction would not occur, resulting in continued chronic sediment input to streams, and put existing road systems at risk of failure due to plugged culverts and ditches. (FEA pages 59, 61, and 74).

2. Proposed Action (Alternative 2)

Alternative 2 will meet the purpose and need for this project (FEA pages 13-18). Alternative 2 authorizes the following activities: salvage harvest, activity generated fuel treatment, site preparation and reforestation, and associated road activities. This is the selected alternative. The rationale supporting my decision is contained throughout this DN.

This proposed action was further refined during the project analysis. The original proposed action was analyzed but dropped from further consideration. The modifications to the proposed action that was provided to the public during the January/February 2016 scoping/30-day comment period are:

- One 4-acre unit was dropped because it did not pass the rapid assessment fine filter requirement of detrimental soils disturbance (DSD) during the soils analysis. This unit exceeded the R1 and Forest Plan soil quality standards. This unit was kept in the proposal for reforestation.
- 132 acres of salvage harvest units and reforestation (and associated road activities) in the Middle Lolo Creek HUC 12 subwatershed was dropped after public comments expressed concerns of how post fire project areas were delineated.
- With more accurate post-fire field data, units were modified or dropped; and additional units were selected for treatment to meet the Purpose and Need for action. Field reviews provided more accurate burn severity and tree mortality areas for salvage harvest and reforestation. Field reviews also provided more data to determine that more units were to be harvested using skyline/cable harvest system rather than ground based harvest, the use of existing road prisms for temporary roads, including recontouring these existing road prisms after use as a temporary road. Temporary roads were increased to 3.7 miles to access salvage harvest units that the interdisciplinary team developed. New construction of temporary roads and the use of existing road prisms will facilitate access to salvage harvest units.

3. Alternatives Considered but Eliminated from Detailed Study

Several alternatives were considered during the planning process but were not been included in the FEA for detailed study. The detailed rationale for eliminating these alternatives from detailed study is provided on FEA pages 18-19. These include:

- An alternative that does not contain any temporary road construction.
- An alternative that does not include ground-based logging but prescribes helicopters or full-suspension cable systems for all salvage logging.
- An alternative that does not include salvage logging in pre-fire old growth stands.
- An alternative to operate over snow or on frozen conditions.

G. Public Involvement and Consultation with Government Agencies and Tribes

The Woodrat Salvage project was listed in the Nez Perce-Clearwater National Forest Schedule of Proposed Actions (SOPA) beginning in January 2016 and in subsequent quarterly SOPAs. This document is mailed to individuals and is available on the internet (http://www.fs.fed.us/sopa/forest-level.php?110117) for those who are interested in activities proposed on the Nez Perce-Clearwater National Forests.

The Nez Perce-Clearwater National Forests issued press releases to local media on November 30, 2015, December 21, 2015, February 9, 2016, May 10, 2016, and June 22, 2016. The Forests also conducted a number of public information efforts to inform the public concerning post fire recovery activities on the Forests. These efforts included briefings to local retired federal employee groups, local city and county officials, industry representatives, interest groups including Orofino Rotary, Public Land Access Year-round, Rocky Mountain Elk Foundation, Trout Unlimited, and National Wild Turkey Federation; the Nez Perce Tribe, Idaho Fish & Game, Idaho Department of Lands, and Clearwater Basin Collaborative.

1. Public Scoping/30-day Comment Period

A scoping/30-day comment period notice was published in the *Lewiston Morning Tribune* (the newspaper of record) on January 29, 2016 concurrent with the scoping/30-day comment period for the Upper Lolo Salvage project. The notice initiated a formal 30-day public comment and scoping period. A scoping package that included anticipated effects to resources was sent to approximately 330 individuals, industry, groups, federal and state agencies at the same time the scoping/30-day public comment period notice was published. Twelve (12) comments were received in response. The Woodrat Salvage project interdisciplinary team responded to approximately 81 comments identified in these letters. The original comment letters and responses to the comments are in the project record.

2. 30-day Notice and Comment Period on the Preliminary EA

A 30-day comment period notice for the preliminary Woodrat Salvage Project Environmental Assessment was published in the *Lewiston Morning Tribune* (the newspaper of record) on September 2, 2016. The notice initiated a formal 30-day public comment period. The preliminary EA was made available on the Nez Perce-Clearwater National Forest website at http://www.fs.usda.gov/project/?project=48651. The notice for the comment period for the preliminary Woodrat Salvage EA that included effects to resources was sent to approximately 310 individuals, industry, groups, federal and state agencies at the same time the 30-day comment period legal notice was published. One comment letter was received in response.

The Woodrat Salvage project interdisciplinary team responded to approximately 56 comments identified in the letter (see FEA Appendix D).

3. Additional Public Involvement

An additional opportunity for public involvement began on May 3, 2016. Those that commented during the combined scoping and 30-day comment period were notified that the draft Woodrat Salvage Project EA was available for public viewing on the Nez Perce-Clearwater National Forests website at http://www.fs.usda.gov/project/?project=48651. This opportunity encouraged feedback from the public to ensure no issues were overlooked in the analysis. Two comments were received concerning salvage harvest in verified old growth before the Woodrat fire, a general opposition of post-fire harvest, and the use of best available science and are located in the project record.

4. Tribal Government Consultation

Trust responsibility arise from the United States' unique legal relationship with Indian tribes. It derives from the Federal Government's consistent promise, in the treaties that it signed, to protect the safety and well-being of the Indian tribes and tribal members. The Federal Indian trust responsibility is now defined as a legally enforceable fiduciary obligation, on the part of the United States, to protect tribal lands, assets, resources, and reserved rights, as well as a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. This responsibility requires that the Federal Government consider the best interests of the Indian tribes in its dealings with them and when taking actions that may affect them. The trust responsibility includes protection of the sovereignty of each tribal government (FSM 1563.8b 2).

The Forest Service best serves the Federal Government’s trust responsibility by:

- Ensuring Forest Service actions never diminish the rights of Indian tribes and tribal members;
- Ensuring Forest Service program benefits reach Indian tribes and tribal communities;
- Observing and enforcing all laws enacted for the protection of tribal cultural interests;
- Observing the principles of consultation whenever our policies, decisions, or other actions have tribal implications; and
- Treating NFS resources as trust resources where tribal legal rights exist.

American Indian tribes are afforded special rights under various federal statutes: National Historic Preservation Act; NFMA; Archaeological Resources Protection Act of 1979; Native American Graves Protection and Repatriation Act of 1990; Religious Freedom Restoration Act of 1993 (PL 103141); and the American Indian Religious Freedom Act of 1978. Federal guidelines direct federal agencies to consult with tribal representatives who may have concerns about federal actions that may affect religious practices, other traditional cultural uses, or cultural resource sites and remains associated with tribal ancestors. Any tribe whose aboriginal territory occurs within a project area is afforded the opportunity to voice concerns for issues governed by National Historic Preservation Act, Native American Graves Protection and Repatriation Act, or American Indian Religious Freedom Act.

Executive Order 13175 “Consultation and Coordination with Indian Tribal Governments;” Executive Memo, April 29, 1994 “Government-to-Government Relationship;” and Executive Memo, September 23, 2004, “Government-to-Government Relationship” recognize the unique legal relationship between the United States and Indian tribal governments and also direct Federal agencies to have a process to ensure meaningful and timely input by tribal officials.

The Woodrat project area is located within ceded lands of the Nez Perce Tribe. These ceded lands are federal lands within the historic aboriginal territory of the Nez Perce Tribe which have been ceded to the United States. In Article 3 of the Nez Perce Treaty of 1855, the United States of America and the Nez Perce Tribe mutually agreed that the Nez Perce retain the following rights:

"*…taking fish at all usual and accustomed places in common with citizens of the Territory [of Idaho]; and of creating temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle…*"

The Nez Perce-Clearwater National Forests is committed to fulfilling the Forest Service's trust responsibilities to Native Americans, to honoring rights reserved in the Nez Perce Treaty of 1855, and to strengthening the Forests' government-to-government relationship with the Nez Perce Tribe. The Forest Service manages and provides access to ecosystems that support Tribal traditional practices. The Woodrat Salvage Project will maintain and enhance these opportunities over the long term by repairing roads, providing for safe travel, and enhancing big game wildlife habitat.

In order to ensure early and frequent opportunities for meaningful and timely input by tribal officials, Forest Service staff began communicating with Nez Perce Tribal staff and the Nez Perce Tribal Executive Committee before the fires were fully contained in the fall of 2015. The first formal staff meeting to introduce proposed projects was held December 16, 2015. Subsequent meetings were held January 22 and March 17, 2016, a conference call on July 14, 2016, and an update on Woodrat Salvage project was given at the regular quarterly meeting on October 6, 2016. These staff-to-staff conversations helped shape the project design to protect important tribal resources such as healthy populations of fish, wildlife and botanical species. Forest leadership also met with the Nez Perce Tribal Executive Committee on April 12, 2016 for formal government to government consultation. No outstanding issues were identified at this meeting.

Nez Perce Tribe staffs asked us to pay particular attention to fish and wildlife habitat and cumulative effects; and were particularly interested in minimizing soil disturbance and controlling invasive weed species. Responses to these concerns were drafted and sent to the Nez Perce tribal staff and Nez Perce Executive Committee members prior to the staff-to-staff meeting on March 17, 2016; where is was briefly discussed as well. Resource analysis determined if there were no negative impacts on the aquatic and terrestrial species of concern to the Tribe, then there would likewise be no negative impacts on treaty-reserved rights. Likewise, any benefits to these resources would be benefits to treaty-reserved rights.

The cultural resource surveys have been completed for the Woodrat Salvage project area and will be submitted to the Idaho State Historic Preservation Office (SHPO) for concurrence prior to project implementation (Memorandum of Agreement (MOA) between the United States Forest Service and the Idaho State Historic Preservation Office; February 9, 2016.

5. Listed Species Consultation

The proposed action is consistent with the Endangered Species Act. Biological evaluations and the biological assessment have been completed for all threatened and sensitive plants, aquatic species, and terrestrial wildlife. There are no endangered species present on the Nez Perce-Clearwater National Forests. All biological evaluations and the biological assessment are located in the project record for the Woodrat Salvage project.

The Nez Perce-Clearwater National Forests initiated Endangered Species Act section 7 consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service on the actions of the Woodrat Salvage project, and has provided the regulatory agencies with a biological assessment regarding the effects of the project to threatened Canada lynx, North American wolverine (proposed), Snake River Fall Chinook salmon, Snake River steelhead, Columbia River bull trout, and their designated critical habitats; and essential fish habitat (EFH). The completed biological assessment and consultations are located in the project record. Letter of concurrence were received from U.S. Fish and Wildlife Service on September 19, 2016 and National Marine Fisheries Service on October 26, 2016.

H. Finding of No Significant Impact

After considering the environmental effects described in the FEA, I have determined that these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base my finding on the following:

1. Context

This project is limited in scope and is designed to minimize adverse environmental effects. The decision made here applies only to the Woodrat Salvage project area (2,505 acres), located on the Lochsa-Powell Ranger District (951,470 acres) within the Big Smith Creek and Middle Lolo Creek subwatersheds of the Nez Perce-Clearwater National Forests (4 million acres). No project activities are proposed in the Middle Lolo Creek subwatershed.

Approximately 21 percent (536 acres) of the 2,505-acre Woodrat Salvage project area will receive salvage harvest and/or fuels treatments, site preparation, and reforestation. In context, salvage harvest, fuels treatments, site preparation, and reforestation would impact approximately less than 1 percent of the Lochsa-Powell Ranger District and even less of the Nez Perce-Clearwater National Forests (Table 3).

Table 3. Context of the Woodrat Salvage project at various scales

Unit	Acres	Acres (and percentage) in the project area	Acres (and percentage) affected by project activities
Nez Perce-Clearwater National Forests	4,072,800	2,505 (<1%)	536 (<1%)
Lochsa-Powell Ranger District	951,470	2,505 (<1%)	536 (<1%)
Middle Fork Clearwater subbasin	139,751	2,505 (1.7%)	536 (<1%)
Big Smith Creek – Middle Fork Clearwater River subwatershed	28,800	1,987 (6.8%)	536 (1.9%)
Middle Lolo Creek subwatershed	29,511	274 (1%)	0

The project area is limited in size and the activities are limited in duration. The resources affected by the proposal are described in the FEA Chapter 3. Effects are local in nature and not likely to significantly affect regional or national resources. The project is consistent with the Clearwater Forest Plan, as amended. Based on these factors, I believe the effects of this project will be localized, and will not contribute to significant environmental effects within or beyond the project area. Given the area affected by the Woodrat Salvage project at the subwatershed, subbasin, district, and forest scales I find the effects are not significant.

2. Intensity

The intensity of effects was considered in terms of the following:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

Adverse and beneficial impacts have been assessed and were not found to be significant. The analysis considered not only the direct and indirect effects of the projects, but also their contribution to cumulative effects (FEA Chapter 3). Past, present, and foreseeable future actions have been included in the analysis. Adverse effects from the selected alternative have been minimized or eliminated through project design

criteria (FEA Chapter 2 – Project Design Features). For this project, there are no known long-term adverse effects or cumulative effects to resources such as wildlife, water quality, fisheries, recreation, or heritage resources. As such, I find that the selected alternative is not a significant federal action.

Effects, if any depending on resource, are described in the following locations in FEA Chapter 3: forest vegetation (pages 21 to 28); fire/fuels and air quality (pages 29 to 37); invasive species (pages 38 to 41); botany/rare plants (pages 42 to 46); soils (pages 47 to 57); hydrology (pages 58 to 68); aquatic species (pages 69 to 82; wildlife (pages 83 to 116); recreation (pages 117 to 119); wild and scenic river (pages 120 to 123); scenic quality (pages 124 to 132); cultural resources (pages 133 to 135); economics (pages 136 to 141); climate change (pages 142 to 144); and other laws, regulations, and policies (pages 145 to 146).

2. The degree to which the proposed action affects public health or safety.

Significant effects to public health and safety are not anticipated to result from implementation of Alternative 2 because implementation incorporates appropriate safety measures as required by the Occupational Safety and Health Administration. Fire managers will plan the dispersal of smoke away from designated areas in accordance with the Montana/Idaho Airshed Group. In addition, real time monitoring will be performed during implementation such that ignition can be halted if smoke impacts become greater than is acceptable (FEA page 29).

Implementation will include advance notice of closures (website, press releases, and postings), signing at appropriate locations, alternative route recommendations, notification of user groups, and timing activities outside of the season of highest recreational use (Project Design Features).

Safety would be improved for the public and firefighters along Forest Roads 101, 5502, 5502-A, 5502-B, 5502-C, 5502-D, 5502-F, 5502-M, 5503, 5503-C 5503-D, 5503-F, 5504, 5504-F, and 75093 were harvest will occur.

There are no municipal watersheds within or near the project area that would be affected by the project.

This project is consistent with the Clean Water Act and Forest Service responsibilities under the Clean Water Act by adopting to state water quality standards. The objectives of the Idaho Anti-degradation policy are to maintain and protect existing instream water uses and the level of water quality necessary to protect those uses. Beneficial uses and water quality criteria and standards are identified in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02, IDAPA 37.03.02) (FEA, pages 8, 55, 66, 69, and 81-82).

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

I find there will be no significant effects on unique characteristics such as historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. There are no park lands, prime farmlands, or ecologically critical areas in the project area.

The Middle Fork of the Clearwater Wild and Scenic River Corridor was burned by the Woodrat fire. Approximately 6 acres burned National Forest System lands within the Middle Fork Clearwater Wild and Scenic River corridor. Stands selected for treatment were not included within the burnt portions of this Wild and Scenic Corridor (Appendix A, Figure 2).

The project does not propose action within any designated Wild and Scenic River corridor. The project is adjacent to the Middle Fork Clearwater Wild and Scenic River. The project was designed to be in compliance with the River Management Plans and Management Guides, and Wild and Scenic Rivers Act as documented in Wild and Scenic River and Eligible Determination (project file). Each outstanding remarkable value (ORV) of the Middle Fork Clearwater River segment was evaluated for impacts (FEA pages 10-11and 121-123; and corresponding resource reports in the project record). Visually, the project areas adjacent to the corridor were designed to meet *Partial Retention* guidelines for the middleground

viewing zone and *Retention* in the foreground viewing zone. Additionally, following analysis, the actions adjacent to the corridor and visible from the corridor were re-evaluated with the intent to meet and exceed all Wild and Scenic values and visual. This included cumulative effects analyzed or discussed in the resource reports (FEA Chapter 3; Vegetation, Hydrology, Aquatics, Wildlife, Recreation, Scenic Quality, Cultural Resource reports in project record).

All cultural properties will be avoided during project implementation. If unknown heritage resources sites are discovered during implementation, all work will stop in the immediate vicinity of the site. Work will not begin again until authorized by a Forest Service archaeologist (Project Design Features).

Wetlands do not occur in the Woodrat Salvage project area.

The primary Clearwater Forest Plan land use allocations in the project area are C4 – big game winter and suitable timber-producing land and E1 – productive timber land. None of the major characteristics of these land use allocations will be negatively impacted by this project. The project was designed to meet Forest Plan standards. Additionally, PACFISH amended the Clearwater Forest Plan by establishing riparian habitat conservation areas (RHCAs). Project design features include RHCA retention.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

As used in the Council on Environmental Quality's guidelines for implementing NEPA, the term "controversial" refers to whether substantial dispute exists as to the size, nature, or effects of the major federal action. The nature of potential effects of forest management activities proposed in this project is well established and not likely to be highly controversial in a scientific context. My decision falls within the scope of the analysis for the Clearwater Land and Resource Management Plan (1987), as amended.

A range of public comments both supporting and objecting to various aspects of the proposed actions was received through the 30-day comment periods. No information was presented that indicates substantial controversy about the effects of the project. The effects of the Woodrat Salvage project are based on the best available science. The interdisciplinary team used information from 181 scientific literature sources to support the project analysis. The FEA Appendix D – Response to Public Comments addresses comments received during the 30-day comment period on the preliminary Woodrat Salvage EA and contains a range of alternative and anticipated resource effects and the project record contains a review of the opposing. I have reviewed science submitted by the public and found nothing that significantly contradicts the science used to develop the proposed activities and assess the impacts of the alternatives. In many cases, the science submitted by the public supports the analysis in the Woodrat Salvage FEA or does not meet the purpose and need. Based on the findings of the analyses, and public comment, there is no indication the effects of the selected alternative on the quality of the human environment are likely to be highly controversial.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

There are no highly uncertain, unique, or unknown risks identified in the Woodrat Salvage Project FEA. Activities approved in this decision and the effects analyses discussed in FEA Chapter 3 are based on sound scientific research and previous experience implementing similar projects under the Clearwater Forest Plan over the past 29 years.

The selected alternative was developed using design features based on the results of past actions and professional and technical insight and experience, public input, field surveys and reconnaissance, and incorporation of pertinent research. Project design features incorporated into this decision and used during layout and implementation will avoid or minimize known risks associated with the project and will be employed where unexpected situations arise that could potentially have a detrimental effect on resources.

I am confident the selected alternative will have no effects that are highly uncertain or involve unique or unknown risks to the human environment.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

I find the actions that are part of this decision will not establish a precedent for future actions with significant effects, nor do they represent a decision in principle about a future consideration. This decision only pertains to the Woodrat Salvage project area and actions authorized by this decision. Any future resource decisions will need to be considered in a separate analysis using relevant scientific and site-specific information available at that time.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

I find the effects of the selected alternative combined with the effects of past, present, and reasonably foreseeable actions will not have significant cumulative effects. Cumulative impacts, including the Road, Administrative, and Recreation Site Maintenance project, are addressed, by resource, in the Woodrat Salvage FEA Chapter 3. Analysis of the project follows the Council on Environmental Quality Guidance Memorandum on consideration of past actions in cumulative effects analysis, in particular the potential impacts from 2015 fires on state, private, and federal lands.

My review of the FEA and supporting documents finds the cumulative effects analyses have adequately considered the time and space of effects to each respective resource and all impacts will be contained within each applicable analysis area. No significant adverse environmental impacts are likely to occur because of this decision.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

In compliance with the National Historic Preservation Act the cultural resource surveys have been completed for the Woodrat Salvage project area and will be submitted to the Idaho State Historic Preservation Office (SHPO) for concurrence prior to project implementation (Memorandum of Agreement (MOA) between the United States Forest Service and the Idaho State Historic Preservation Office; February 9, 2016. One site was identified within the area of potential effects during field surveys that is not eligible for the National Register of Historic Places (Cultural Resources report and FEA pages 133-135).

I find the action will have no significant adverse effects on cultural sites in or eligible for listing in the National Register of Historic places because all known cultural properties will be avoided during implementation (FEA pages 18 and 134-135). If unknown cultural resources sites are discovered during implementation, all work will stop in the immediate vicinity of the site. Work will not begin again until authorized by a Forest Service archaeologist (Project Design Features). With the implementation of the project design criteria for cultural resources, there is minimal risk of additional incremental degradation of the cultural properties associated with the proposed action.

The Nez Perce Tribe and both Idaho and Clearwater Counties were each invited to be consulting parties for purposes of National Historic Preservation Act compliance (36 CFR 800.2(c)). Only Idaho County formally accepted the invitation, however, the Nez Perce Tribe will be considered a consulting party by default (36 CFR 800.2(c)(2)(ii)).Consultation occurred with the Nez Perce Tribe. Input received from the Nez Perce Tribe was considered (see Tribal Government Consultation and preliminary EA Appendix D – Response to Public Comments).

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The action complies with the Endangered Species Act (ESA) of 1973 for aquatic and wildlife species.

The wildlife biologist determined that the project would have "no effect" on the Canada lynx as no preferred habitat or Lynx Analysis Units (LAUs) for lynx occur in the project area (FEA page 84 and Appendix E). He also determined that the project is "not likely to jeopardize" the continued existence of the North American wolverine (FEA pages 84 and 114-115; Appendix E) since no primary habitat is present in the area.

A Biological Assessment for Snake River steelhead trout, Snake River fall chinook, bull trout, and Essential Fish habitat (EFH) determined that the project is "not likely to adversely affect" the species or their designated critical habitat. This is due to the implementation of design features and Best Management Practices (BMPs) that minimize the sediment delivery to streams and the long distance between project activities and designated critical habitat for the species (FEA pages 80-81). The National Marine Fisheries Service an U.S. Fish and Wildlife Service concurred with the determination (Letters of Concurrence are in the project record). Based on these assessments and analyses, I find that the project would not adversely affect threatened and endangered species.

The following Forest Service Region 1 sensitive species were eliminated from analysis as they would not likely be affected by the proposed activities, or a lack of suitable habitat or expected presence, or they would be affected at a level that does not impact the population: bald eagle, belted kingfisher, Coeur d' Alene salamander, fisher, gray wolf, grizzly bear, harlequin duck, pygmy nuthatch, ring-necked snake, Shiras moose, Townsend's big eared bat, and western (boreal) toad (FEA pages 88 and 89; Appendix E).

The project may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species for the following sensitive wildlife species and Clearwater Forest Plan Management Indicator Species (MIS) black-backed woodpecker, flammulated owl, fringed myotis, long-eared myotis, long-legged myotis, American marten, northern goshawk, pileated woodpecker, Rocky Mountain elk, and neotropical bird species (FEA pages 90-114).

I have considered the effect of my decision on threatened and sensitive species relative to the Endangered Species Act. Based on the analysis presented in the FEA and the project record, I conclude that Alternative 2 will not have an adverse impact to wildlife and fish species, including Management Indicator Species (MIS) outlined in the Clearwater Forest Plan. My decision is consistent with the Clearwater Forest Plan (FEA pages 116).

There are no federally ESA listed plant species within the project area. There would be no effect to Macfarlane's four-o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and Spalding's catchfly (*Silene spaldingii*) because no habitat exists within the project area (FEA page 46). There are five Region 1 sensitive plant species documented to occur in or closely adjacent to the proposed units or road corridors that will be involved in the project actions. Given the extensive area of suitable habitat for some species of concern, it is anticipated that undocumented populations occur. Presently suitable habitat is difficult to determine as most areas of potential habitat have been rendered unsuitable given the wildfire; however, there may be small inclusions that could be affected that did not burn or did not burn with intensity sufficient to completely compromise the habitat. The project may impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species for Green bug-on-a-stick (*Buxbaumia viridis*), Contance's bittercress (*Cardamine constancei*), Pacific dogwood (*Cornus nuttallii*), Clustered lady's slipper (*Cypripedium fasciculatum*), and Dasynotus (*Dasynotus daubenmirei*) (FEA pages 45-46).

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

My decision will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the FEA (pages 7-12, 27, 28, 37, 41, 46, 55-57, 66-68, 80-21, 114-116, 119, 120-123, 132, 134-135, 140-141, and 143-146). The action is consistent with the Clearwater Forest Plan as described in the consistency section for each resource in the FEA Chapter 3 as well as described below. The selected alternative is consistent with the National Forest Management Act regulations for vegetative management. There will be no regulated timber harvest on lands classified as unsuitable for timber production (36 CFR 219.14) and vegetation manipulation is in compliance with 36 CFR 219.27(b). The project complies with Executive Order 12898 regarding environmental justice (FEA pages 140-141 and 145). No disproportionately high adverse human or environmental effects on minorities and/or low-income populations were identified during the analysis or public scoping process (FEA page 140-141). I have determined that this project is consistent with standards in the Idaho County Natural Resource Plan in that the proposed action salvages timber for vegetation management, I met with Idaho County commissioners during the planning of the Woodrat Salvage project and considered comments from Idaho County received during the scoping period.

3. Conclusion

After considering the environmental effects described in the FEA and specialist reports, I have determined the selected alternative will not have significant effects on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared.

I. Predecisional Administrative Review Process

This project is subject to pre-decisional administrative review pursuant to 36 CFR 218, Subpart B. Also called the "objection process" the predecisional administrative review process replaced the appeal process in March 2013. The primary difference with the objection process is that a person may object to a project prior to the final decision, whereas under the appeal procedures, appeals were made after the decision. The regulations can be found at http://www.ecfr.gov/cgi-bin/text-idx under "Predecisional Administrative Review Process."

Only individuals or organizations that submitted specific written or oral comments during the designated opportunity for public participation (January/February 2016 combined scoping/30 day public comment period or September 2016 30-day comment period) may object (36 CFR 218.2 and 36 CFR 218.5). Objection must meet the requirements of 36 CFR 218.8(d). Objections can be submitted in writing, either electronically or in hard copy, and must be filed with the Reviewing Officer within 45 days from the date of publication of notice of the opportunity to object (published in the *Lewiston Morning Tribune*, Lewiston, ID).

Objections must be submitted within 45 calendar days following the publication of this notice in the *Lewiston Morning Tribune*. The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object should not rely on dates or time-frame information provided by any other source. The regulations prohibit extending the time to file an objection.

Incorporation of documents by reference is not allowed, except for the following list of items that may be referenced according to 36 CFR 218.8(b) by including date, page, and section of the cited document, along with a description of its content and applicability to the objection: 1) all or any part of a federal law or regulation; 2) Forest Service directives and land management plans; 3) documents referenced by the Forest Service in the subject environmental analysis document; or 4) comments previously provided to the Forest Service by the objector during public involvement opportunities for the proposed project where

written comments were requested by the responsible official. All other documents must be included with the objection.

Issues raised in objections must be based on previously submitted specific written comments regarding the proposed project or activity and attributed to the objector, unless the issue is based on new information that arose after the opportunities for comment. The burden is on the objector to demonstrate compliance with this requirement for objection issues.

At a minimum an objection must include the following (36 CFR 218.8(d)): (1) The objector's name and address, with a telephone number, if available; (2) a signature or other verification of authorship upon request (a scanned signature for email may be filed with the objection); (3) when multiple names are listed on an objection, identification of the lead objector (verification of the identity of the lead objector shall be provided upon request); (4) the name of the proposed project (i.e. Woodrat Salvage), the name and title of the Responsible Official, and the name(s) of the National Forest(s) and/or Ranger District(s) on which the proposed project will be implemented; (5) a description of those aspects of the proposed project addressed by the objection, including specific issues related to the proposed project if applicable, how the objector believes the environmental analysis or draft decision specifically violates law, regulation, or policy; suggested remedies that would resolve the objection; supporting reasons for the reviewing officer to consider; and (6) a statement that demonstrates connection between prior specific written comments on the particular proposed project or activity and the content of the objection.

Objections may be:

- Postal Delivery and hand deliveries (8:00 AM and 4:30 PM MST, Monday through Friday except legal holidays): *USDA Forest Service, Objection Reviewing Officer, Northern Region, USDA Forest Service, 26 Fort Missoula Road, Missoula, MT 59804*; or
- Emailed to: *appeals-northern-regional-office@fs.fed.us*mailto:objections-pnw-regional-office@fs.fed.us. Please put "Woodrat Salvage Project" in the subject line. Electronic objections must be submitted as part of an actual e-mail message, or as an attachment in Microsoft Word (.doc or .docx), rich text format (.rtf), or portable document format (.pdf) only. E-mails submitted to addresses other than the ones listed above or in formats other than those listed above or containing viruses will be rejected. It is the responsibility of the objector to confirm receipt of objections submitted by electronic mail. For electronically mailed objections, the sender should normally receive an automated electronic acknowledgement from the agency as confirmation of receipt. If the sender does not receive an automated acknowledgement of receipt, it is the sender's responsibility to ensure timely receipt by other means; or
- Faxed to: *Objection Reviewing Officer at 406-329-3411*.

J. Implementation

Implementation is expected to begin in 2017. I reviewed the FEA, associated appendices, and project record, and I believe there is adequate information within these documents to provide a reasoned choice of action. I am fully aware of adverse effects that cannot be avoided and believe these risks have been adequately mitigated and are outweighed by the benefits. Implementing the selected alternative will cause no unacceptable impact to any resource.

Minor changes may be needed during implementation to better meet on-site resource management and protection objectives. In determining whether and what kind of further NEPA action is required, we will consider the criteria at FSH 1909.15, section 18.

Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. The cumulative impacts of these changes will also be considered.

Minor adjustments to unit boundaries may be needed during implementation for resource protection, to improve harvest system efficiency, and to better meet the intent of our decision. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws.

K. Contact Information / Further Information

Project records are on file at the Lochsa-Powell Ranger District office in Kooskia, Idaho. The FEA and other project documents are available on the internet at http://www.fs.usda.gov/project/?project=48651.

For additional information concerning the specific activities authorized with this decision, you may contact:

Brandon Knapton, District Ranger
Lochsa-Powell Ranger District
502 Lowry Street
Kooskia, Idaho 83539
bknapton@fs.fed.us
(208) 926-6400

Sara Daugherty, Natural Resource Planner
Nez Perce-Clearwater National Forests Supervisor's Office
903 3rd Street
Kamiah, Idaho, 83536
sddaugherty@fs.fed.us
(208) 935-4263

L. Responsible Official

The Forest Supervisor of the Nez Perce-Clearwater National Forests is the official responsible for deciding the type and extent of management activities in the Woodrat Salvage project area.

__signature reserved for final decision_____
CHERYL F. PROBERT
Forest Supervisor
Nez Perce-Clearwater National Forests

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Appendix A

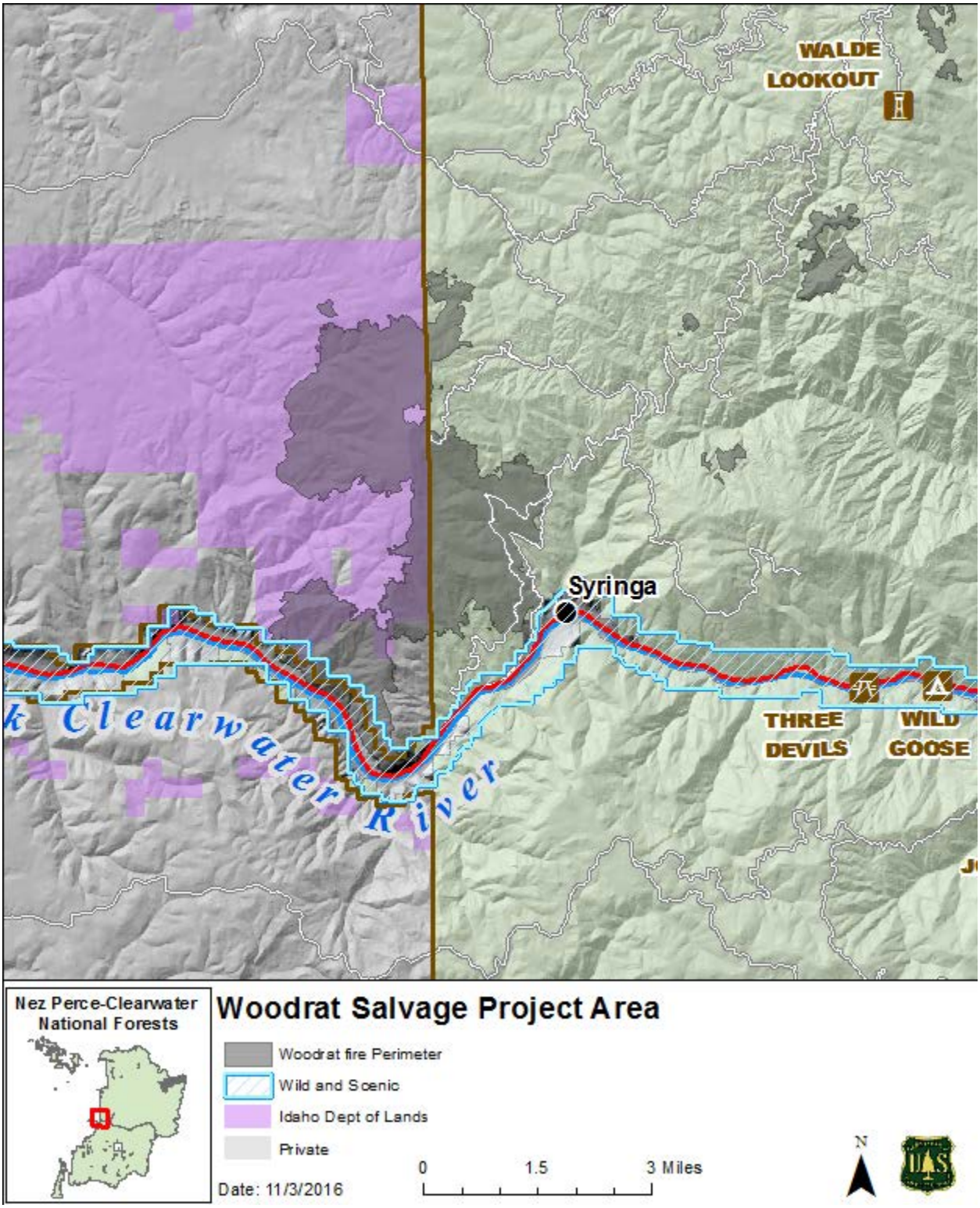

Figure 1. Woodrat Salvage project vicinity map

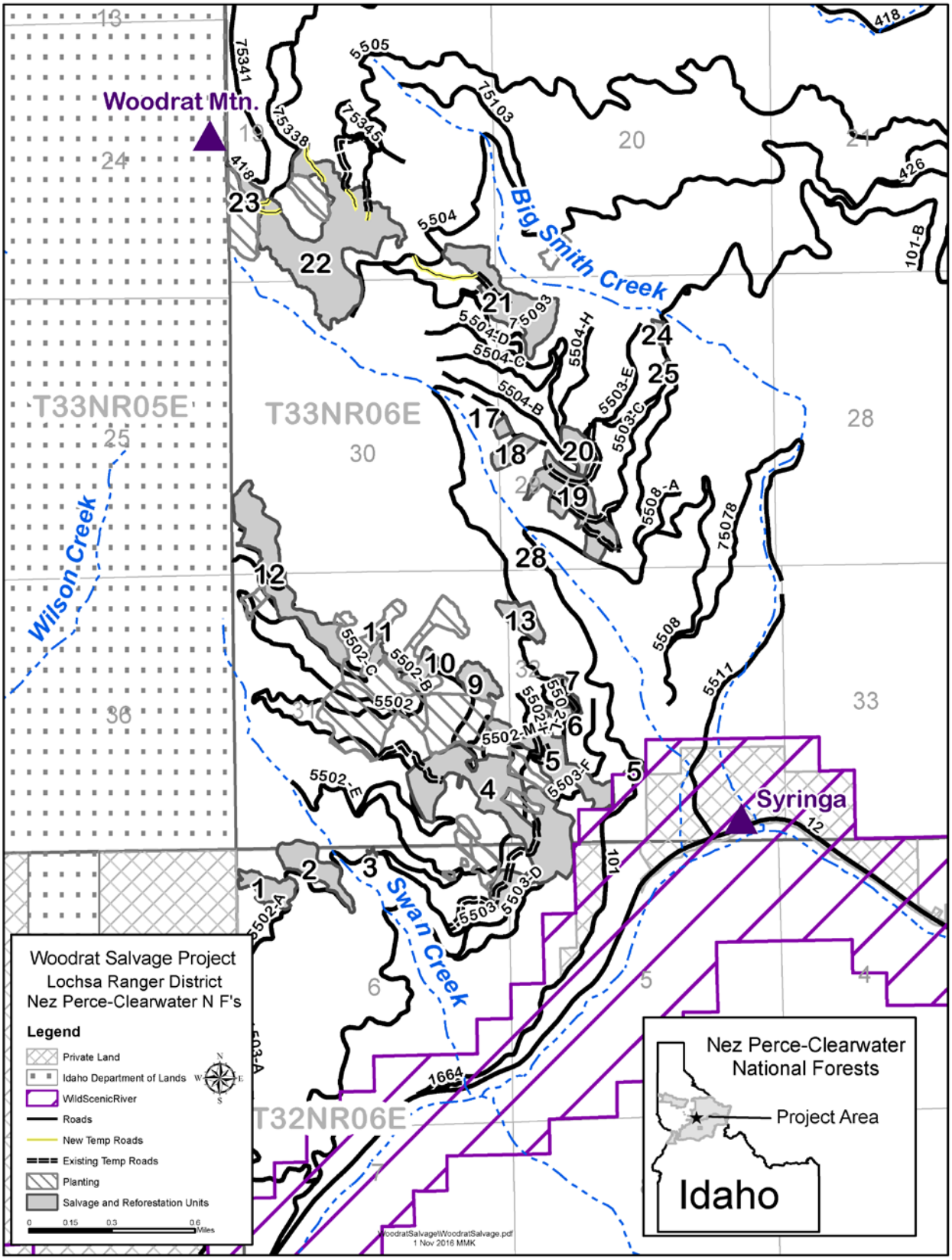

Figure 2. Woodrat Salvage project salvage harvest and reforestation units

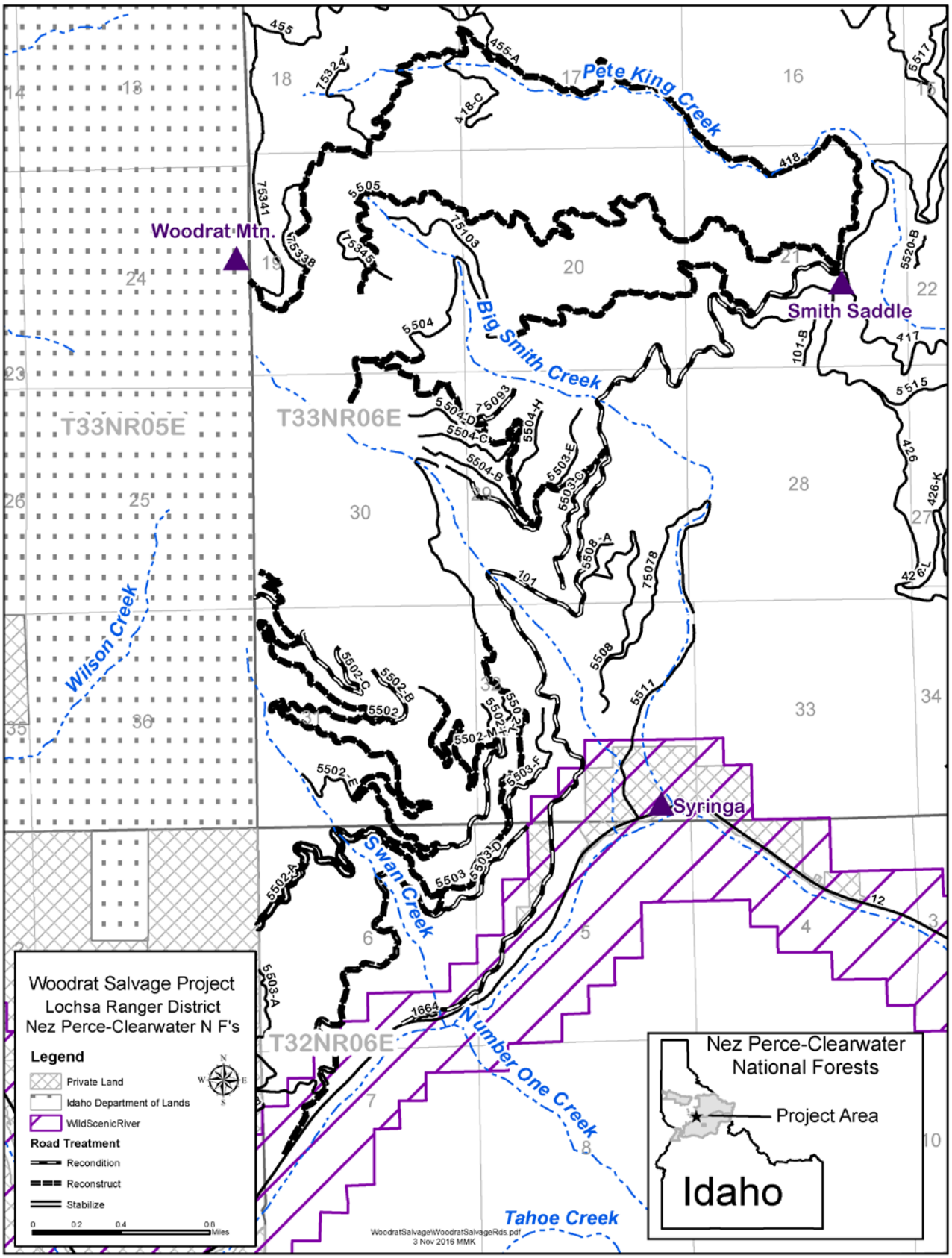

Figure 3. Woodrat Salvage project proposed road work

United States Department of Agriculture

Woodrat Salvage Project

Final Environmental Assessment

USDA Forest Service
Lochsa-Powell Ranger District
Northern Region

Nez Perce-Clearwater National Forests
December 2016

For More Information Contact:

Sara Daugherty
Natural Resource Planner
903 3rd St.
Kamiah, Idaho 83536
208-935-4263

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Chapter 1. Purpose and Need for the Proposal

Changes Between Preliminary and Final Environmental Assessment

The following changes were made to the Woodrat Salvage Project Environmental Assessment (EA) between the preliminary and final versions:

- Minor editorial changes throughout the document.
- Maps were edited for clarity and easy reading.
- Effects to the outstanding remarkable values (ORVs) of the Wild and Scenic Middle Fork Clearwater were added to the Regulatory Framework in Chapter 1 and an entire Wild and Scenic River section was added to Chapter 3 to describe the impacts, if any to the ORVs of the Middle Clearwater Wild and Scenic River..
- Additional Project Design Features have been included in the proposed action as the Forest Service consulted with National Marine Fisheries Service and U. S. Fish and Wildlife Service.
- Revisions have been made to the resource effects sections in Chapter 3 in order to clarify environmental effects.
- Appendix D – Repsonse to comments – has been replaced with Response to Comments on the preliminary EA. The response to comments from the combined scoping and 30-day comment period of January/February 2016 is in the preliminary Woodrat Salvage EA and the project record.

1.1 Introduction

The Forests prepared this environmental assessment to determine whether effects of the proposed activities may be significant enough to prepare an environmental impact statement. By preparing this environmental assessment, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This environmental assessment discloses the direct, indirect, and cumulative environmental impacts that would result from implementing the proposal.

1.2 Background

The 2015 fire season on the Nez Perce-Clearwater National Forests was exceptionally severe. Fuel moistures were low and temperatures were high throughout the spring and early summer. Dry lightning storms started two hundred and fifty fires on National Forest System (NFS) lands between August 9 and 11. Eventually 195,683 acres burned, the majority of these acres being within the roaded "front country" on the Nez Perce-Clearwater National Forests. Over 280,000 acres of private, state, tribal, and federal land were also affected. The Woodrat fire burned 6,500 acres in total, with 2,300 acres occurring on NFS lands and the rest on areas managed by the Idaho Department of Lands. The Idaho Deaprtment of Lands has completed harvest of their fire salvage area.

The Woodrat Salvage project is one of several projects developed to address the wildfires of 2015. The Forests are also proposing projects that respond to emergency needs within the burned areas (Burned Area Emergency Response or BAER), maintain critical infrastructure and mitigate hazards to the public and Forest employees, and restore burned landscapes. In total, less than 3 percent of the area burned during the summer of 2015 on the Nez Perce-Clearwater National Forests is proposed for harvest or hazard tree removal, including this proposal.

During the late summer and fall of 2015, Nez Perce-Clearwater National Forests staff and resource specialists met and initiated a rapid assessment to help guide the Forests' post-fire recovery and to identify needed restoration activities and salvage opportunities across the Forests from the 250 fire events described above. The purpose of the rapid assessment salvage strategy was to identify the process and necessary steps for timber salvage opportunities following the 2015 fires.

Phase I of the rapid assessment process was a broad level review (coarse filter) and screening process using sideboards/criteria to identify any obvious problematic resource issues within or adjacent to the affected areas. The Woodrat fire cleared the coarse filter screening process and was brought forward as a salvage opportunity. Sideboards/criteria that were **not present** within the Woodrat fire perimeter were:

- Idaho Roadless Areas,
- Designated wilderness areas,
- culturally significant areas,
- Research Natural Areas,
- and Botanical Areas.

Sideboards/criteria that were present within the Woodrat fire perimeter and were eliminated from timber salvage opportunities included:

- The Middle Fork Clearwater Wild and Scenic River corridor,
- Riparian Habitat Conservation Areas (RHCAs), and
- Areas with old growth characteristic after the fire.

Geographic Information System (GIS) identified potential land slide prone (LSP) areas were not excluded from consideration for salvage opportunities pending field verification. There would be no harvest on soils that were field verified as landslide prone . Subsequently, this potential salvage area within the Woodrat fire was then looked at through a fine filter for vegetative and landscape characteristics.

Field verification/validation was conducted under Phase 2 (fine filter screening) of the rapid assessment process. Interdisciplinary team members considered the following sideboards/criteria for the fine filter screening process of the Woodrat fire:

- No Forest Plan amendments,
- No new permanent road construction,
- Minimize new temporary road construction,
- No harvest on soils field verified as landslide prone,
- Validate threatened, endangered, and sensitive species habitat and significant impacts to species,
- Avoid cultural sites, and
- Address logging system feasibility and access.

Based on the two phases of the rapid assessment process described above, areas initially excluded within the Woodrat fire perimeter for potential salvage included burned areas within the Middle Fork Clearwater Wild and Scenic River corridor, RHCAs, and areas of old growth; no wilderness areas, Idaho Roadless areas, culturally significant areas, Research Natural Areas, Botanical Areas, and known critical threatened, endangered, or sensitive species habitat were burned by this fire. Approximately 6 acres of the Woodrat fire burned National Forest System lands within the Middle Fork Clearwater Wild and Scenic River corridor. Stands selected for treatment were not included within the burned portions of the Middle Fork Clearwater Wild and Scenic River corridor. The results of the coarse and fine filters left 2,276 acres that were potentially suitable for salvage harvest within the Woodrat fire area.

The interdisciplinary team determined that approximately 450 acres of dead and dying trees would be available for economically viable ground-based and cable system salvage harvest. This is 18% of National Forest System lands that burned within the Woodrat fire perimeter. These acres were further reduced after public involvement and additional post-fire field data collection. Additional information and meeting notes supporting the assessments are located in the project record.

The interdisciplinary team designed the Proposed Action, including project design features, after application of the rapid assessment process. Post fire assessments were conducted on the ground and field visits were made by members of the interdisciplinary team to determine vegetation burn severity, tree mortality, species composition, merchantability, and access feasibility to determine units to propose for salvage harvest. The interdisciplinary team analyzed these assessments and determined that approximately 378 acres of dead and dying trees would be available for economically viable ground-based and cable system salvage harvest. This is 15% of the total area of National Forest System lands that burned within the Woodrat fire perimeter. Additional information and meeting notes supporting the rapid assessment and post fire assessments are located in the project record.

All units proposed for salvage harvest are within burned areas. Green trees that do not meet the Nez Perce-Clearwater National Forests hazard tree and mortality guidelines will not be removed. These guidelines have been developed through research and guidance from various scientific sources such as Scott et al. 2002, Region 1 (R1) Forest Health Protection Fire Survivability report, and others. Supporting documentation used in the development of the Nez Perce-Clearwater hazard tree and mortality guidelines are in the project record. The Nez Perce-Clearwater National Forests hazard tree and mortality guidelines were also used in recent salvage projects on the Forests.

1.3 Location of the Proposed Project Area

The Woodrat Salvage project is located in the state of Idaho in Idaho County on the Lochsa Ranger District of the Nez Perce-Clearwater National Forests within the Big Smith Creek – Middle Fork Clearwater River and Pete King Creek subwatersheds of the Middle Fork Clearwater River subbasin. The fire recovery area is within the fire perimeter of the 2015 Woodrat fire, located approximately 10 miles east of Kooskia, Idaho, and immediately northwest of the town of Syringa in Township 33 North, Range 6 East, sec. 19, 20, and 29-32; T. 32 N., R. 6 E., sec. 5-6, Boise Meridian (Figure 1). The Woodrat Fire perimeter was about 6,500 acres in size with approximately 2,505 acres occurring on National Forest System lands.

1.4 Purpose and Need for Action

The purpose of the project is to protect the health and safety of public, workers, and private citizens, capture remaining forest product economic value and benefit, maintain existing and develop future wildlife habitat, maintain watersheds and reduce runoff from erosion, and reforest suitable portions of the landscape deforested by the Woodrat Fire.

The primary needs for action include reducing hazardous fuels in fire-affected areas to reduce the risk of future stand-replacing wildfire events; timely recovery of the economic value of dead and dying trees to assist in offsetting the cost of forest restoration activities, such as planting; reducing hazards to the public and forest workers; and restoring forest ecosystem function and structure through reforestation and other restoration activities, where appropriate. Timely implementation of the project is necessary to achieve the purpose and need for the project. Timber deterioration estimates show a 60 percent decrease in the merchantable timber volume if the product is not under contract within one year of the fire. Without the commodity value of the product, the ability to prepare the site for reforestation, safely access areas for

planting, reduce fuel loading to prevent future re-burn events and mitigate hazards that pose a risk to the public and forest employees may not be possible.

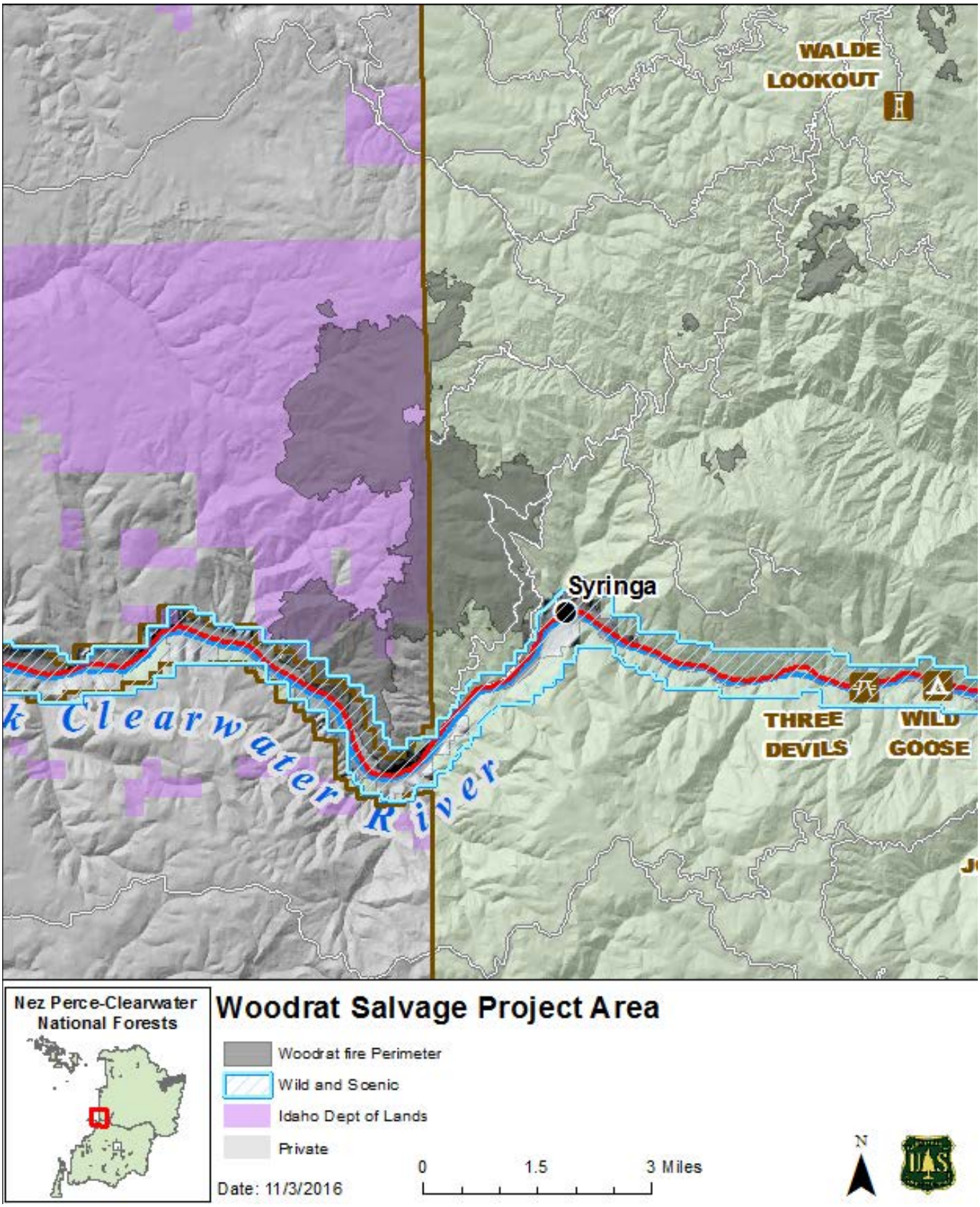

Figure 1. Woodrat Salvage project vicinity map. Project activity maps are located in Appendix B. Project Activity Maps

1.5 Decision Framework

The need for the proposal outlined earlier sets the scope of the project and analysis to be completed. Based on the analysis, the Nez Perce-Clearwater Forests Supervisor will determine whether the proposed project and alternatives could result in a significant impact. If there is a finding of no significant impact, the forest supervisor will select an alternative deciding:

- Whether to implement the Woodrat Salvage project;
- What specific design features or mitigation measures are needed;
- What specific project monitoring requirements are needed to assure design features and mitigation measures are implemented and effective.

The decision will be based on:

- How well the selected alternative achieves the need;
- How well the selected alternative protects the environment and addresses issues and concerns; and
- How well the selected alternative complies with relevant policies, laws and regulations.

1.6 Emergency Situation Determination

The Forests submitted a request for or an Emergency Situation Determination (ESD) for this project to the Chief of the Forest Service on April 1, 2016. An ESD is defined under 36 CFR 218.21(b) as "A situation on National Forest System (NFS) lands for which immediate implementation of a decision is necessary to achieve one or more of the following:

- Relief from hazards threatening human health and safety;
- Mitigation of threats to natural resources on NFS or adjacent lands;
- And avoiding a loss of commodity value sufficient to jeopardize the agency's ability to accomplish project objectives directly related to resource protection or restoration".

Under 36 CFR 218.21(d), a proposed action is not subject to the pre-decisional objection process if the Chief of the Forest Service determines that an emergency situation exists with respect to the proposed action. Immediate implementation of this project is necessary to avoid further delay in addressing human health and safety concerns and to capture commodity value. Loss of commodity value could jeopardize the accomplishment of critical restoration and resource protection activities in the fire areas.

In response to public comments as the project was being analyzed, the ESD request was withdrawn on July 15, 2016 to allow for the objection process and to allow interested parties to object.

1.7 Public Involvement

The Forests conducted a number of public information efforts to inform the public concerning post fire recovery activities on the Forest and for this project in particular. These efforts included briefings to local city and county officials, interest groups including Rocky Mountain Elk Foundation, Trout Unlimited, and National Wild Turkey Federation; the Nez Perce Tribe, Idaho Fish & Game, Idaho Department of Lands, and Clearwater Basin Collaborative.

This project has been posted on the Nez Perce-Clearwater National Forests project planning page at: http://www.fs.usda.gov/project/?project=48651. Scoping for this project comprised both the Woodrat and Upper Lolo Salvage projects. A legal notice describing the proposals and inviting comment was published in the *Lewiston Morning Tribune* on January 29, 2016. The Forests mailed approximately 330 scoping

letters and posted the legal notice and letter on the Nez Perce-Clearwater website. The Forests received 12 comment letters in response. Information about the project was first posted to the quarterly Schedule of Proposed Actions (SOPA) in March, 2016.

On May 3, 2016 the Draft Woodrat Salvage EA was posted to the Nez Perce-Clearwater National Forests project planning page. The 12 individuals, organizations and entities that commented during the 30-day scoping/comment period were notified and invited to provide feedback. The Forests received comments from 2 individuals at this time providing feedback concerning the use of best available science, a general opposition of post-fire harvest, and whether stands of old growth identified before the Woodrat fire are within salvage harvest units.

A 30-day comment period notice for the preliminary Woodrat Salvage Project Environmental Assessment was published in the *Lewiston Morning Tribune* (the newspaper of record) on September 2, 2016. The notice initiated a formal 30-day public comment period. The preliminary EA was made available on the Nez Perce-Clearwater National Forest website at http://www.fs.usda.gov/project/?project=48651. The notice for the comment period for the preliminary Woodrat Salvage EA that included effects to resources was sent to approximately 310 individuals, industry, groups, federal and state agencies at the same time the 30-day comment period legal notice was published. One comment letter was received in response. The Woodrat Salvage project interdisciplinary team responded to approximately 56 comments identified in the letter (Appendix D).

1.8 Issues

The proposed action was developed to meet the purpose and need for action and designed to minimize effects to forest resources. Public comments for this project suggested a number of possible alternatives, and identified several issues and concerns. Comment letters reviewed by the interdisciplinary team included concerns about the appropriateness of requesting an ESD determination, temporary roads, cumulative effects, volume of salvage operations, old growth, noxious weeds, effects to the wild and scenic river corridor, climate change, effects to soils, watershed, fisheries, and wildlife; and the use of the best available science. Several commenters wrote letters in favor of or opposed to post-fire logging. Appendix D, Response to Comments, contains a summary of these concerns and the Forests' response. Chapter 2 discusses alternatives developed from these issues, as well as the Forest Service internal process used to develop or eliminate alternatives to the Proposed Action.

1.9 Management Direction

Clearwater National Forest Plan

Although the Clearwater and Nez Perce National Forests were administratively combined in February 2013, the management of lands formerly within the boundary of the Clearwater National Forest will continue to be guided by the Clearwater National Forest Plan until the plan is revised. The Clearwater National Forest Plan (USDA Forest Service 1987, as amended, hereafter called the "Forest Plan") includes goals, objectives, standards, and guidelines that direct management of forest resources. Forest Plan direction is established at two scales; Forest-wide direction is applicable throughout the Forest and management area direction ties specific goals, objectives, and standards to the unique capabilities of given parcels of land.

Clearwater National Forest Plan standards apply to NFS lands within the Clearwater National Forest boundary. They are intended to supplement, not replace, national and regional policies, standards and guidelines found in Forest Service manuals and handbooks. The project analysis was guided by management direction within the Clearwater National Forest Plan. The proposed action responds to the

goals and objectives outlined in the Forest Plan, and helps move the project area towards desired conditions. The Woodrat Salvage project analysis and documentation of effects is consistent with the Clearwater Forest Plant.

1.10 Regulatory Framework and Consistency

The Woodrat Salvage project analysis and documentation of effects is consistent with direction described below and throughout Chapter 3.

Watershed and Fisheries Regulatory Framework

All Federal and State laws and regulations applicable to water quality would be applied to the Woodrat Salvage project, including 36 CFR 219.20, the Clean Water Act, and Idaho State Water Quality Standards, Idaho Stream Channel Protection Act, and BMPs. In addition, laws and regulations require the maintenance of viable populations of aquatic species including the National Forest Management Act (36 CFR 219.19), subsequent Forest Service direction (Fish and Wildlife Policy, 9500-4) and Forest Service Manual direction (FSM 2470, 2600).

Idaho Forest Practices Act

The proposed action is consistent with the Idaho Forest Practices Act, including requirements to ensure reforestation, reduce impacts to soils and maintain water quality.

Clean Air Act

The Woodrat Salvage project would adhere to the Clean Air Act and all post activity fuel reduction treatments would adhere to the requirements of the Montana/North Idaho Smoke management guidelines and the recently implemented Idaho emergency episode rule.

Endangered Species Act

FSM 2670 directs the Forest Service to conserve threatened and endangered species and to use its authorities in furtherance of the Endangered Species Act (ESA), and to avoid actions that may cause a species to become threatened or endangered. FSM 2670 also requires the Forest Service to maintain viable populations of all native and desirable non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on NFS lands. As directed by the ESA, biological assessments and consultation under section 7 of the ESA will be completed for this decision. Project alternatives are not expected to result in a jeopardy biological opinion for any listed species.

National Historic Preservation Act of 1966, as amended

The cultural resource surveys have been completed for the Woodrat Salvage project area and will be submitted to the Idaho State Historic Preservation Office (SHPO) for concurrence prior to project implementation (Memorandum of Agreement (MOA) between the United States Forest Service and the Idaho State Historic Preservation Office; February 9, 2016.

National Forest Management Act

The National Forest Management Act (NFMA) (16 USC 1600–1614, August 1974, as amended 1976, 1978, 1980, 1981, 1983, 1985, and 1990) reorganized, expanded, and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on NFS lands. NFMA requires the Secretary of Agriculture to assess forest lands; develop a management program based on multiple-use, sustained-yield principles; and implement a resource

management plan for each unit of the NFS. It is the primary statute governing the administration of national forests. Project activities have been designed to be consistent with the NFMA.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) (42 USC 4321 et seq.) was signed into law on January 1, 1970. NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The National Forest Management Act (NFMA) requires that projects and activities be consistent with the governing Forest Plan (16 USC 1604(i)). Title I of NEPA contains a Declaration of National Environmental Policy that requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony. NEPA section 102 requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. This document and the project record demonstrate that the Woodrat Salvage project is consistent with the Clearwater Forest Plan, including all applicable standards and guidelines.

Tribal Rights and Trust Responsibilities

Trust responsibility arise from the United States' unique legal relationship with Indian tribes. It derives from the Federal Government's consistent promise, in the treaties that it signed, to protect the safety and well-being of the Indian tribes and tribal members. The Federal Indian trust responsibility is now defined as a legally enforceable fiduciary obligation, on the part of the United States, to protect tribal lands, assets, resources, and reserved rights, as well as a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. This responsibility requires that the Federal Government consider the best interests of the Indian tribes in its dealings with them and when taking actions that may affect them. The trust responsibility includes protection of the sovereignty of each tribal government (FSM 1563.8b 2).

The Forest Service best serves the Federal Government’s trust responsibility by:

- Ensuring Forest Service actions never diminish the rights of Indian tribes and tribal members;
- Ensuring Forest Service program benefits reach Indian tribes and tribal communities;
- Observing and enforcing all laws enacted for the protection of tribal cultural interests;
- Observing the principles of consultation whenever our policies, decisions, or other actions have tribal implications; and
- Treating NFS resources as trust resources where tribal legal rights exist.

American Indian tribes are afforded special rights under various federal statutes: National Historic Preservation Act; NFMA; Archaeological Resources Protection Act of 1979; Native American Graves Protection and Repatriation Act of 1990; Religious Freedom Restoration Act of 1993 (PL 103141); and the American Indian Religious Freedom Act of 1978. Federal guidelines direct federal agencies to consult with tribal representatives who may have concerns about federal actions that may affect religious practices, other traditional cultural uses, or cultural resource sites and remains associated with tribal ancestors. Any tribe whose aboriginal territory occurs within a project area is afforded the opportunity to voice concerns for issues governed by National Historic Preservation Act, Native American Graves Protection and Repatriation Act, or American Indian Religious Freedom Act.

Executive Order 13175 “Consultation and Coordination with Indian Tribal Governments;” Executive Memo, April 29, 1994 “Government-to-Government Relationship;” and Executive Memo, September 23, 2004, “Government-to-Government Relationship” recognize the unique legal relationship between the

United States and Indian tribal governments and also direct Federal agencies to have a process to ensure meaningful and timely input by tribal officials.

The Woodrat project area is located within ceded lands of the Nez Perce Tribe. These ceded lands are federal lands within the historic aboriginal territory of the Nez Perce Tribe which have been ceded to the United States . In Article 3 of the Nez Perce Treaty of 1855, the United States of America and the Nez Perce Tribe mutually agreed that the Nez Perce retain the following rights:

"*…taking fish at all usual and accustomed places in common with citizens of the Territory [of Idaho]; and of creating temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle…*"

The Nez Perce-Clearwater National Forestd is committed to fulfilling the Forest Service's trust responsibilities to Native Americans, to honoring rights reserved in the Nez Perce Treaty of 1855, and to strengthening the Forests' government-to-government relationship with the Nez Perce Tribe. The Forest Service manages and provides access to ecosystems that support Tribal traditional practices. The Woodrat Salvage project will maintain and enhance these opportunities over the long term by repairing roads, providing for safe travel, and enhancing big game wildlife habitat.

Wild and Scenic River Act (1968) – Section 7(a) (2004)

A portion of the proposed activities border and/or are visible from the designated boundaries of the Middle Fork Clearwater Wild and Scenic River Corridor. The Middle Fork Clearwater River, including the Lochsa and Selway Rivers was designated as a Wild and Scenic River in 1968 (P.L. 90-542 (82 Stat. 906). The segment of the Middle Fork Clearwater River Wild and Scenic River within the project area is classified as a recreational. The Wild and Scenic Rivers Act requires that the designated river be managed to protect its free-flowing condition and other values of the designated river, water quality, and outstandingly remarkable values. The outstandingly remarkable values (ORVs) of the Middle Fork Clearwater River are stated in the Middle Fork River Resource Assessment and Lochsa River Resource Assessment (both February 14, 2002) as Scenery, Recreation, Fish, Water Quality, Wildlife, Vegetation/Botany, Prehistory, History, and Traditional Use, Cultural.

Woodrat Salvage project Environmental Assessment and resource reports in the Woodrat Salvage project record evaluates the effects to the ORVs identified above and documents that no salvage harvest activities will take place within the designated Middle Fork Clearwater River Wild and Scenic boundary. Although there will be project activities that border and are visible from within the Wild and Scenic River boundary; the Woodrat Salvage project will not invade the Middle Fork Clearwater River Wild and Scenic River Corridor. The proposed action will not unreasonably diminish the scenic, recreational, fish or wildlife values (Project Design Features and no effects as documented below and in corresponding resource reports). The Woodrat Salvage project will have no adverse effect on the conditions of free-flow or on the ORVs in the Middle Fork Clearwater Wild and Scenic River.

Scenery: The proposed action would create openings of varying sizes and shapes in areas that are highly visible, but were affected by the Woodrat fire. Design features would be implemented so that openings created through harvest would emulate the natural openings created by previous fire events in the river corridor. These openings will be visible, but will appear very similar to the openings in the river corridor that were created by natural fire processes in the past. Most of the areas affected by the fire will appear as openings eventually, whether they are harvested by man or not. Over time the natural regeneration process will introduce coniferous vegetation back to the canyon, but this process can take decades. This revegetation process would be accelerated in areas of harvest that are then replanted after harvest was completed.

Although none of the proposed harvest areas are within the designated Wild and Scenic River corridor boundary, areas adjacent to the boundary that have the VQO of Partial Retention are proposed for harvesting. Since only dead and dying vegetation would be removed in this proposal, the Woodrat Salvage project would meet the Management Guidelines for the Middle Fork of the Clearwater Wild and Scenic River for scenery. Areas of the project which area visible in the foreground from the wild and scenic river must meet wild and scenic river guidelines (Scenic Quality specialist report).

Recreation: The action alternative is consistent with the Wild and Scenic Rivers Act as it would have negligible effects recreating on the Middle Fork Clearwater River. Recreation attractions and activities occurring on lands adjacent to the corridor would be protected through design features and BMP implementation; thus protecting and enhancing the outstandingly remarkable value of recreation (Recreation specialist report).

Fish: The proposed action is consistent with the Wild and Scenic Rivers Act as it would have little to no effect on, and also protects the outstanding remarkable fisheries and water quality values in project area streams and in the Middle Fork Clearwater River as discussed in the aquatics specialist report in the project record.

Water Quality: The Wild and Scenic Rivers Act has found that the water quality of the Middle Fork Clearwater is exceptional and provides a variety of beneficial uses. There are no dams in the Middle Fork Clearwater and all water is free flowing. The Middle Fork Clearwater River provides exceptionally clear and clean water, where the primary impacts to Water Quality are sedimentation resulting from natural events such as landslides and fire. No project activities that will directly alter within-channel conditions or existing hydrologic or biologic processes are proposed within the Wild and Scenic River corridor. There are no treatments proposed that will alter riparian or floodplain areas of the Middle Fork Clearwater River Wild and Scenic River. Both the location of proposed project activities and the design of implementation will limit sedimentation into Project Area streams and the low levels of sedimentation will not degrade water quality at the site-scale. Sedimentation into headwater tributaries at the site scale, will not impact water quality of the Middle Fork Clearwater River (Hydrology specialist report).

Wildlife: The Woodrat Salvage project would comply with the criteria for the Wildlife ORV because there is no harvest activities that would occur within the corridor and those activities adjacent to the corridor would either improve forage opportunities for elk, mountain lion, and black bear; or would not affect habitat for the duck, salamander, or otter (Wildlife specialist report).

Vegetation: The action alternative is consistent with the Vegetation/Botany ORV of the Middle Fork of the Clearwater including the Lochsa & Selway Comprehensive River Management Plan (CRMP). Regarding vegetation, the ORV for the river corridor is related to the “many rare and uncommon plants that occupy unique coastal disjunct communities in the corridor” (Middle Fork Clearwater River Resource Assessment, 2002). Under the coordinating requirements of the CRMP, commercial harvest is confined to areas outside the boundaries of the river area and therefore the plants of concern would remain unaffected within the river corridor by this project. The vegetation/botany outstanding remarkable values would be protected through avoidance of harvest within the river corridor. A complete analysis of effects to rare plants and forest vegetation is included in the Botany an Forest Vegetation specialist report.

Prehistory/History/Traditional Use, Cultural: There are no known prehistoric or historic sites located within in proposed harvest units associated with the proposed action. Project design features would protect any that are found during project implementation. Although there is ethnographic, historic, and archaeological documentation about the historic Nez Perce tribe and their prehistoric lifeways associated with this river corridor, the Nez Perce tribe has provided no subsequent information about their traditional uses or use sites along the Middle Fork Clearwater River in relation the Woodrat Salvage project area.

The outstanding remarkable values (ORV) for prehistory, history, and traditional use, cultural will be protected (Cultural resources specialist report).

The Woodrat Salvage project will protect and enhance the ORVs as a result of Alternative 2. The ORVs are addressed in Chapter 3 of this EA and Resource reports located in the project files at the Lochsa-Powell Ranger District Office.

1.11 Project Record Availability

This EA hereby incorporates by reference all appendices and the project record. The project record contains specialist reports, biological assessment and evaluations, and other technical documentation used to support the analysis and conclusions in this EA. Relying on specialist reports and the project record helps implement the CEQ Regulations' provision that agencies should reduce NEPA paperwork (40 CFR 1500.4). The objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental impacts of the Proposed Action and how these impacts can be mitigated, without repeating detailed analysis and background information available elsewhere.

Chapter 2. Proposed Action and Alternatives

This chapter describes and compares the alternatives considered by the Forest Service for the analysis area. Two alternatives are analyzed in this chapter, the No Action alternative (Alternative 1) and the Proposed Action (Alternative 2). Chapter 2 is intended to present these alternatives in comparative form, defining the differences between the alternatives and providing a basis for choice among options by the Responsible Official.

2.1 Alternative Development

The Forest Service interdisciplinary team used resource information, field-related surveys, Forest Plan direction, professional knowledge, and public concerns identified during scoping when developing the Proposed Action. Project design features were built into the Proposed Action to resolve issues and concerns raised internally by agency resource specialists and externally by the public. Although some members of the public suggested alternatives or raised concerns during scoping, after considering the comments and conducting the initial project analysis, the IDT felt these concerns were outside the scope or could be mitigated through careful project design. When there are no unresolved conflicts concerning alternative uses of available resources (NEPA, section 102(2)(E)), the EA need only analyze the Proposed Action and No Action alternative, and can proceed without consideration of additional alternatives (36 CFR 220.7(b)(2)(i)). Scoping efforts did not identify a need to analyze an additional alternative for this analysis; therefore, the Proposed Action and No Action alternative constitute the range of alternatives for this analysis. For more discussion of public concerns see Appendix B, Response to Comments.

2.2 Alternative 1 (No Action)

The no-action alternative provides a baseline for comparison of the existing condition to the potential environmental impacts of the proposed action. This is a management option that could be selected by the Responsible Official. The results of taking no action would be the existing condition as it changes over time due to natural processes.

This alternative assumes routine forest protection and maintenance activities such as fire suppression, access management and road maintenance will continue. No commercial timber harvest or road construction would occur. Some incidental tree removal would occur through firewood cutting. This alternative includes none of the actions contained in the proposed action. Ongoing actions would continue as directed in the Forest Plan, but no new activities would occur as a result of this alternative, including reforestation of severely burned stands consisting of approximately 20% of the project area. Natural regeneration of less desirable vegetation would likely occur. Although reforestation of native trees species in severely burned areas will still occur as a result of other approved projects, it would take place on far fewer acres and at a cost to appropriated funds rather than proceeds from the sale of salvaged timber.

2.3 Alternative 2 (Proposed Action)

Alternative 2 is the Proposed Action, which responds to the Purpose and Need for action. The Proposed Action would authorize a variety of activities described below. The Forest Service interdisciplinary team for the Woodrat Salvage project used input received from interested members of the public to refine the Proposed Action developed for this project. This Proposed Action was further refined by scoping comments received during the scoping period in January/February 2016 (see modifications to the Proposed Action below). Rather than develop additional alternatives, the Proposed Action was modified in response to scoping comments using site-specific public and internal input and interdisciplinary team knowledge of the project planning area. The interdisciplinary team elected to modify the Proposed Action

rather than develop an additional action alternative because the scope of proposed activities had already been narrowed within the Woodrat fire area and further alterations to the Proposed Action would not fully meet the Purpose and Need for action or achieve the desired future condition for the Woodrat Salvage project area.

A. Modifications to the Proposed Action

When there are no unresolved conflicts concerning alternative uses of available resources (NEPA, section 102(22) (E)), the EA need only analyze the Proposed Action and proceed without consideration of additional alternatives. (36 CFR 220.7(b)(2)(i)). The modifications to the Proposed Action that was scoped to the public are:

- Dropped from treatment a 4-acre harvest unit that preliminary analysis showed would exceed Regional detrimental soil disturbance. This unit will be kept in the proposal to be reforested.
- Dropped from treatment 132 acres and associated road activities in the Middle Lolo Creek HUC 12 subwatershed after public comments expressed concerns of how post-fire project areas were delineated.
- With more accurate post-fire field data, units were modified or dropped; and additional units were selected for treatment to meet the Purpose and Need for action. Field reviews provided more accurate burn severity and tree mortality areas for salvage harvest and reforestation. Field reviews also provided more data to determine that more units were to be harvested using skyline/cable harvest system rather than ground based harvest, the use of existing road prisms for temporary roads, including recontouring these existing road prisms after use as a temporary road. Temporary roads were increased to 3.7 miles to access salvage harvest units that the interdisciplinary developed. New construction of temporary roads and the use of existing road prisms will facilitate access to salvage harvest units.

B. Revised Proposed Action

The Lochsa-Powell Ranger District is proposing to salvage harvest approximately 378 acres of dead and dying trees within the Woodrat fire perimeter (Table 1). Preliminary estimates suggest that the harvested timber volume could be about 7.6 million board feet (MMBF). Ground-based systems would be used to harvest 48 acres, and cable/skyline logging systems would be used on 330 acres (Appendix A). Salvage harvest would occur on lands within Forest Plan Management Areas (MA's) C4 and El. Management Area C4 is big game winter and suitable timber-producing land. Management Area El is productive timber land. The 1987 Clearwater Forest Plan, as amended, permits timber removal on these MAs. Funds collected from salvage harvest activities may be used to offset the cost of reforestation on 158 acres of severely burned timber stands and 378 acres of salvage-harvested stands. Dead and dying trees for removal will be determined using the Nez Perce-Clearwater Mortality Guidelines. No live trees will be harvested except where determined necessary for safety or to facilitate logging systems. All ponderosa pine, western white pine, and western larch will be retained (even if these trees meet the Nez Perce-Clearwater Mortality Guidelines). Activity-generated fuels would be jackpot burned or hand piled or mechanically piled and burned; or mastication would occur on slopes less than 35% and on ground that is not machine operable. The proposed action would include approximately 3.7 miles of temporary roads to fully access proposed harvest units. Ground-based harvest systems would be limited to slopes less than 35 percent. Cable-based systems would be used in areas with steeper slopes. Trees would not be removed for commercial purposes in Riparian Habitat Conservation Areas (RHCAs), ground-verified landslide-prone areas (LSP), stands with verified post-fire old-growth characteristics, or areas where cultural resources are likely to be adversely affected.

Table 1. Woodrat Salvage project salvage harvest unit and reforestation

Acres	Tractor (acres)	Cable/Skyline (acres)	Temp Roads (miles)	MMBF (est.)	Reforestation
378	48	330	3.7	7.6	536a[a]

[a] Reforestation of 158 acres of severely burned timber stands and 378 acres of salvage-harvested stands

Reforestation - Timely removal of dead and dying trees will allow for more acres of reforestation of native tree species. Western larch and western white pine would be planted in the cooler, higher elevation sites; and Ponderosa pine and Douglas-fir will be planted in drier areas. Post fire assessments have determined areas of reforestation based on the burn severity where natural regeneration may not occur.

In areas that burned at moderate and high severity, where timber does not meet merchantability standards or hazard abatement; fuels reduction and site preparation for reforestation may be accomplished using biomass removal, mastication, felling and lopping, machine piling and burning, or jackpot burning.

Temporary Roads – Temporary road construction would be necessary to access several harvest units. Existing road templates of non-system roads will serve as the road prism for 2.9 miles of proposed temporary roads; the remaining 0.8 miles of temporary road would be new temporary road construction. All temporary roads would be obliterated after use; including the 2.9 miles of existing road prisms used as temporary roads. Obliteration would eliminate future use of the road with the objective of restoring hydrological function. Temporary roads would be restored to ensure that the road has adequate drainage and ground cover to prevent erosion, soil productivity is restored, the road is no longer drivable or highly visible.

Swing Trail - A swing trail is a ridgetop skid trail upon which logs are skidded from a skyline yarder site to a haul road. Swing trails would be used in some skyline harvest system units located on low-gradient, dry ridges, or upper slopes away from water. Swing trails will not cross streams and thus are not expected to contribute sediment to streams. Swing and skid trails would be managed while in use to minimize disturbance, and would be decompacted and stabilized as described in the project design criteria. The width of a swing trail impact area (ground disturbance, plus vegetation removal) would average 15 feet, whereas the width of temporary road impact areas would average 25 feet.

Road Work- The project proposal would include 35.5 miles of haul road improvements including road maintenance and road reconstruction. These road improvement activities consist of brush removal, clearing culvert inlets, road grading for water flow control, and temporarily removing closure barriers as needed. Additional haul routes would include county roads and U.S. and State highways. Each road on National Forest System (NFS) lands used for timber haul in accordance with the salvage harvest will be either reconditioned or reconstructed based on the existing condition of the roadway (Appendix A).

Approximately 9.6 miles of roads will be maintained to facilitate management activities described above, which meets the intent of these roads' management level designation. Standard mainenance consists of activities such as road blading, brushing, removal of small cutslope failures, applying rock in wet areas and removal of obstructions such as rocks and trees. Maintenance also includes replacement of existing culverts

Road reconstruction improves the roadway and is proposed on multiple small road segments along 25.9 miles of Forest system roads. This includes replacing and installing new culverts for cross drains and live water culverts, placement of rock surfacing, placement of roadway fill, and installation of new signs or gates. Other activities include installation of drainage dips, road blading, brushing and removal of obstructions.

The definitions for road maintenance and road reconditioning above do not include all activities that can be completed under each classification; these definitions are for informational purposes only. Maintenance and reconstruction is based on the current condition of the roadway. As the project continues, road failures or different access may require the type of work and roads requiring work to change.

Road stabilization is required on roads needing permanent erosion control measures after hauling and administration is done. Road stabilization is proposed on 1.2 miles of roads. Stabilization practices vary depending on the road location and the risk of road failure. Examples of stabilization work includes culvert removal at streams and cross drains, water bar installation, road decompaction and road out sloping or recontouring. Roads that have moderate to high risk of failure will receive more work.

Nez Perce-Clearwater National Forests Tree Mortality and Removal Guidelines

Burned areas selected for salvage harvest would use the Nez Perce-Clearwater National Forests Tree Mortality and Hazard Tree Guidelines. Only those trees meeting the criteria of the guidelines in Table 2 are considered dead and would be removed; all live trees would be retained.

Table 2. Nez Perce-Clearwater Tree Mortality Guidelines and Hazard Tree Criteria

Species	Dead Tree Selection Criteria
	Two criteria must be met in order to be considered dead.
Douglas-fir	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch. 3. 50% or more of the area under tree crown has had duff removed by fire.
Grand fir	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch 3. 50% or more of the area under tree crown has had duff removed by fire.
	One criteria must be met in order to be considered dead.
Western redcedar and Engelmann spruce	1. 50% or more circumference of bole cambium at ground line is burnt. 2. 25% or more crown scorch. 3. 50% or more of the area under tree crown has had duff removed by fire.

All western larch, western white pine, and ponderosa pine would be left uncut, regardless of whether or not the tree is dead; therefore no specifications are given here for determining whether these species are dead.

In order to provide structure for wildlife and to function as a source of future coarse woody debris (which would help maintain soil productivity), trees in addition to western larch, western white pine, and ponderosa pine would be left uncut within proposed harvest units. In addition to all live trees and all western larch, western white pine, and ponderosa pine being left uncut, grand fir that have a stump diameter greater than or equal to 37” and western redcedar that have a stump diameter great than or equal to 40” would be left uncut. The target number of retained snags and snag replacements (live trees that would eventually become snags) would be an average of 14 trees per acre. If the combined total of all trees meeting the above criteria averages less than this target, additional groups of 10-30 grand fir, Douglas-fir, and western redcedar would be retained in order to reach an average of 14 trees per acre. No area greater than 2 acres would be void of leave trees and snags.

C. Project Design Features

Project design criteria were developed by the interdisciplinary team with prominent consideration to resource conditions found in the project area. The project was designed to avoid undesirable cause-effect relationships and potential effects to resource conditions; and ensure that these projects are consistent with the Clearwater National Forest Land and Resource Management Plans and all laws, regulations, and policies (Table 3). These design features were developed from past projects, have been verified by field surveys, and will be used to limit possible adverse effects to soils, water quality, fish and wildlife habitat, and culturally significant areas.

Table 3. Woodrat Salvage project design features

Soil Resources, Water Quality and Fish Habitat	
1.	Directionally fell trees to facilitate efficient removal along pre-designated yarding patterns with the least number of passes and the least amount of disturbed area.
2.	No ground based skidding would be allowed on continuous slopes over 35%.
3.	Limit operating periods to avoid saturated soils and prevent resource damage (indicators include excessive rutting, soil displacement and erosion).
4.	Limit tractor crossings over ditchlines where possible. As needed, install temporary culverts (or crossing logs) to limit damage to ditchlines at tractor crossings. Post-harvest, reconstruct ditch crossings, cut slopes, and fill slopes to standard.
5.	If practicable, temporary roads would be constructed, used, and obliterated within the same operating season. If roads are to be overwintered, they would be water-barred and placed into a hydrologically stable condition to minimize surface erosion potential.
6.	Locate and design skid trails, landings and yarding corridors prior to harvest activities to minimize the area of detrimental soil effects. Space tractor skid trails to a minimum of 80 feet apart, except where converging, and reuse existing skid trails where practicable, to reduce the area of detrimental soil disturbance. This does not preclude the use of feller bunchers if soil impacts can remain within standards.
7.	Recontour excavated skid trails and landings to restore slope hydrology and soil productivity. Scarcify excavated skid trails and landings that are compacted or entrenched 3 inches or more. Scarcify to a depth of 6 to 14 inches but avoid bringing up unfavorable subsoil material. The use of excavated skid trails and landings will be minimized. Where skid trails and landings are constructed on moderate to severely burned slopes, construction would occur only during a period when soils are dry and recontouring and replacement of at least 50% cover would occur immediately after use. Erosion control measures would be implemented on scarified surfaces (per timber sale contract standard provisions).
8.	Retain 7-33 tons per acre of coarse woody debris (greater than or equal to 8 inches in diameter) following completion of activities. Drier Sites would retain 7 to 12 tons per acre and moister sites would retain 12-33 tons per acre of coarse woody debris. Reference "Coarse Woody Debris, Snag and Green Tree Retention Guidelines" (USDA 2008).
9.	In units with high burn severity, trees would be processed on-site and activity generated slash (tops and limbs) would be scattered on-site. These areas would not be eligible for broadcast burn post-harvest.
10.	PACFISH default buffers would be used to define salvage sale unit boundaries. No harvest would occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 100 feet of intermittent streams, and 100-foot slope distance from the edge of wetlands larger than one acre or verified landslide prone areas.

11.	In harvest units adjacent to high fire severity/intensity-affected RHCAs, default RHCA buffer widths would be increased, as needed, to protect RMOs and maintain function of the RHCA.
12.	Cross drains will be installed and spaced no more than 100 feet on either side of stream crossings where necessary prior to other road work and haul to reduce road drainage area to streams.
13.	Equipment and fueling will be staged outside of RHCAs.
14.	There wil be no road construction in RHCAs and roads will be located to avoid adverse effects to soil, water quality, and riparian resources.
15.	Sediment control devices will be installed to minimize sediment to streams during instream culvert work.
16.	Ditches and catch basins will only be cleaned as needed to function.
Botany and Invasive Species	
17.	Use Forest Service approved native plant species/seed or non-native annual species/seed to meet erosion control needs and other management objectives. Apply only certified weed-free seed and mulch. (Timber Sale Contract Provision, currently C6.601)
18.	Remove all mud, soil, and plant parts from off road equipment and equipment being used for road maintenance before moving into project area to limit the spread of noxious weeds. Conduct cleaning off National Forest lands. (Timber Sale Contract Provision, currently B6.35)
19.	Protect TES plant species and/or potential habitat identified at any point during planning or implementation as recommended by the unit botanist and approved by the appropriate line officer. (Timber Sale Contract Provision, currently B6.24).
Wildlife	
20.	Stands meeting old growth criteria post fire will not be harvested.
21.	Northern Goshawk – maintain a minimum 40-acre yearlong no treatment buffer (no ground disturbing activities) around occupied goshawk nest trees. Additionally, no ground disturbing activities shall be allowed inside known occupied post-fledgling areas from 15 April to 15 August.
22.	Maintain snags in accordance with Forest Plan standards including snag density and the scale at which those densities apply, preferably retaining larger diameter snags.
Cultural Resources	
23.	Halt ground-disturbing activities if cultural resources are discovered until an approved Archaeologist can properly evaluate and document the resources in compliance with 36 CFR 800. (Timber Sale Contract Provision, currently B6.24).
Air Quality	
24.	Coordinate with the North Idaho/Montana Airshed Group when prescribed fires are scheduled to ensure compliance with the Clear Air Act.
Visuals	
25.	Within all viewsheds, created openings within treatment units should not be symmetrical in shape. Straight lines and right angles should be avoided. Created openings should resemble the size and shape of those found in the surrounding natural landscape. Treatments should follow natural topographic breaks and changes in vegetation if possible.
26.	Within all viewsheds, where the unit is adjacent to denser forest, the percent of thinning within the transition zone will be progressively reduced toward the outside edge of the unit. In addition, vary the width of the transition zone.
27.	Within all viewsheds where skyline harvest methods are used, minimize the number of skyline corridors in visually sensitive areas.

28.	Within retention viewsheds, harvest areas within 300 feet of the viewing platform, (i.e., road, recreation sites, or administrative site), stumps should be cut to 8 inches or less in height.
29.	Within retention viewsheds, landing areas within 300 feet of the viewing platform (i.e., road, recreation sites, or administrative sites) slash, root wads, and other debris should be removed, burned, chipped or lopped to a height of 2 feet or less.
Access Management and Public Safety	
30.	Dust abatement would be used as needed on major haul routes to provide for public safety by protecting the road surface and to reduce sediment input to streams from log hauling activities. Methods used would be either chemical (MgCl) or water and would be applied to limit introduction into streams.

D. Monitoring

Monitoring is done to assure that Forest Plan standards and guidelines are being met and adhered to during project implementation. The following specific items were identified by the ID Team as needing monitoring during preparation and implementation of the Woodrat Salvage project.

- Temporary roads will be inspected by the Sales Administrator to verify that erosion and stormwater controls are implemented and functioning prior to log hauling, and are appropriately maintained during and after the hauling. Implementation monitoring of road reconstruction and reconditioning activities will occur prior to hauling on any reconstructed segments on which hauling is scheduled to occur. The monitoring would verify that the implementation of proposed activities and design criteria has addressed sources of sediment and reduced sediment delivery from these sources prior to hauling activities commencing and following project implementation.
- Once the project has been laid out the Landscape Architect will review and determine how well it meets the forest plan visual quality objectives. It will also be monitored for Forest Plan compliance when implemented.

2.4 Alternatives Developed and Analyzed but Dropped from Consideration

The proposed action was sent to the public for initial review and comment in January of 2016. This alternative proposed salvage harvest on 462 acres. The revised proposed action is presented as Alternative 2. Various aspects of this alternative were altered after further field review and in response to comments both internal and external. Some salvage harvest and reforestation areas were dropped because of the presence of unstable soils, water, or other resource concerns. Other treatment areas were identified after additional field review to meet the Purpose and Need of the project and are present in Alternative 2. Temporary road construction increased to access these treatment areas. Further field review also reduced ground based harvest and increased full suspension cable based harvest systems.

2.5 Alternatives Considered but not Analyzed in Detail

Federal agencies are required by NEPA to explore and objectively evaluate a range of reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not considered in detail (40 CFR 1502.14). After reviewing the comment letters and concerns, the interdisciplinary team considered the following alternatives to the proposed action in addition to the multitude of alternatives considered as part of the course filter/fine filter exercise. The alternatives were eliminated due to the reasons described below.

1. *An alternative that does not contain any temporary road construction*. No permanent roads will be constructed under the Proposed Action. All temporary roads included in the proposed activities are necessary to implement the most economically viable project. Many potential harvest areas were excluded during the coarse and fine filter analyses in the early planning phase of these projects. This process greatly reduced the need for temporary road access at that point. The temporary roads that remain in the proposal will be necessary in order to implement the proposed activities in the most efficient and economically viable way.

2. *An alternative that does not include ground-based logging but prescribes helicopters or full-suspension cable systems for all salvage logging.* The Clearwater Forest Plan requires that the Forest "Provide a sustained yield of timber and other outputs at a level that is cost-efficient and that will help support the economic structure of local communities and will provide regional and national needs" (Forest Plan Goal 9a, p. II-2). Economic feasibility analyses have been conducted for these projects. Requiring helicopter logging and full suspension cable systems for all salvage logging would not be economically feasible or cost-efficient. In all the proposed salvage projects cable-based logging systems will be required on slopes over 35 percent. Only areas that would not be adversely effected by the skyline cable or tractor harvest methods are proposed for treatment.

3. *An alternative that does not include salvage logging in pre-fire old growth stands*. The Northern Region of the Forest Service has chosen to adopt the old growth definition given by Green and others (1992). Understanding the background behind the definitions given by Green and others (1992, errata corrected 2011) is useful in understanding old growth and why it is important. Useful background information (given in the Introduction of Green and others, 1992) includes the following:

   - Definitions are not tied to resource values derived from old forests, but based on ecological attributes.
   - Old growth is a key element in providing for biological diversity.
   - Definitions are meant to ecologically define one particular successional stage (i.e. the old growth stage) of forest development.

   Salvage harvest would not be permitted where stands currently meet old growth criteria. Pre-fire old growth stands that burned and no longer meet old growth criteria can be assumed to no longer meet the ecological attributes of old growth. Nyland (2002) and Oliver and Larson (1996) argue that following a major disturbance (i.e. stand replacing event), the successional stage of a stand reverts to a "stand initiation" or non-old growth stage. Therefore, if old growth is defined by these ecological attributes, and these attributes are no longer present, these stands are no longer providing the biological diversity they would provide as "old growth." Since this benefit is no longer realized, avoiding salvage harvest in them for the sake of retaining old growth would not accomplish the Forest Service's objectives for retention of old growth.

4. *An alternative to operate over snow or on frozen conditions.* Limiting ground based harvest to over snow or frozen conditions was considered during alternative development. In order to meet the purpose and need of the Woodrat Salvage project, waiting until the ground is snow covered or frozen is not feasible as timber value will be lost and forest worker and public safety could be jeopardized. Project design features were developed using the best science currently available to protect soil resources and are in described in detail in Chapter 2 and their effectiveness is described in Chapter 3.

Chapter 3. Environmental Impacts of the Proposed Action and Alternatives

This section summarizes the physical, biological, and social environments of the Woodrat Salvage project area and the effects of implementing each alternative on that environment. The affected environment (or existing condition) for each resource is described first and establishes a baseline for comparison of the alternatives. The second part of each resource section describes the analysis of environmental effects of the No Action alternative and the Proposed Action alternative. The information contained in this section presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Complete copies of the resource reports are available for public review and are located in the project file.

3.1. Vegetation

A. Affected Environment

Analysis for this project relative to vegetation is based upon the effect the proposed action would have on ecosystem health and resilience. Ecosystem health and resilience are best analyzed by measuring attributes of ecosystems; which, for this project, includes only forest cover types. Issue indicators for vegetation also commonly include landscape pattern and age or size class distribution. However, for this project landscape pattern and size class distribution were not chosen as issue indicators because salvage harvest removes only dead and dying trees; and from a vegetation perspective, removal of dead and dying trees does not affect these two attributes of ecosystem health.

1. Geographic Scope

The vegetative analysis area is National Forest System (NFS) lands within the Woodrat fire perimeter since all proposed actions would take place within this area. The cumulative effects area is defined as the Big Smith, Little Smith, Swan, and Middle Fork Clearwater Face drainages. These drainages were chosen as the analysis area for cumulative effects because all proposed activities would occur within these watersheds and to expand the analysis beyond these watersheds would dilute effects. This also provides a scale at which effects following treatment can be compared with reference conditions.

2. Methodology

Methodology for inventory included utilizing Rapid Assessment of Vegetation Condition after Wildfire (RAVG, USDA Forest Service, 2016) gathered for the burned areas. RAVG data was broken down into four different categories: 0% mortality of basal area (BA); 0-24% mortality of BA; 25-74% BA mortality; BA mortality ≥75%. These categories helped identify areas for treatment. Additionally, post-fire assessments were conducted to identify salvage opportunities and planting needs for the Woodrat Fire. For the post-fire assessments, crews performed walk thru exams in which data was gathered to complete silvicultural diagnosis forms, which are included in the project record.

Region 1 Existing Vegetation Map Products, Version 14 (VMap, USDA Forest Service, 2014) was used to categorize pre-fire forest cover types by relative abundance within the Big Smith, Little Smith, Swan, and Middle Fork Clearwater Face drainages. These drainages were selected because this is where all proposed actions would occur and they also form a landscape of sufficient size to provide for comparison with historic conditions. The base-level data were used and cover types were analyzed based on the DOM_GRP_6040 attribute. DOM_GRP 6040 is tree dominance group “based on 2 thresholds of tree abundance: 60% and 40%. If the single most abundant tree species comprises at least 60% of the total

abundance of the classification attribute, the class assigned is the species' PLANTS code (e.g. ABLA, PIPO). If the most abundant species comprises less than 60% and at least 40% of the classification attribute, the class assigned is the species PLANTS code with a suffix of the tree lifeform sublass, such as PICO-TMIX or PICO-IMIX." (Barber et al 2011). Wherever a species was identified in this field as being of the greatest abundance, that species was identified as the cover type. For example, in some cases ABGR (grand fir) was identified as the only species in this field, in other cases an area was categorized as ABGR-TMIX (grand fir, shade tolerant species mix); in both cases the area would be categorized as the grand fir cover type. Historic distribution of cover types was Losensky's (1994) Percent Acres by Cover Type for Section M333D.

Cumulative effects calculations were made by analyzing known vegetation types and comparing with projected changes based upon knowledge of planned management actions. The percentage comparison was calculated using the projected amount of vegetation within each cover type, then dividing by the total amount of acreage within known vegetation types.

3. Existing Condition

Forest Cover Type

Historic and current landscape conditions are compared in the following sections to show the need for more early seral species on the landscape.

Historic Landscape Conditions

The landscape in which the Woodrat fire of 2015 occurred was dominated by the grand fir (*Abies grandis*) cover type, but much of this area would have historically been dominated by the western white pine type. The percentages of current (immediately preceding the fires of 2015) forest cover types on the landscape are displayed in Table 4. This information is given to provide the context in which the fires occurred and is meant to provide a general idea of historic conditions compared with pre-fire conditions. The data given are to show that the western white pine and western larch cover types are currently at much lower levels on the landscape than they were in pre-European settlement times. Historic data in the table are for the area that Losensky (1994) classified as area M333D, which primarily encompassed north central Idaho. While it is recognized that these numbers represent a larger area than what is analyzed in this project, so this project does not attempt to exactly match the numbers given below- the numbers given for historic conditions provides a perspective of historic abundance of species on the landscape relative to current levels and shows how cover type distribution would need to change in order to trend toward historic levels.

Table 4. Comparison of historic and current cover types.

Cover Type	Historic Distribution[a]	Current Distribution[b]
Western white pine	34%	0%
Western larch/Douglas-fir	20%	0%
Douglas-fir	3%	17%
Grand fir[c]	0%	37%
Spruce-fir	2%	0%
Lodgepole pine	9%	0%
Ponderosa pine	21%	31%

[a] Losensky, 1994. Historic data is from Losensky's (1994) analysis of Section M333D, which "lies between the Lochsa River north to Coeur d'Alene Lake and from the Paluse [sic] Prairie east to the Clark Fork River in Montana".

[b] It may be noticed that the "Current Distribution" column does not add up to 100%. This occurred for two reasons. First, the model was unable to differentiate tree species due to size class- VMap includes herb, shrub, sparse vegetation, and transitional forest as "species categories"- meaning the model does not identify species when the vegetation is categorized this way. These classifications account for nearly 27% of the area included in current conditions. Second, some of the "cover types" within the area were classified as non-vegetative, such as "urban" or "water".

[c] Numbers for grand fir are not given in Losensky's (1994) historic information. He does not specify what type of fir makes up the fir part of the forest type described, but his description of where the type is found causes some doubt that he is referring to grand fir. Losensky (1994) states that stands [of white pine] "were generally not pure stands but mixtures of all of the other species found in the area". Thus, it is assumed that the grand fir type did not historically comprise a measureable portion of this section and instead of being prevalent enough to be a cover type, grand fir was typically present as a species within other cover types. It is now the most prevalent cover type in the analysis area.

Historically, western white pine (Pinus monticola) was the most important forest cover type in North Idaho, occupying the region's cooler moister sites in elevations between 2,000 ft. and 5,500 ft. (Haig, 1932). Because of the shade intolerance of western white pine, successful fire suppression efforts of the 1900s discouraged the continued reproduction of white pine, as did the introduction of white pine blister rust. Due to the lack of stand replacing disturbances and lack of naturally occurring blister rust resistant seed sources on the landscape, western white pine is being supplanted by more shade tolerant, more disease susceptible species, including grand fir and Douglas-fir (Fins, et al 2001) – primarily grand fir on this landscape.

Previous harvest activities also set the stage for forest cover types to depart from historical species distributions. Neuenschwander and others (1999) give an excellent history on the decline of white pine and the synergism between previous harvest and blister rust that caused the forest to be altered so radically:

> By the late 1950's, Inland Northwest National Forests accelerated timber harvests to meet timber demand resulting from the post-World War II housing boom. At the same time, despite Ribes control efforts, blister rust mortality accelerated in mature white pine. By the 1960's it became obvious that the war against Ribes was lost. In 1968 the Forest Service officially abandoned both its Ribes control efforts and its antibiotic treatments of white pine. The 1968 Forest Service policy discontinued planting of non-blister rust resistant white pine, emphasized regeneration and thinning of species mixes that did not include white pine, and focused major commercial timber harvests on white pine groves threatened by blister rust. Commercial harvests after 1968 were clearcuts planted with Douglas-fir. Most of the remainder were partial harvests that removed white pine and left other trees in the forests. Not only were dead and dying white pine harvested, but entire populations of white pine were removed- effectively also removing any blister rust-resistant genes that might have remained. From the 1960's through the mid-1970's the areas

formerly holding the best mature white pine groves were being converted to other trees-predominantly Douglas-fir, grand fir, and hemlock.

The watersheds used to assess current conditions of forest cover types would likely have been affected as described in Neuenschwander and others' (1999) history.

The pre-fire forest cover types on the landscape showed a notable departure from historic conditions; with much of the departure being anthropogenic, as described above. Thus, forest cover types show a need to trend toward historic conditions in order to increase ecosystem health and resilience.

Current Landscape Conditions

A blend of fire severities occurred within the Woodrat Fire perimeter. According to RAVG (Rapid Assessment of Vegetation Condition after Wildfire) data, on NFS lands, about 1,652 acres burned with low severity (0% to <25% basal area mortality), 1,158 acres burned with moderate severity (basal area mortality ≥25%, and <75%), and 1,051 acres burned with high severity (basal area mortality ≥75%), with the remainder categorized as 0% mortality.

Areas proposed for treatment include approximately 406 acres of low fire severity, 74 acres of moderate fire severity, and 55 acres of high fire severity. This acreage includes proposed salvage and areas where planting is proposed without salvage. While many acres experienced only low severity fire, it should be recognized that RAVG only shows "the amount of change in the live tree cover immediately (approximately 30 days after wildfire containment) after a wildfire" (USDA Forest Service, 2015). Using the Nez Perce-Clearwater National Forests Hazard Tree and Mortality Guidelines, many more trees are expected to die that did not immediately appear to have succumbed to mortality. Some of this acreage was identified by field crews as being burned to the extent that artificial regeneration would be necessary to assure adequate stocking and desired species composition.

B. Environmental Impacts

1. Forest Cover Types

Analysis of effects to forest cover types was performed by comparing current conditions and proposed changes of the NFS lands within the Woodrat fire (project) area. Analysis for this indicator does not incorporate quantitative measures of historic or desired conditions because the project area is a much smaller area than would be appropriate to compare with historic conditions. To expand the analysis area that would be appropriate to compare with historic conditions would cause the analysis area to become so large that effects would be diluted and unmeasurable. Thus, historic and current landscape conditions are compared in the "existing conditions" section to show the need for more early seral species on the landscape. Effects given below show the extent to which each alternative would trend the landscape toward historic conditions.

The alternatives would also affect forest cover type in more general terms; meaning that the cover type by lifeform (i.e. shrub, tree, etc.) would be affected by the different alternatives. Salvage harvest by itself would not be expected to cause changes to vegetation, because only dead and dying trees would be removed. Thus, this analysis focuses on vegetation changes that would occur if planting is performed as proposed.

Direct and Indirect Effects

Alternative 1 No Action:

If the no action alternative is chosen, planting would not occur within areas proposed for planting (including both proposed salvage and proposed planting only). These areas would be unlikely to be reforested naturally and would remain un-forested or stocked with trees at stocking levels that are lower than desired on 536 acres. These areas would be likely to be dominated by shrub species and various pioneer plant species, but would be unlikely to be promptly returned to a forested condition. The areas proposed for treatment all occur within management areas E1 and C4. Management Area E1 emphasizes optimizing timber production while providing protection for soil and water quality. Management Area C4 emphasizes providing big game winter range and timber outputs - it is considered “suitable” timber land. If no action is taken, the acres proposed for reforestation would remain unstocked or understocked and would not meet Forest Plan objectives for this management area; meaning that these areas would not be producing timber consistent with the goal of “optimizing timber production” or “producing timber outputs”. Thus, under the “no action” alternative, current timber volume (estimated in the “Economics” section of this document) would be sacrificed on the acres not salvaged and future volume on these 536 acres would be sacrificed.

If the no action alternative is selected, occurrence of early seral species such as western larch and western white pine would not increase. Western white pine populations have declined enough that it is unlikely that this species would return to its past prevalence without intervention (Fins et al 2001). Under the no action alternative, it is unlikely that the western white pine or western larch cover types would increase because these cover types are currently not represented on the landscape. Due to their scarcity (or absence) from the landscape, it is unlikely that western larch and western white pine would reproduce in sufficient amounts such that the western larch and western white pine cover types would be increased on the landscape.

Alternative 2 Proposed Action:

If the proposed action is selected, 536 acres would be promptly (within 5 years) returned to a forested condition, and would be at stocking rates that would be desirable for producing timber and provide wildlife cover and visual structure as seen from the Middle Fork Clearwater Wild and Scenic River Corridor. Stocking levels would be consistent with management objectives as given within the Forest Plan. If the proposed action is selected, a mix of trees, shrubs, and various pioneer plant species would be present within the treated areas. While these areas would include a level of tree stocking commensurate with the goal of producing timber, shrubs and various pioneer species would also be present on the sites.

These areas would be planted predominantly with a mix of western white pine, western larch, and ponderosa pine; and other species may be mixed in. Amounts of the western white pine and ponderosa pine cover types would increase, since these would be the primary species planted following salvage harvest. They would also be the primary species planted in burned areas that would not be salvaged and not expected to naturally regenerate. The western larch cover type would not increase because western larch would be planted in conjunction with western white pine and ponderosa pine, with the planting being focused on western white pine on sites where white pine is ecologically appropriate; and focused on ponderosa pine on those sites that are too warm and dry for western white pine.

Under this project, about 536 acres are proposed for planting. While some variation may occur when prescribing site-specific planting mixes and parameters, Table 5 shows expected cover type changes that would be caused by planting within the project area. Acreage in the ponderosa pine cover type that burned and is being treated would be expected to be planted back to ponderosa pine. Additionally, about 50 acres in the Douglas-fir and grand fir cover types were identified as being within habitat type groups where

ponderosa pine would be the most ecologically appropriate species to plant. These acres would be expected to be planted back to ponderosa pine. All other acres would be expected to be planted to a mix of western white pine and western larch, with the stocking being heavier to western white pine. Other species may come in naturally, but they would consist of grand fir and would not contribute to long term stand resiliency and may not fully restock the area in hotter burned areas.

Table 5. Change in cover types within the project area

Cover Type	Acreage in Project Area	Cover Type Acreage After Treatment
Ponderosa pine	196	246
Douglas-fir	407	331
Grand fir	1498	1241
Western redcedar	88	79
Western white pine	0	359

Cumulative Effects

Past activities form the basis for the current conditions of vegetation within the analysis area and are therefore already considered in the analysis. Thus, cumulative effects for vegetation should consider present and reasonably foreseeable actions within this area.

The Idaho Department of Lands (IDL) lands within the cumulative effects area have been salvaged and are planned for planting in the Spring of 2016 and 2017 (Dan Fabbi, personal communication, February 26, 2016). According to Fabbi, these lands are planned to be reforested to a mix of western white pine, Douglas-fir, and western larch, with the species composition primarily driven by aspect. In general white pine would be concentrated on north and east aspects. Approximately 260 acres of IDL lands are included in this analysis and are those within both the Woodrat fire perimeter and the cumulative effects analysis area. Western larch would most likely be mixed with both white pine and Douglas-fir, but that western white pine and Douglas-fir would be the primary species represented on IDL lands.

A portion of the Nez Perce-Clearwater National Forests Road, Administrative and Recreation Site Maintenance project is also proposed within the cumulative effects area. The assumption was made for this analysis that the entire proposed action of the Road, Administrative and Recreation Site Maintenance project would be implemented and that planting would occur on every acre (about 456 acres within the Cumulative Effects Area) within the proposed action as this would yield the most potential impacts to vegetation. Planting practices for the Road, Administrative and Recreation Site Maintenance project are assumed to be similar to those that would be used for the Woodrat project.

The Interface Fuels 2 Project is also occurring within the cumulative effects area, but did not affect forest cover types, since no regeneration harvest occurred. Underburning and planting are the only activities remaining to occur on 155 acres, but since underburning is defined as “fire that consumes surface fuels but not trees and shrubs” (Helms 1998); this activity is not expected to alter forest cover types. The reforestation planned in Interface 2 project would be intended to only contribute to within stand diversity and help achieve desired stocking levels.

The final action that is considered in this cumulative effects analysis is additional planting proposed on the Lochsa-Powell Ranger District. The planting includes 352 acres of early seral species planting. The assumption for this planting is that the planting will be performed favoring the same species as those favored for planting in the Woodrat project.

Table 6. Cumulative effects of Alternative 2.

Species	Existing Acres within Cumulative Effects Area	Existing Percentage of Analysis Area	Cumulative Project Acres (All actions within Cumulative Effects Area)	Percentage of Cover Types (Effect of All Actions Considered in the Cumulative Effects Area)	Historic Distribution
Western white pine	0	0%	718	4%	34%
Western larch-Douglas-fir	0	0%	0	0	20%
Douglas-fir	3,628	20%	3,503	20%	3%
Grand fir[a]	7,745	43%	7,189	40%	0%
Spruce-fir	0	0%	0	0%	2%
Lodgepole pine	70	0%	0	0%	9%
Ponderosa pine	6,455	36%	6,425	36%	21%

[a] Numbers for grand fir are not given in Losensky's (1994) historic information. He does not specify what type of fir makes up the fir part of the forest type described, but his description of where the type is found causes some doubt that he is referring to grand fir. Losensky (1994) states that stands [of white pine] "were generally not pure stands but mixtures of all of the other species found in the area". Thus, it is assumed that the grand fir type did not historically comprise a measureable portion of this section and instead of being prevalent enough to be a cover type, grand fir was typically present as a species within other cover types. It is now the most prevalent cover type in the analysis area.

C. Regulatory Framework

The proposed action has been reviewed and is determined to be in compliance with the management framework applicable to this resource. The laws, regulations, policies and Forest Plan direction applicable to this project and this resource are as follows:

1. National Forest Management Act of 1976 (NFMA)

NFMA states that timber harvest will occur only where there is assurance that such lands can be adequately restocked within five years after harvest and that, "except for salvage sales or sales necessitated to protect other multiple-use values" no timber harvesting should occur on lands determined to be unsuitable for timber production.

As relates to vegetation, this proposal is in compliance with NFMA. The purpose of artificial regeneration (i.e. planting) following salvage harvest is to provide assurance that lands will be adequately restocked following harvest. NFMA also includes a provision for opening size limitations created by timber harvest. However, the opening size limitations do not apply to "areas that are harvested as a result of natural catastrophic conditions such as fire…"

Planting in areas where no timber harvest occurs would also be in compliance with NFMA, as NFMA states that "all forested lands in the National Forest System shall be maintained in appropriate forest cover with species of trees, degree of stocking…and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans."

D. Forest Plan Consistency

1. Management Area E1

Vegetation management activities proposed for this project are all located within Clearwater Forest Plan management area E1. Lands within the E1 management area are intended to provide optimum, sustained production of wood products and to produce timber in a cost effective way while providing adequate protection of soil and water quality. In E1, the standards relevant to timber for this project are:

- Maintain stocking control commensurate with the level of management intensity
- Identify and maintain suitable old-growth stands and replacement habitats

These standards for E1 are met by artificially regenerating those stands proposed for salvage harvest and by not harvesting in areas that are meeting criteria to be considered as to old growth.

2. Management Area C4

Vegetation management activities proposed for this project are partially located within Clearwater Forest Plan management area C4. Lands within the C4 management area are intended to provide sufficient forage and cover for existing and projected big-game populations and achieve timber production outputs. These objectives would be met by the proposed action of the Woodrat Project.

3. General Forest Plan Standards

General Forest Plan standards relevant to this project include:

- Require silvicultural examination and prescriptions before any vegetative manipulation takes place
- Allow, after appropriate analysis, for salvage sanitation [sic] harvesting of timber stands which are substantially damaged by fire…in all management areas except those specifically designated unavailable for timber harvest.

These standards would be met with this project. In compliance with the Forest Plan and FSH 2409.17, a Certified Silviculturist would prepare and/or approve a silvicultural prescription prior to any vegetation manipulation. As seen above, salvage harvesting fire-damaged timber stands and replanting the sites to maintain appropriate species composition and stocking levels is consistent with the Forest Plan.

3.2 Fuels/Air Quality

A. Affected Environment

The Clearwater - Nez Perce National Forests Fire Management Plan (USDA 2008) outlines appropriate fire management strategies across the Nez Perce-Clearwater National Forests, based on the management area direction in the Clearwater Forest Plan (1987). All proposed salvage units for treatment fall within the Protection/Suppression Fire Management Unit (FMU). The objective of this FMU emphasizes full suppression strategy with some modified suppression allowed, and prescribed fire for hazardous fuels reduction.

This area has been identified as a Wildland Urban Interface (WUI) in the Idaho County Wildfire Mitigation Plan (2005). The project area is located along the Forest boundary and is adjacent to private and state lands. The pervasiveness of the WUI has immediate relevance in the current U.S. debate on wildland fire, fuel treatments, and the restoration of fire dependent forest ecosystems (Covington 2000). The WUI is where wildland fires destroy the most structures when fuels and weather are conducive to fire (Covington 2000, Service 2003) and where human-caused fire ignitions are most common (Cardille et al. 2001).

1. Resource Concern:

Issue: Due to current and expected levels of mortality from the Woodrat Fire, conditions would change as more trees succumb to the effects of fire damage, needles turn red on affected trees, red needles fall to the ground, and dead trees start to fall over. Fire killed/fire-affected trees will fall over time, increasing surface fuel loadings which will trend upwards over time from the recommendations for this forest type thus, increasing future surface fire intensity.

Indicator: Surface fuel loading in tons/acre (greater than 3 inches diameter) per Graham 1994 provide positive values for other affected resources while avoiding excessive fire hazard (Brown et al., 2003). These levels are 17-32 ton/acre in fuels greater than 3 inches.

2. Geographic Scope:

The project area would fall completely within the Woodrat fire perimeter on the Lochsa-Powell Ranger District. The Woodrat proposed salvage units (387 acres) are located immediately northwest of Syringa, Idaho. For air quality, the Airshed boundaries 12B and 13 would be applied. The cumulative effects boundary for fuels is the Woodrat fire perimeter area and directly adjacent to this area because project activities would have localized effects on fuel arrangement and continuity. This provides an appropriate analysis area for fuels resources related to characteristics such as species composition, forest structure, wildfire risk, wildfire hazard, and insect/disease risk.

The cumulative effects geographic area of the project is the portions of North Idaho Airshed 12B and 13 within the boundary of the Lochsa-Powell Ranger District. The airshed boundary is used by the Airshed Group to analyze, monitor and regulate smoke production. The air resource analysis is unique in that past impacts to air quality are not usually evident once the source is removed. Therefore, this discussion will focus on present and foreseeable effects of air quality and visibility.

3. Methodology:

Modeling results indicate that potential fire behavior increases as fuel loading increases and potential fire behavior decreases as fuel loading decreases. Where predicted fire behavior would result in high rates of spread, or would result in flame lengths that exceed capability to work with hand crews (four feet), fuels would be reduced using a variety of methods to reduce predicted rates of spread and flame lengths.

Photo series for quantifying forest residue guides were used to identify Fire Behavior Fuel Models represented in the project area. Site visits (Fall 2015), BAER report, and data collected by the timber crews were used to identify the existing condition of the fuels within the proposed unit boundaries and immediately adjacent.

BEHAVEPlus5, a fire behavior prediction and fuel modeling program, was used to predict fire behavior given current conditions and post-treatment conditions. Fire behavior characteristics such as rate of spread, flame length, and fireline intensity are predicted and used to plan and prioritize treatment needs, evaluate management effectiveness, and describe the area's response to wildfire. Potential Rate of Spread (ROS) and Flame Length (FL) were the primary parameters reviewed for this project because of their significance to the decision-making process of risk management. Fireline intensity is also widely used as a means to relate visible fire characteristics and interpret general suppression strategies. A visual indicator of fireline intensity is flame length (Neary et. al 2005).

There are several ways of expressing fire intensity. Fireline intensity is widely used as a means to relate visible fire characteristics and interpret general suppression strategies. A visual indicator of fireline intensity is flame length (Neary et. al 2005). Table 7 compares fireline intensity, flame length, and fire suppression difficulty.

Table 7. Fireline intensity interpretations based on Rothermel 1983

Intensity	Flame length	BTU/ft/sec	Interpretation
Low	<4 feet	< 100	Direct attack at head and flanks with hand crews, hand lines should stop spread of fire
Low-Moderate	4-8 feet	100-500	Employment of engines, dozers, and aircraft needed for direct attack, too intense for persons with hand tools
Moderate	8-11 feet	500-1000	Control problems, torching, crowning, spotting; control efforts at the head are likely ineffective
High	> 11 feet	> 1000	Control problems, torching, crowning, spotting; control efforts at the head are ineffective

Direct and indirect effects where fuel characteristics are effectively moderated through treatment include:

- Reduction in potential fire behavior through fuel bed modification;
- Ingress/egress routes benefit due to reduced long-term maintenance by removing hazards at once rather than through repetitive maintenance; and
- Pre-emptive improvement in fire fighter safety during fire management activities by removing overhead hazards and reducing potential fire behavior resulting in improved successes at fire suppression
- Increasing overall resiliency through prescribed burning and other fuels treatments.

Fuel models can represent different successional stages as a forest regenerates, matures, and then dies over time. A collection of fuel properties input into fire behavior modelling programs, fuel models allow fire managers to rate fire danger and predict fire behavior by providing the inputs necessary calculate those indices or fire behavior potential (Anderson, 1982). Fuel model descriptions were determined based on field reviews and Aids to Determining Fuel Models for Estimating Fire Behavior (Anderson, 1982) and Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model (Scott and Burgan, 2005). Photoload sampling and photo series guides were used to assess

existing fuels conditions (Keane and Dickinson, 2007). The general guidelines to predicting slash fuel loadings, available through the photographic series Appraising Slash Fire Hazard in Idaho (Morgan and Shiplett, 1989), may also be utilized after felling/removal operations to inform final determination of the necessary type and amount of fuel treatment to be implemented on a unit by unit basis.

4. Existing Condition

Alternative 1 No Action

The Woodrat fire resulted in a significant reduction of surface and small understory (ladder) fuels in the proposed salvage units. Proposed salvage units are expected to change dramatically if left untreated. In the short-term (up to five years), this change in fuel loading and composition is expected to reduce wildfire intensities. However, as the standing dead trees decay and fall to the ground, these areas would become occupied by high snag densities and a complex arrangement of fallen trees, broken tops, and branches intermixed and suspended within an increasingly heavy shrub component. The green needles of dying trees will turn red over the next few seasons and drop to the ground. In the longer-term (greater than 15 years), these conditions would result in a heavily increased surface fuel loading.

Studies have shown that there is a strong positive relationship between initial fire severity and severity of a subsequent reburn (e.g. Holden et al. 2010; Thompson and Spies 2010; Van Wagtendonk et. al. 2012; Parks et al. 2014). The two principal mechanisms identified as being strongly tied to fire severity in the initial fires and the reburn were snag basal area and shrub cover. Results suggest that high to moderate severity fire in an initial fire can lead to an increase in standing snags and shrub vegetation, which in combination with severe fire weather, can promote high severity fire in the subsequent reburn of an area. The window of low reburn potential can close relatively quickly (5 to 10 years) as regenerating vegetation and litter accumulates on the surface (Donato et al. 2013). These dead trees will have mostly fallen within fifteen years (Mitchell and Preisler 1998) which will greatly heighten 1000-hr fuel loading. This time also allows for enough smaller surface fuels and ladder fuels in the form of regeneration to accumulate to actively carry the next fire and become established in the heavier fuel loadings that are amassing as snags fall. According to Passovoy and Fule', they note for example the Tillamook fire in 1933, which burned almost 300,000 acres of Douglas–fir forest in Oregon, the same area burned again in 1939 and 1945. The reburns were difficult to suppress, burning two-thirds of the original acreage. More recently, in the mixed coniferous forests of northern California, they found that there was three times more high severity fire in reburn areas than those that had not been burned in at least 84 years (Passovoy and Fule 2005, Odion et al. 2004). This increase in large heavier fuel accumulations also hampers fire suppression as these areas are difficult to walk through and chainsaws are needed to remove layers of logs in order to dig fireline. Fireline production can be very slow which may limit the success of initial attack.

In addition, heavy loadings of 1000-hr fuels allows for long residence time should a fire occur. Residence time refers to the total length of time that the flaming front of the fire occupies one point. Long residence times promote smoldering of duff and litter which creates high smoke emissions and exposes mineral soil. Exposed mineral soil creates a suitable site for noxious weed establishment and higher potential for erosion. Fire suppression costs can be very high during this extended mop-up phase to extinguish large dead logs. Changes in forest structure will accelerate for ten to twenty years as trees die and eventually fall over. For purposes of fire behavior analysis for this alternative, fifteen years from the present are examined (year 2031).

Fuel Models

Without treatment, most areas are expected to convert to fuel models 185 and/or 187 over the next fifteen years. These fuel models contain a substantial loading of 1000-hr fuels on the ground. The visual

difference between these fuel models lies in the size of the fuels on the ground and whether ladder fuels (such as conifer regeneration) are present.

Fuel Model (FM) 185- High load conifer litter; light slash or mortality fuel. FM 185 includes areas with a heavy load of litter and small diameter downed logs. This fuel model occurs in stands of higher elevation forests with mortality in the form of small to moderate (3-9 inch) diameter logs on the ground. Rate of spread and flame lengths are low. The moisture of extinction, the depth of the fuel bed involved in the fire front; and fuel moisture, including that at which fire will not spread, is 25 percent.

Fuel Model (FM) 187 - Large Downed Logs. FM 187 includes areas with a heavy load of litter and large diameter downed logs. This fuel model occurs in stands of higher elevation forests with mortality in the form of large-diameter (greater than 9 inches) logs on the ground. Rate of spread and flame lengths are low. The moisture of extinction is 25 percent.

Fire Behavior

The residence time in these fuel models can be long as these large fuels are slow to extinguish. Long residence times can promote smoldering of all surface material including duff, litter, vegetation, and fine woody debris which can subsequently affect erosion, native plant recovery, and noxious weed establishment. Smoldering fires also have high smoke emissions. Long residence times and high resistance to control also increase risk exposure to firefighters. Because of the extent of dead and dying trees, these concerns are valid over the proposed Woodrat Salvage area.

Table 8. Alternative 1 (No Action) fire behavior modeling

Fire Behavior	Fuel Model 185	Fuel Model 187
Flame Length (ft)	4.5	3.8
Fireline Intensity (BTU/ ft/s)	146	103
Rate of Spread (chains/hr)	17.8	9.3

Fires burning in these fuel characteristics were modeled using weather conditions under a “Very High” fire danger rating:

- 1 hour fuels at 2%
- 10 hr fuels at 4%
- 100 hr fuels at 6%
- 10 m.p.h. midflame wind speed
- 30% slope

Fire behavior under this alternative would be highly variable and would greatly depend on the influence of weather. Under very high weather conditions, a stand may burn as shown with fuel model 187. However, given the same stand and “Extreme” weather conditions fuel model 185 may be more representative. Flame lengths less than 4 feet can generally be directly attacked by firefighters but they are ineffective if flame lengths are greater than 4 feet. Mechanized equipment such as dozers and skidgeons are used for flame lengths 4-8 feet.

Air Quality

Historical Condition

Although there is no known historical air quality data for Montana and Idaho, fire has historically played a major role in the vegetative dynamics of the northern Rocky Mountains, as evidenced by burn mosaics

of the forested lands. Fire history indicates that much of the Clearwater National Forest was burned from 1910-1934. Fires, either natural or management ignited, can potentially generate smoke from a few hours to several months.

Existing Condition

Air Quality for the analysis area is generally good. The largest effects on air quality come from wildland fire and/or prescribed fire smoke that settles into the local creek drainages and valleys. Under the North Idaho Smoke Management Agreement, site specific conditions are used to develop a smoke management forecast and warranted restrictions for planned burning. This enables scheduling of prescribed burns when atmospheric conditions are conducive to smoke dispersal, and helps to minimize or prevent the accumulation of smoke in Idaho and downwind air sheds in order to meet State and Federal ambient air quality standards.

The climate is dominated by Pacific maritime air masses and prevailing westerly winds. Air Quality for the analysis area is generally good. The largest effects on air quality come from wildland fire and/or prescribed fire smoke that settles into the local creek drainages and valleys. Under the North Idaho Smoke Management Agreement, site specific conditions are used to develop a smoke management forecast and warranted restrictions for planned burning. This enables scheduling of prescribed burns when atmospheric conditions are conducive to smoke dispersal, and helps to minimize or prevent the accumulation of smoke in Idaho and downwind air sheds in order to meet State and Federal ambient air quality standards.

Fugitive dust from roads is a local phenomenon with little effect outside the immediate project area. Dust is associated with traffic utilizing forest roads through the area. The volume of dust generated is directly related to the amount of traffic using roads through the area. The estimated level of effect from road dust varies based on the estimated level of traffic associated with implementation of a given alternative. Traffic associated with implementation would include monitoring, administration, timber operations, watershed, wildlife, and fire. Except for visibility, traffic safety, and maintaining the integrity of the road surface, fugitive dust is of little concern outside the road corridors.

B. Environmental Impacts

1. Direct and Indirect Effects:

Alternative 2: (Proposed Action)

The proposed salvage would harvest approximately 387 acres of dead and dying trees within the Woodrat fire perimeter. This would remove the trees instead of allowing these trees to fall over time. As a result, this action would have many favorable consequences, including:

1. Firefighter safety would be improved during fire suppression within the project locations by removing hazard trees,
2. Ingress and egress routes would benefit due to the reduced long-term maintenance by removing hazard trees in proposed units that also have road systems in close proximity and,
3. Fire behavior would be changed with implementation of the proposed action as the fuel models and vegetation characteristics would change within the project.

The direct effect of salvage harvest and area fuel treatments would be a reduction of snags on the landscape. Treatments would remove future surface fuels, which would reduce the vertical arrangement and horizontal continuity of the surface fuels (Peterson et al. 2005, Graham et al. 2004). Post-fire logging would remove a substantial portion of the large woody fuels that would contribute to a future complex arrangement of dead and live surface fuels. Removal of limbs and tops would greatly reduce activity-

generated surface fuels (Agee and Skinner 2005). In the short term following the harvest activities (generally within 3 years); fire behavior, flame lengths, and fire intensity could be increased slightly as compared to that expected without treatment. However, these activity-generated fuels would be either jackpot burned, hand or machine piled, and piles burned, so any potential increases to fire behavior would be reduced when weather and environmental conditions are favorable. In areas that burned at moderate and high severity from the Woodrat Fire, where timber does not meet merchantability standards, hazard abatement, fuels reduction, and site preparation for reforestation would be accomplished using biomass removal, mastication, felling and lopping, machine piling and burning, or jackpot burning.

Prescribed fire (jackpot and pile burning) would follow mechanical and hand thinning treatment operations to reduce the natural and activity generated surface fuel accumulations. Jackpot burning is a modified form of broadcast burning where greater accumulations of downed woody material are fired and the fire is confined to these spots, due to the scattered and disconnected fuel loading within the burn unit perimeter. The number of acres treated by jackpot burning or pile burning is dependent on the amount of biomass removed from within the mechanical or hand treatment units. If more biomass is removed, the number of jackpot burning or pile burning acres would most likely decrease.

The indirect effects of prescribed fire treatments would be a likely small increase in scorch in the lower canopy of any remaining trees and may cause limited mortality in trees. The radiant heat produced from machine and hand pile burning could cause crown and cambial scorch on nearby residual trees, and could cause incidental mortality, but on a very limited basis. During the implementation phase of the project, an empahasis on pile location/placement would mitigate most of the damage to nearby healthy trees.

Mastication (chipping, crushing, and compacting) of both trees and shrubs could be used to reduce competition to improve residual tree growth and vigor. Although using prescribed fire would be the preferred method of surface fuel treatment in non-planted areas, mastication could occur in stands, or portions of stands, to reduce heavy surface fuel loads in areas after mechanical or hand thinning activities. Mastication would alter the structure and arrangement of the surface and ladder fuel loading and reduce the expected flame lengths and rate of spread in the event of a wildland fire and during prescribed fire operations.

The direct effects of mastication would be a reduction of the aerial fuels and an increase of the surface fuel loading. Although the surface fuel loading would be increased, it would also be compacted. Fire behavior would be expected to be decreased due to the compaction of the surface fuels. This slash compaction would decrease the packing ratio of the surface fuels and would lead to shorter flame lengths, lower rates of spread, and a longer burning, higher severity fire.

The indirect effects of the mastication treatments would be a reduction of growth in the grass and forb species due to the increased surface fuels creating a deeper and more compact duff and litter layer. The layer would decline over time due to decomposition and the use of prescribed fire, eventually allowing establishment of understory vegetation.

Fuel Models

Post-treatment fuel models were predicted based on the dominant understory or fuel stratum that would carry fire following hazard tree removal. Post-treatment fuel models depend on post treatment canopy cover, fuel loadings, and ladder fuels. Most activity areas will be fuel model 181 and 183, although there may be residual 1000-hr fuels present as well in all areas regardless of post-treatment fuel model.

Fuel Model (FM) 181, Low Load Compact Conifer Litter. FM 181 has a light to moderate load, fuel 1 to 2 inches deep under a timber overstory, which can be open. Rate of spread and flame lengths are very low. The moisture of extinction is 30 percent.

Fuel Model (FM) 183, Moderate Load Conifer Litter. FM 183 combines moderate load conifer litter and light load of coarse woody debris. This fuel model includes Douglas-fir, spruce, and western larch. An understory of litter is the main component that would carry fire. This fuel model has a sparse vegetative understory. Rate of spread is very low and flame lengths are low. The moisture of extinction is 20 percent.

Fire Behavior

In past years, research has been conducted in the western US on how fuels treatments affect wildland fires that subsequently move through the treated areas. The probability that a given acre is burned by a wildland fire is low, and even lower when looking at the probability that a given treated acre be burned by a wildland fire (Rhodes and Baker 2008). However, when looking at how wildland fires burn through treated areas, fuels treatments should be judged successful if desirable changes are made to wildland fire behavior. Treatments have been designed not to stop fire but to alter the fire behavior in treated areas, thereby reducing the future effects of a potential wildfire (Stratton 2004). Fires burning in these fuel characteristics were modeled again using weather conditions under a “Very High” fire danger rating (Table 9.).

Table 9. Alternative 2 fire behavior modeling

Fire Behavior	Fuel Model 181	Fuel Model 183
Flame Length (ft)	.9	2.1
Fireline Intensity (BTU/ ft/s)	4	29
Rate of Spread (chains/hr)	1.7	6.2

Following treatment, activity areas that have a light load of course woody debris and a moderate load of timber litter are represented by Fuel Model 183. Activity areas that have a timber overstory remaining and an understory composed of compact forest litter are best represented by fuel model 181. Fires in both fuel models can be direct attacked by fire fighters using handtools with high success during initial attack.

Air Quality

Prescribed fire would occur following mechanical salvage and fuels treatments. Depending on weather conditions and timing of other projects, it could take between one to three years to treat these areas following completion of salvage harvest. Jackpot burning would take place in the fall and spring, machine pile burning and landing pile burning would take place in the fall. Smoke is the most visible impact to air quality and the particulates generated are a health concern. Burning would produce an increase in the accumulation of smoke and haze but effects from smoke would remain near the source, and be short term depending on how long the fire is in the smoldering stage. North Idaho Airshed Group guidelines would be followed when burning within the analysis area and favorable weather conditions will be utilized to minimize smoke duration and impact.

Indirect effects on air quality would result from the continued build-up of forest fuels and the eventual reburn process creating high particulate concentrations for longer periods during the summer months of fire season if the current fuels aren’t treated.

2. Cumulative Effects of Relevant Past, Present, and Reasonably Foreseeable Activities Relevant

The cumulative effects geographic boundary for fuels is the fire perimeter area on National Forest System lands because project activities would have localized effects on fuels and fuel continuity. This area is sufficient to display effects.

Fire/Fuels: Prescribed fire and unplanned ignitions (including wildfires and fires managed for resource benefits, formerly called wildland fire use) have changed the vegetation and are the management activities that most influence fire and fuels. Suppression activities in the project area may have had an effect on the existing fuel profile. Fire suppression may change the way the ecosystem responds to fire in the future (Zack and Morgan, 1994). Ecological implications of such subtle changes in structure is unknown (Smith and Fischer, 1997), and because suppression is likely to continue in this area, further structural changes from suppression may continue to occur.

Other vegetation management activities: These activities include a variety of management practices and silvicultural treatments, ranging from timber harvest with intermediate salvage harvest, tree planting, regeneration harvest, pre-commercial thinning, and fuel reduction. Outside of wildfires, from a fuels perspective, vegetation management activities across the project area have been the dominant change factor in the project area. Vegetation management projects have had an influence in the species composition, size class distribution, and function of the ecosystem. The long-term effect of these activities is beneficial because overall fire resilience of the residual stands has improved. The concurrent Roadside, Administrative, and Recreation Site Maintenance project within the Woodrat fire area will have a similar positive effect on the overall resiliency and success of fire suppression.

The prospect of firewood cutting affecting the overall fuel loading in comparison to the recent fire is minor. However, it does contribute nominally to the total fuel reduction cumulative effect.

Air Quality: Salvage harvest would create the need to dispose of activity fuels through burning. Smoke is a health concern and can be modeled prior to ignition to ensure appropriate conditions exist for implementation. All burning is coordinated through the Idaho/Montana Airshed Group who then collaborates with both Montana and Idaho Department of Environmental Quality.

Burning in the spring poses the least risk of lingering smoke and residual impacts to air quality. \Spring weather patterns provide good air movement and mixing to disperse smoke. The greatest risk of impacting air quality would be associated with fall burning. Smoke impacts would be more likely and of longer duration when burning is conducted during the fall season. The probability of smoke lingering in the valley increases in the fall due to the higher likelihood of temperature inversions that are more common during that time of year.

3. Conclusion

Under the No Action Alternative , without treatment, as hazard trees fall, heavy loadings of dead wood hamper fireline production and may create dangerous conditions, and increased exposure to risk for firefighters in these activity areas. Fire behavior in these conditions would hamper initial attack success and 1000-hr surface fuel loadings would exceed the recommended 17-32 tons per acre for this habitat.

Under the Proposed Action, implementation offers an efficient and effective means to create a better chance of fire suppression success. Conditions would be safer for firefighters in the treated areas as there would be far fewer hazard trees. Also, suppression strategies and tactics would be more successful without the heavy 1000-hr fuel loading. Successful suppression of fires during initial attack is a performance measure of the National Fire Plan and protecting ingress/egress routes were identified in the Idaho County Wildland-Urban Interface Wildfire Mitigation Plans.

C. Regulatory Framework:

1. Clean Air Act 1963

The Clean Air Act, passed in 1963 and amended numerous times since then, is the primary legal authority governing air quality management. This Act provides the framework for national, state, and local efforts to protect air quality. The Montana/Idaho State Airshed Group was formed to coordinate all prescribed burning activities in order to minimize or prevent impacts from smoke emissions and ensure compliance with the National Ambient Air Quality Standards (NAAQS) issued by the Environmental Protection Agency (EPA), the federal agency charged with enforcing the Clean Air Act. The USDA Forest Service, including the Nez Perce- Clearwater National Forest, is a member of this Airshed group. All post-harvest site preparation and fuel reduction treatments would be conducted according to the requirements of the Montana/North Idaho Smoke management guidelines. All activities proposed under the Woodrat Fire Salvage are in compliance with the Clean Air Act (Montana/Idaho Airshed Group Operating Guide, 2010).

2. The National Fire Plan (2000)

The National Fire Plan (NFP) was developed in August 2000 following a landmark wildfire season with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capabilities. The NFP addresses five key points: firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. Implementing Alternative 2 would be in compliance with the NFP.

D. Forest Plan Consistency:

The Clearwater Forest Plan (USDA Forest Service 1987) provides the overall direction of management activities on the Forest. The following are the forest goal and management area direction for the project relative to fire and fuels management. The Woodrat Salvage project would be consistent with Forest Plan goals, objectives, and standards.

- Forest Plan Goals are to “Coordinate with the State of Idaho Air Quality Bureau to develop a smoke management program for prescribed burning in the State” (FP II-4).
- Forest Plan Objectives are to “Develop a smoke management program that will meet Environmental Protection Agency as facility standards for the State of Idaho by FY 1988” (FP II-8).
- Forest Plan Standards are to “Treat activity fuel loadings to an acceptable level to reduce fire spread, and fire intensity, prepare sites for regeneration, and reduce impediment to wildlife travel (FP II-35).

3.3 Invasive Species

A. Affected Environment

Idaho's noxious weeds are plant species that have been designated "noxious" by law in the Idaho code (title 22, chapter 24, "Noxious Weeds"). There are currently 67 Noxious Weeds on the state List. These 67 weeds are separated into three Categories based on the level of concern, which affects how they are managed. Statewide Early Detection Rapid Response EDRR category is top priority, as these are the new invaders and pose the greatest risk. No weeds in this category are known to exist within the project area. The next level is Statewide Control, these plants can be eradicated, but in most cases they are managed to reduce the infestations within 5 years. One Species, Yellow Hawkweed (Hieracium caespitosum) is present in a single site occurrence or spot infestation along Forest Road #101. The last category is Statewide Containment, most plants in this category are established populations and managed locally depending on the size and density of the infestation. Current noxious weed inventories in the analysis area identify 2 species form the Statewide Containment Category, Spotted knapweed (*Centaurea stoebe*) and Canada thistle (*Cirsium arvense*) as the most widespread. These two weed species can be found primarily along roads and in the open, drier habitats within the project area. Two other weed species on the Statewide containment category; Houndstongue (*Cynoglossum officinale*) and Oxeye Daisy (*Leuxanthemum vulgare*), also exist in small numbers within the analysis area, but are not inventoried. These last 2 species are sporadically dispersed throughout the entire Nez Perce-Clearwater Forest, mostly by animals and rarely occupy continuous areas, which makes mapping difficult.

Currently, the Nez Perce-Clearwater National Forest conducts integrated weed management strategies that deal with weed infestations within the project area based on priorities outlined in the Annual Operating Plan for the Clearwater Basin Weed Management Area, a community based cooperative (CBWMA). The area has and will continue to receive high priority for invasive weed control work prior to and throughout the life of the proposed project. Noxious weed treatments are currently conducted with crews from the Forest Service, Idaho County, Private Contractors, and Idaho Backcountry Horseman. Monitoring and inventory of these weed populations would occur in conjunction with these treatments.

Weed expansion in the analysis area is greatly influenced by habitat susceptibility, seed availability, seed or propagule dispersal, and habitat disturbance. The probability that weeds will expand in the project area depends on the interaction of these four factors. Weed expansion begins with the dispersal of seed from existing weed infestations adjacent to uninfested areas. Roads and trails are the primary means by which people and animals interact with the environment and therefore are an important spread vector. These linear corridors act as dispersal networks for exotic plants. The majority of documented infestations within the analysis area are along the transportation corridors.

Disturbance creates spatial and temporal openings where sites become suitable for plant establishment, and where usable light, space, water and nutrients are available to meet the specific growing requirements of the plant. Disturbance may increase the susceptibility of an otherwise intact plant community to weed invasion by increasing the availability of a limited resource. Natural or human caused fires along with timber harvest and grazing are broad scale disturbances that influence the amount of available habitat for weed establishment.

Weed expansion risk in the analysis area was determined by assessing the susceptibility of habitat type groups, the presence of weed infestations (seed source), the amount of recently burned or harvested areas (site disturbance), and the density of roads or trails (spread vectors).

1. Geographic Scope

The analysis area for this noxious weed assessment includes only the approximately 378 acres of National Forest Service managed lands within the proposed Woodrat fire project area.

Analysis Methodology

This assessment addresses the presence of noxious weeds relative to susceptible habitats, expansion risk, and spread vectors. The effects are considered within the Woodrat Salvage project.

Susceptible Habitats

Susceptibility refers to the vulnerability of plant communities to colonization and establishment of invasive plants. All plant communities are subject to invasion or colonization, but vary in their susceptibility to invasive weeds.

Habitats were classified as having low, moderate, or high susceptibility based on habitat type group (HTG) characteristics and known ability of weeds to colonize in these habitat types. Highly susceptible habitats can be colonized and dominated with exotic plants even in the absence of intense and frequent disturbances. HTG's with a low rating are only slightly susceptible to weed colonization. Habitats within and adjacent to the fires vary from HTG 5 (moderately cool and moist western red cedar) and HTG 6 (moderately cool and wet western red cedar).

Subbasin weed susceptibility models have identified HTG 5 (mixed species stands of western red cedar, grand fir, and Douglas fir, with diverse shrub and forb understories moderately warm and dry Douglas-fir, grand fir, and Ponderosa Pine habitats) and HTG 6 (grand fir and western red cedar with diverse shrub and forb understories) as highly susceptible to invasive weeds.

Weed Expansion Risk

The risk of weed expansion was determined by assessing the following factors; susceptibility of habitat type groups (HTG's), the presence of weed infestations (seed source), the amount of fire and harvest activity (site disturbance), and the density of roads (spread vectors). Weed risk is the indicator of weed expansion in the project area. While it is well known that the risk of weed invasion increases with disturbance and is variable depending on specific habitats. Management activities and variable seasonal climate make exact determinations of weed invasion extremely difficult. In any scenario, the best predictions of weed response would be based upon local parameters of the particular project area. Highly susceptible habitats, existing infestations, and exposed mineral soils along roads greatly increases the risk of invasive weed spread as a result of fire disturbance. The risk of weed expansion has dramatically increased within the Woodrat Fire due to the interaction of the weed expansion factors and poses a serious threat to ecosystem health.

Exotic Plant Inventory Data

Inventory of existing exotic plant populations has been ongoing in the project area for several years. Surveys have been conducted, but generally these have been of limited scope. Where noxious weed populations have been documented, treatments have occurred and the data is accurate and reliable.

A noxious weed assessment was conducted during September 2015 by Forest Service personnel, as part of the Woodrat Fire BAER (Burned Area Emergency Response) Team, which consisted of road, landing, and administrative site review and observation of invasive species currently growing within and adjacent to the fire perimeter. No large, continuous populations of weeds were documented, only small and scattered satellite groups, mostly confined to the road right-of-ways. Three noxious weed species from the Idaho State List, Spotted knapweed, Canada thistle, and Yellow Hawkweed were found growing within

the proposed project area transportation corridor along Forest Service Roads: #101, #5503, #5504, #5502; and three drop points within the Woodrat burn perimeter. Noxious weed control with herbicides was recommended and funded with BAER funding to treat all existing exotic weed populations, along with any new invader weed infestations found within the Woodrat fire perimeter during the summer season of 2016. Implementain is covered under the Lochsa Weed Decisoin Notice. Weed monitoring was also recommended and funded for populations within and adjacent to the fire, to determine if any increase in densities occur, along with post treatment monitoring effectiveness. These BAER weed treatments and monitoring will occur in 2016 whether or not the proposed Woodrat Savage project is implemented.

B. Environmental Impacts

1. Direct and Indirect Effects

Alternative 1 – No Action

Under this alternative, management practices and use within the project area will continue under current management, with no further actions proposed. The risk of noxious weed expansion will continue at current levels; which may be elevated because of fire disturbance, so invasive species are expected with the no action alternative).

Alternative 2 - Proposed Action Alternative

The proposed action has the potential to spread weeds to some degree because of ground disturbing activities associated with timber harvest and temporary road construction. The risk of noxious weed introduction is greater when the activities are within close proximity to existing infestations and a potential seed source. The level of expansion depends directly on how well design criteria are followed. Pioneering weeds such as thistles can be initially expected to occur in any burned areas with bare soil. Accurate data on exactly how fast each weed species would colonize and spread in response to ground disturbing actions is not available as weed models do not distinguish between differing categories of disturbance. It is estimated however, that 1 to 5 percent of the activity acres would experience weed establishment following treatments. With rigorous application of design features, herbicide application and monitoring, the expansion would be closer to 1 percent. With poorly implemented design criteria and little or no herbicide treatment, expansion would be closer to 5 percent. It is recognized that the actual treatment acres or actual amount of ground disturbing activity would likely be less than the gross acres proposed.

Levels of herbicide application would be expected to increase initially under this alternative, as existing weed populations are treated and design criteria for other activities are developed and implemented. Assuming weed management actions are effective, herbicide application levels would taper off over time. Complete eradication of all weeds would not be attainable under either alternative. Weeds such as Spotted knapweed and Canada thistle would be contained and managed locally.

2. Cumulative Effects

Foreseeable future activities in the Woodrat fire area include the Road, Administrative, and Recreation Site Maintenance project, recreational use (ongoing), and road maintenance on all system roads (ongoing).

The no action alternative would continue with some ground disturbing activities common to the action alternative such as the Road, Administrative, and Recreation Site Maintenance project, motorized recreation, and road maintenance. Weeds would continue to invade and spread across the landscape. The cumulative effect of these activities, combined with ongoing human and natural disturbances, create the

existing rate of weed spread. The level of weed colonization currently observed would be expected under the No Action Alternative.

Activities proposed under Alternative 2, when combined with ongoing disturbances associated with recreation use, road maintenance, logging and culvert replacement, have the potential to increase the rate of noxious weed spread more so than the No Action Alternative.

Past and present disturbances associated with vegetation treatments, added to reasonably foreseeable actions, would create a cumulative effect on weed expansion by the combination of distribution of weed seed, ground disturbance, and creation of spread vectors. The degree of the cumulative effect would vary depending upon the number of entrances over time, distribution of disturbance across the analysis area, and acres disturbed. The impacts of cumulative effects incurred by Alternative 2, to the risk of weed expansion, would be eased with the implementation of the design criteria and 2016 BAER funded noxious weed treatments and effectiveness monitoring.

With increased disturbance within and outside of the analysis area, opportunities for the spread of “new invader” noxious weed species increase. As vehicles, equipment, animals, and humans move through the landscape, each has the potential to carry weed seed to new and currently uninfested areas. This spread really has no limit other than the susceptibility of receiving habitats. Though proposed activities from this project will increase overall weed risk for a short time, habitat readily available for weed invasion in the long term should decline due to overall trends in habitat management, increase in landscape restoration/reforestation, advancement of succession, and progressive weed management with herbicides.

C. Regulatory Framework

Analysis and evaluation of noxious weeds in this project is based on direction contained in the Federal Noxious Weed Law (1974) as amended (1975), Executive Order13112 for Invasive Species. Forest Service Policy (FSM 2080.5), Nez Perce National Forest Plan (II-7,II-20.II-26,III-6), Idaho State Noxious Weed Code (title 22, chapter 24), and Forest Service Handbook 2109.14 (Chapters 10, 40, 50). In general, the Forest is directed to implement an effective weed management program with the objectives of preventing the introduction and establishment of noxious weeds; containing and suppressing existing weed infestations; and cooperating with local, state, and other Federal Agencies in the management of noxious weeds. The Woodrat Salvage project is consistent with this direction.

3.4 Botany/Rare Plants

A. Affected Environment

The lower Middle Fork Clearwater River and its tributaries are botanically significant as part of the coastal refugium that is represented in much of the Clearwater Basin, where a wide assemblage of rare plant species occurs. Overall the project area is dominated by moist, mixed conifer forests with potential vegetation being mostly of various western red cedar and warm, moist grand fir habitats. The Woodrat fire in 2015 burned with mixed intensity and reset the baseline existing condition for much of the area. In most cases the current potential habitat has been significantly reduced from the fire because most rare species potentially present prefer late-seral forests. Although some species may have been impacted by the fire, the current open conditions may benefit these species, thus the existing condition has seen improved habitat due to the fire for some species.

Some plant communities in the watershed have been altered through time, by timber harvest, fire exclusion and several other factors that have contributed to the present condition. These past management activities have had variable effects on rare plant species and their habitats, ranging from enhancement to reduction.

Current direction from the U.S. Fish and Wildlife Service indicates federally listed plant species do not occur in Idaho County within the Clearwater River basin. Local knowledge of the project area supports this finding as there is no potential habitat for any of the listed species. For these reasons, none of the Threatened species typically addressed on Forests projects are treated further in this analysis. Whitebark Pine (*Pinus albicaulis*) is a Candidate for federal listing. Lower elevational limits for this species are not reached in this project areas, thus its very unlikely to occur and also will not be further addressed.

There are five Region 1 sensitive plant species documented to occur in or closely adjacent to the proposed units or road corridors that will be involved in the proposed actions. Given the extensive area of suitable habitat for some species of concern, it is anticipated that undocumented populations occur. Presently suitable habitat is difficult to determine as most areas of potential habitat have been rendered unsuitable given the preceding wildfire; however, there may be small inclusions that could be affected that did not burn or did not burn with intensity sufficient to completely compromise the habitat.

Generally the species that require intact, mid to late seral forests likely did not survive the burn, but it is possible that some small areas survived and could be impacted by the proposed activities. Species known to occur or previously occur that fall under this category include clustered lady’s slipper, green bug-on-a-stick, and existing Pacific dogwood in a shrub or small tree form.

Other species that were present before the burn require or withstand disturbance such as that provided by the wildfire. Such populations were likely impacted by the fire, but overall the preferred habitat would have been rejuvenated and increases in these species could occur into the future. In areas potentially affected by the proposed management activities the following species are known to occur: Dasynotus, Constances’ bittercress. While occurrences of Pacific dogwood were likely reduced, the resetting of habitat to an earlier seral, shrub condition is beneficial in the long run for this species (Lichthardt 1999).

1. Geographic Scope

The analysis area for this rare plant assessment includes only the approximately 378 acres of treated National Forest System (NFS) lands within the project area. The area of consideration for cumulative effects includes lands within the entire project area. The rationale for this is that the effects are site specific and will not extend beyond the boundaries, and effects from outside the defined area will likewise not affect the resource within.

2. Analysis Methodology

Resource review included study of aerial photos, burn severity maps, element occurrence records and topographic and forest habitat maps to determine presence and potential habitat for plants of concern. Individual species requirements were reviewed and appropriate habitat criteria identified to determine which species or corresponding habitat would be expected to occur in the project area.

The basic mapping unit used is the Habitat Type Group (HTG). This classification groups similar vegetative habitats into functional categories based upon vegetative type, moisture, and temperature characteristics. For some species, these units are useful to match species criteria to potential habitat. For other species, the Habitat Type Group itself may not be a good indicator of suitable habitat, but may provide the microsites the species requires. Other species may have more specific habitat parameters that enable more precise modeling than the HTG. For this project, the Woodrat fire rendered the potential habitats largely unsuitable for most species at this time.

Locations of the proposed activities were evaluated against the habitat groupings and known occurrences to determine which activities would potentially impact habitats or occurrences. Activities occurring in potential habitat were evaluated based on the criteria important for each species.

Direct and indirect effects are discussed for potential species. Cumulative effects are the overall effects to species from past, present and reasonably foreseeable future projects.

3. Resource Indicators

The effect on occurrences or potentially suitable habitat is the primary indicator used in the analysis.

B. Environmental Impacts

The effects analysis is based on evaluation of proposed activities occurring in potentially suitable habitat and the potential for those activities to directly or indirectly effect populations or habitat characteristics.

1. Direct and Indirect Effects

Alternative 1 – No Action

Since there are no management activities proposed under this alternative, there would be no direct effects on plant species or habitats.

Alternative 2 – Proposed Action

The effects analysis is based on evaluation of the proposed management activities occurring in potentially suitable habitat and the potential for those activities to directly or indirectly effect plant populations or habitat characteristics. For all species, the baseline habitat has been greatly reduced in the short term due to the Woodrat fire in 2015. Recovery and suitability of habitat will vary widely depending upon species biology.

Late seral species such as clustered lady’s-slipper and green-bug-on-a-stick that require older, more developed forests likely have little if any habitat in the proposed units after the fire. There is still a possibility that some small areas did not burn that could hold these species. If present they could be mechanically impacted by the proposed activities, though it would be unlikely because non-burned patches of forest would not be removed. Older, established individuals of Pacific dogwood also fall into this category, but in general the habitat is maintained and for reinitiation purposes this species would also fall under the following group.

All species in the group potentially favored by early seral habitat may be mechanically impacted by the proposed activities of this project; however, despite the physical impacts to some individual plants, the scarification of soil along with any activity that promotes open conditions at occupied sites is beneficial in the long term. The response to disturbance for Dasynotus and Constances' bittercress, has been documented by Crawford (1980) and through field observations by Mousseaux (1995) and others.

Invasive species, anticipated to increase after the fire and ground disturbing activities, provide the primary indirect threat to sensitive plant species. Due to the potential habitats present, the weed influx is unlikely to be heavy or at least not expected to occur long term in the more mesic forests. In such cases thistles would be expected to be the primary invasive species; however, observations of fires and even aged management have shown this increase is often short term and other native increaser species and shrubs generally displace them within a few years. There are potential sensitive plant species that respond well to open conditions that could be suppressed or excluded by such invasive plants for a time. The increase of such weeds is highly likely after the fire, but any ground disturbance from proposed activities may increase opportunity for further establishment of these undesirable plants.

2. Cumulative Effects

Discussion of cumulative effects for rare plants is addressed through the general trend of the suitable habitat required by these species as a result of past, present, and future management actions. Historically such effects on individual species were not measured or noted. However, the past effects on general habitat condition can be qualified and matched to species dependent on a particular habitat. These effects are considered only for the species potentially affected by this project and from the initial habitat transformations in the early 1900s through the proposed and reasonably foreseeable future.

Timeframe: These effects are considered only for the species potentially affected by this project and from the initial habitat transformations in the early 1900s through the proposed and reasonably foreseeable future.

Geographic boundary: The area of consideration for cumulative effects includes lands within the entire 2,505 Woodrat fire project area. The rationale for this is that the effects are site specific to areas treated within the project area and will not extend beyond the boundaries, and effects from outside the defined area will likewise not affect the resource within.

Past, Present and Foreseeable Future Actions: The primary management activities that have influenced rare plant habitat in the project area and potentially may continue to under this project include past and present timber harvest and salvage harvest and road construction. The earliest timber harvest on National Forest lands within the area probably started decades ago and may not have been fully documented. More recently vegetation management projects in the Big Smith, Bridge Creek, and Swan Creek vicinities followed by the Powerline Salvage and Interface Fuels projects further shaped the existing condition of the forest habitats. Trends of harvest activity have significantly declined in these more recent decades with a corresponding decline in effects to plant habitat. In addition, advancements in harvest operations and logging technology have further reduced resource impacts. However, the wildfire of 2015 has reversed this recent trend.

To facilitate logging, a system of roads have been constructed over time within the project area. This construction generally mirrors timber harvests. Many of these roads are no longer used and have become overgrown. Over the years, some roads have received various levels of maintenance and reconstruction. There has also been a shift from permanent roads to less impactive, short term temporary roads used to facilitate management. The general trends to later successional species habitat has likely been one of increase due to fire suppression and decreased timber harvests. However, throughout time the trends of

potential habitat have likely increased and decreased considerably given the interplay of these natural and man-caused disturbances.

Wildfire has occurred throughout history, but the Woodrat fire in 2015 has had the greatest effect, largely establishing the current baseline condition concerning rare plant species and potential habitats. The connected management activities of the salvage harvest could further impact this resource, though to a much lesser extent than the fire. This is because the proposed activities would be very small compared to the fire effects and very little, if any suitable habitat is present at this time due to the fire.

Other activities that have affected plant species of concern would be numerous road decommissioning projects and culvert replacements. These projects would only minimally impact species due to their limited footprint and the restorative practices would increase general habitat conditions into the future.

It can be assumed that there may be weed treatments in the future in response to the anticipated invasive species increase in these highly disturbed ground surfaces. Rare species such as Constance's bittercress and the narrow endemic, Dasynotus may increase in appropriate habitats from the wildfire. Care should be taken when weeds are treated to identify and avoid killing these species.

Alternative 1 – No Action

The no action alternative would produce no additional effects on sensitive plants or potential, thus there would be no cumulative effects.

Alternative 2 –Proposed Action

This alternative adds short-term disturbance to this landscape through salvage harvest activities and roadwork to access harvest units. These activities, along with ongoing activities, would result in very little change to short term habitat trends since the Woodrat fire largely eliminated or reduced most suitable habitats. Recovery of suitable habitat in the treatment areas could vary from a few years to several decades depending upon the individual species ecology and state of the new, post-fire baseline condition. Species that require earlier stage habitats or transitional habitats were likely reduced by the fire, but in the near and longer term future should see an increase in potential habitat from the effects of both the fire and the ground disturbance caused by the salvage operations. Other ongoing activities discussed above would have very little if any cumulative effects on the botanical resource due to very small scope and the overall security of species viability in the lower Middle Fork Clearwater Basin.

3. Sensitive Plant Effects Determinations

Botanists have reviewed this project, used available information on species distributions and habitat (using one or more of the following: topo maps, occurrence records, aerial photos, field reconnaissance, previous surveys, and habitat modeling), and then assessed the potential for impacts for all federal listed and Region 1 sensitive species. If the project was determined to have **no effect** or **no impact**, this determination was based on one or more of these criteria:

- Habitat for the species is not present in the project area.
- Habitat for the species is present but the species does not occur in this area.
- Habitat for the species is present, the species occurs or may occur in the project area, but the project would not have any direct, indirect, or cumulative effects on this species.

Sensitive species with a may impact determination may be affected by the project, but those effects would not cause any concern for overall species viability or move the species toward federal listing (Table 10). This is generally due to the overall secure nature of other occurrences and habitat or the species may also be benefited by the activity.

Table 10. Species determinations of sensitive plants present in Woodrat project area

Plant Species	Determination[a]
Green bug-on-a-stick (*Buxbaumia viridis)*	**MI**
Contance's bittercress (*Cardamine constancei)*	**MI/BI**
Pacific dogwood (*Cornus nuttallii)*	**MI/BI**
Clustered lady's slipper (*Cypripedium fasciculatum)*	**MI**
Dasynotus (*Dasynotus daubenmirei)*	**MI/BI**

[a] Sensitive Species Determination: NI = No Impact; BI = Beneficial Impact; MI = May impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species

C. Regulatory Framework

Threatened and endangered species are designated under the Endangered Species Act. It is the policy of Congress that all Federal departments shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of this purpose (ESA 1531.2b). Four plants listed as Threatened occur in Idaho and are addressed under the ESA. The Threatened plants are Macfarlane's four-o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and Spalding's catchfly (*Silene spaldingii*). According to the current U.S. Fish and Wildlife Service list, no federally listed species occur in Idaho County. Whitebark pine (*Pinus albicaulis*) is listed as a Candidate for federal listing. The affected elevations in the project area do not reach high enough for this species to likely occur in the project area.

Sensitive species are defined in the Forest Service Manual (FSM 2670.5) as "those plant and animal species identified by the Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers, density, or habitat capability that reduce a species/existing distribution." In FSM 2670.22, management direction for sensitive species is in part, to ensure that species do not become threatened or endangered, because of Forest Service actions and to maintain viable populations of all native species. The most recent update to the sensitive species list was recently released and is effective in May 2011. The Forest Service must evaluate impacts to sensitive species through a biological evaluation.

This specialist report contains the necessary determinations section and discussion of effects for sensitive plant species to serve as the Biological Evaluation (BE) for rare plants as directed by the streamlined BE processes outlined in the FSM. This report also discloses and documents the effects to the threatened plant species that potentially occurs on the Clearwater National Forest, thus this report also serves as the Biological Assessment for this project.

D. Forest Plan Consistency

The Clearwater Forest Plan states that no action will be taken that will jeopardize a threatened and/or endangered species. As stated under the regulatory framework, the objective for managing sensitive species is to ensure population viability throughout their range on National Forest lands and to ensure they do not become federally listed as threatened or endangered. The Forest Plan supports this direction but does not set specific standards and guides for sensitive plants. The alternatives are consistent with this direction to the extent that proposed management actions would not adversely affect viability of existing sensitive plant populations or habitat.

3.5 Soils

A. Affected Environment

1. Geographic and Temporal Scope

The Woodrat Fire includes 22 proposed salvage units of varying acreage. Regional soil standards focus on site-scale soil productivity as the key metric to evaluate potential soil disturbance from proposed harvest (Page-Dumroese et al., 2006). Given the premise that soil productivity is site-specific, protocols outlined the Region 1 Approach to Soils NEPA Analysis (USDA 2011) require an evaluation of predicted detrimental soil disturbance (DSD). The specific activity areas assessed for soils concerns are the individual treatment units and associated skid trails, landings, and temporary roads within the project area. The temporal scope for direct and indirect effects is several decades (30–50 years), covering both pre- and post-project activities.

2. Methodology

GIS generated reports and maps, aerial photos, and field reviews were used to analyze effects to the soil resource from the project's proposed activities. Forest Service Activity Tracking System (FACTS) queries were conducted to identify past harvest activities and their time frames. Field data was collected during the BAER assessment for the Woodrat fire. Information collected by the above methods includes burn severity, soil texture, landslide prone, and erosion potential. Existing detrimental soil disturbance (DSD) was determined using LiDar imagery to identify old skid trails and jammer and formulas were used to calculate existing and predicted conditions. Detailed formulas and assumptions used to calculate existing and predicted project soil disturbance is in the project record. The proposed action would cause additional soil disturbance, but most units will remain below thresholds allowed in the Clearwater National Forest Forest Plan with implementation of project design features (Table 13).

Data Assumptions and Limitations

The existing and estimated values for DSD are not absolute. The calculation of the percentage of additional DSD from a given activity is an estimate, since DSD is a combination of such factors as existing ground cover, soil texture, timing of operations, equipment used, skill of the equipment operator, the amount of wood to be removed, and sale administration. The DSD estimates for proposed project activities are based on local monitoring and research results (Archer 2008; Reeves et al. 2011). The DSD estimates of proposed activities also assume that design features will be implemented and that soil recovery occurs over time.

3. Existing Condition

Previous harvest has left legacy impacts, usually identifiable by low mounds and depressions created by machinery. The greatest impact to the soil resources in the Woodrat Salvage project area is the existing road system. The current Forest Plan standards allow for as much as 15% detrimental soil conditions on the activity area without being mitigated (USDA, 1987). Only in Existing conditions of proposed Unit 3 and Unit 7 for the Woodrat Salvage project exceed forest plan standards. These exceedances are due to the fire effects and the small area of the units.

Soil characteristics in the project area vary according to slope gradient, slope aspect, parent material, texture, depth, vegetative cover, and microclimate. Landform areas in the project area are described in Table 11 below.

Table 11. Landforms in the Woodrat Salvage project area

Landtype	Description	% of Project Area
22	Low Relief Rolling Hills	4
24	Moderate Relief Rolling Uplands	11
31	Mountain Slopelands	30
50	Mass Wasted Slopes	43
60	Non-dissected Stream Breaklands	12

The geologic substrate is primarily Border Zone metamorphics (44%), and Mass Wasted sites of micaceous schists (54%). The remainder of the project area is mixed alluvium (2%). Surface soils are generally silty loams. The coarse fragment content in the soils ranges from 20-50%.

The area is overlain by a deep, intact layer of Mazama volcanic ash, ranging from 7 to 26 inches in thickness. Ash material is physically highly favorable to root growth, being very permeable and possessing a high ability to hold moisture and nutrients.

Soil Productivity

Volcanic and metamorphosed basalt with frequent outcrops of gneiss and metasedimentary parent material dominates the bedrock in the Woodrat fire perimeter on National Forest System lands (Enterprise Business, 2015). The geologic character and slopes result in landslide prone deposits. There are also some areas of alluvium near the Middle Fork Clearwater River.

Soils in the project area are generally silt loams, formed from loess and overlain with a moderately deep volcanic ash layer. Past natural and management activities have impacted the productivity of these soils.

Field data was collected in September 2015 during the Burned Area Emergency Response (BAER) assessment for the Woodrat fire. Burned Area Reflectance Classification (BARC) maps were produced and field-verified as part of the BAER soil assessment for the Woodrat fire. Burn severity is defined through differences in surface organics, duff cover, and characteristics of mineral soils (Debano et al, 1998):

- Low severity – low soil heating, litter scorch or consumption with duff largely intact, mineral soil is not changed.
- Moderate severity – litter consumption with moderately charred or consumed duff, no visible alteration of mineral soil surface.
- High severity – complete consumption of duff and mineral soil surface visibly reddish or orange color.

Information collected includes burn severity, soil texture, landslide prone, and hydrophobicity. Burn severity maps were created following the Woodrat fire (Table 12).

Table 12. BARC Burn severity by harvest unit

Unit Number	Acres	Burn Severity % of Unit Area			
		Unburned	Low	Moderate	High
1	10	61	37	2	0
2	15	21	31	25	23
3	0.5	49	51	0	0

Unit Number	Acres	Burn Severity % of Unit Area			
		Unburned	Low	Moderate	High
4	77	37	31	20	12
5	26	28	36	23	13
6	2	3	61	36	0
7	3	81	16	2	1
9	9	23	15	31	31
10	6	0	0	2	98
11	5	2	58	25	15
12	39	39	56	4	1
13	9	90	10	0	0
17	2	71	29	0	0
18	7	99	1	0	0
19	29	44	41	12	3
20	8	83	22	0	0
21	33	92			
22	86	35	47	9	9
23	5	11	25	24	40
24	2	100	0	0	0
25	2	100	0	0	0
28	1	100	0	0	0

Although not specifically addressed by a Forest Plan standard, the presence of above-ground organic matter or woody material is an important component of soil health. The retention of coarse woody material (>3 inches in diameter) is essential to maintaining soil productivity (Graham et al. 1994). Regional direction for organic material recommends following guidelines such as those contained in Graham et al. (1994) if more-specific local guidelines have not been developed. Graham et al. (1994) recommend 7–33 tons/acre of coarse woody material (depending on habitat type, moisture regime, and aspect). This amount should provide sufficient organic material for soil productivity in the long term (100–300 years). Retaining existing coarse wood levels and allowing for recruitment through the natural addition of snags and/or standing trees would facilitate these benefits. Existing down woody material averages about 20 tons/acre in units proposed for project activities. In areas of moderate to high burn severity, litter and duff was completely consumed, however subsequent needle cast from fire-killed trees ameliorated the loss of surface organic matter. In low burn severity areas, litter/duff layers average 2 to 4 centimeters; and in unburned areas, duff/litter layers are approximately 4 to 6 centimeters deep.

Soil Stability

Landtypes are ecological land units categorized by similarities in soils, landforms, geologic substrate, geomorphic processes, and plant associations (Cleland et al. 1997). These land units have been mapped for the entire Clearwater National Forest. Landtypes were identified for the project area to help focus field evaluations and to pinpoint any erosion hazard concerns.

Landslides and mass wasting dominate natural erosion process in the project area. Areas considered highly prone to landslides comprise approximately 43% of the project area. All areas identified as landslide prone have been excluded from proposed activities.

The landtypes in the Woodrat project area are a mix of rolling foothills for the majority of the project area and basalt plateaus for the northern most units. Soils in both landtypes are highly productive ash-cap silt loams overlaying igneous bedrock.

B. Environmental Impacts

The only activities analyzed in detail are the salvage harvest units and associated temporary road construction.

1. Effectiveness of Project Design Features

Past monitoring and research indicate that the effectiveness of the project design features would be moderate to high (McNabb and Froehlich 1983; Graham et al. 1994; Graham et al. 1999; Korb and Covington 2004; Neary et al. 2009; Curran et al. 2005a, b, Wagenbrenner et al. 2006).

Detrimental soil effects from proposed ground-based skidding are estimated at 10% of an activity area. Monitoring conducted across the Clearwater Forest in 2008 showed that past ground based harvesting created an average of 14% DSD (CNF Monitoring Report, 2008). This same monitoring report recommended several design features that could minimize detrimental disturbance. Based on incorporating the recommended design features and requiring rehabilitation of all project created detrimentally disturbed soils, it was determined that ground based effects would be lower than in the past and a 10% estimate was established for use. Design features include limiting activities to drier periods, designating skid trails, and limiting the extent of equipment when excavator piling of slash which are included in the Woodrat Salvage proposed action. DSD is generally limited to main skid trails and landings. Soil disturbance can be minimized by using existing skid trails and/or by designating the location of new skid trails (Froehlich and Adams 1984; Froehlich and McNabb 1983).

Reducing off-road equipment usage on slopes is an effective way to reduce the effects of harvesting trees to soil resources. Research studies analyzing post-fire harvest effects on soil resources show that slopes compacted by roads, equipment, and skid trails contribute the majority of management-caused erosion (Smith et al., 2011; McIver and McNeil, 2006; Stabenow et al., 2006; Johnson and Beschta 1980). Minimizing the use of equipment on slopes will reduce soil displacement, compaction, and erosion. Reusing existing skid trails, reducing the number of passes on skid trails, and limiting the area covered by skid trails will reduce erosion and compaction in areas of tree removal (Froelich et al 1985; Haupt and Kidd 1965).

As the proposed action was modified after scoping and harvest systems were changed from tractor to cable system reduces soil disturbance by 8-20%, logging systems that switch from tractor to skyline reduce disturbance by 20% (Forest Data and Archer 2008).

Saturated soils are more susceptible to compaction than drier soils (Alexander and Poff 1985; Adams and Froehlich 1981; Moehring and Rawls 1970). An early research study suggests that on saturated soils one pass with harvest equipment is machine is equal to four passes when soils are dry (Steinbrenner 1955). Limiting operating periods on saturated soils will reduce the impact of tree removal to both watershed and soil resources.

2. Direct and Indirect Effects

The spatial scope for direct, indirect, and cumulative effects is the individual salvage harvest units and associated temporary roads. The temporal scope for direct and indirect effects is several decades (30–50 years), covering both pre- and post-project activities.

Alternative 1-No Action

This alternative maintains the existing condition resulting from the Woodrat fire. Alternative 1 would not alter the current soil erosion or landslide potential and would retain the same amount of coarse woody material, both standing and down. Existing DSD would persist with very slight natural recovery of surface layers of compacted soils. Over time, large woody debris from dead trees would fall on the ground, increasing organic matter and water-holding capacities on-site.

Under Alternative 1, no temporary road obliteration activities would occur that would directly improve soil conditions by decompacting soils and adding coarse woody material and other organic matter to the existing road surface. Soils in these areas would continue to remain in a less productive condition.

Alternative 2-Proposed Action

Detrimental Soil Disturbance (DSD) to soil resources depend on site conditions (wet/dry, winter/frozen) site characteristics (soil texture, organic matter, slope, previous impacts), the number of machine passes, and the type of equipment used (Page-Dumroese, et al, 2006; Williamson and Neilsen, 2000). Existing DSD includes the effects of compaction, displacement, rutting, severe burning, surface erosion, and loss of surface organic matter.

The vegetation management of the proposed action consists primarily of fire salvage timber harvest. Equipment and techniques used for vegetation management will cause measurable increases in DSD through alteration of soil structure, slope gouging, and modification of soil infiltration capacities. Thinning and harvest conducted with machinery will compact soils, resulting in increased bulk density and associated reduced infiltration and decreased hydraulic conductivity (Cullen et al, 1991). In fine textured soils such as the ash-cap silt loams prevalent in the project area, compaction can impede water infiltration and plant root growth, but the extent and severity of these effects is highly variable and isn't always biologically significant (Page-Dumroese, et al, 2006; Gomez, et al, 2002; Parker et al, 2007; Froehlich, et al, 1985; Snider and Miller, 1985; Powers, et al, 1999). If design features are followed, the detrimental effects of the proposed action will not exceed Forest Plan standards.

Temporary Road Construction

Approximately 0.79 miles of temporary roads would be constructed. An additional 3.4 miles of existing skid roads will be reconditioned for use, and then obliterated. Disturbed width for temporary roads would average 25 feet. Temporary roads will be located on low-gradient, dry ridges or upper slopes and away from water; these roads have no stream crossings.

Temporary roads are considered 100% detrimental disturbance with reduced soil productivity until vegetation, organic matter, and hydrologic function are restored. The greater disturbance associated with temporary road construction is the displacement or mixing of the topsoil, including the Mazama ash cap, during road excavation. Temporary roads would be constructed, used, and decommissioned within the same operating season if possible. Decommissioning immediately following use would promote restoration of soil structure, water infiltration, aeration, root penetrability, and soil biological activity, as observed with road decommissioning techniques used on the Clearwater National Forests.

Salvage Harvest

The Alternative 2 proposes 378 acres of salvage harvest, of which 48 acres would utilize tractor logging and 330 acres would utilize skyline or cable logging. Included in the proposed salvage acreage analysis are those areas proposed for roadside salvage under the Road, Administrative, and Recreation Site Maintenance project where they intersect with the Woodrat project. Activity-generated slash would be dispatched via burning. Slash within the units would be left in place or treated using jackpot piling and burning, after coarse wood material criteria is accounted for.

Landslide and Erosion Hazard Potential

Mass wasting, surface erosion, and subsurface soil erosion potentials were evaluated for the landtypes coinciding within the proposed harvest and burn units. Units 5, 6, 7, and 13 are located on Landtype 50, which is highly unstable, previously mass-wasted sites. The Clearwater Forest Plan states that we must "review silvicultural prescriptions and unit locations on landtype 50 (old slump) to determine whether vegetation removal may contribute to slope instability."

The proposed silvicultural action is to remove the boles of dead, non-transpiring trees that were killed by the fire. Increased soil water content associated with reduced vegetative transpiration is due to the fire, not to any proposed management action. Because removal of roots and root systems will not happen as part of the proposed action, the mechanical reinforcement provided by the roots will remain until the roots decay and become part of the soil organic matter. As the roots are decaying, new trees will be growing, transpiring, and creating new root systems.

Surface soil loss through displacement and mixing with infertile substrata has long-lasting consequences for soil productivity. This loss occurs during temporary road construction, excavation of skid trails and landings, and displacement of soils during ground-based harvest. Irreversible damage to soils could result from the loss of the volcanic ash cap. Although soil recovery could still occur in remaining subsurface soils, the exceptionally high porosity and water-holding properties of the Mazama ash cap would likely be irrecoverable. Even though the ash layer is not a significant source of soil nutrient content, loss of the ash layer reduces water-holding capacity and high-quality tree rooting material. Since volcanic ash is not easily replaced, these effects will be very long lasting. Skid trails and landings would be located and designated to minimize the area of soil disturbance. See the design features for soils in Chapter 2 for a complete list.

The proposed temporary roads would be located on ridgetops and upper slopes, and only short, discontinuous portions would require some form of excavation. All temporary roads would be decommissioned immediately after use, and woody material would be placed on the surface to aid in soil stability and erosion control. Even if small segments in these roads cut into the subsurface material and some erosion does occur, the likelihood of sediment delivery to streams would be minimal to none, because the proposed temporary roads are located on ridgetops far from stream channels.

Effects associated with the Roadside, Administrative, and Recreation Site Maintenance project within the Woodrat units are included in the analysis along with the implementation of required design features . After implementing the proposed action and design features, all units except for Unit 3 will meet Region 1 and Forest Plan standards. The DSD in Unit 3 is due entirely to the fire and will remain unchanged by the proposed cabling. In Units 4, 7, 19, and 20, the obliteration of existing skid trails/jammer roads will slightly improve overall soil conditions within the units' area. Tractor logging, skyline/cable logging, proposed temporary roads, and the swing trail are included in the analysis. After implementing the proposed action and design features, all units will meet Forest Plan standards (Table 13).

Table 13. Effects of Proposed Actions on DSD

Unit	Acres	Existing % DSD	Harvest system	Final % DSD
1	10	6	Skyline	6
2	15	4	Skyline	5
3	0.5	19	Cable	19
4	77	6	Mixed	5

Unit	Acres	Existing % DSD	Harvest system	Final % DSD
5	26	9	Mixed	10
6	2	10	Tractor	15
7	3	20	Cable	13
9	9	8	Skyline	8
10	6	9	Skyline	10
11	5	5	Skyline	5
12	39	2	Mixed	4
13	9	<1	Skyline	1
17	2	<1	Skyline	1
18	7	3	Skyline	3
19	29	8	Mixed	7
20	8	1	Skyline	0
21	33	2	Mixed	3
22	86	3	Skyline	4
23	5	9	Cable	9
24	2	<1	Cable	0
25	2	<1	Cable	0
28	1	<1	Cable	0

Implementation of project design features will limit, and in some cases, reduce DSD. Road and skid trail decommissioning activities include decompaction, recontouring, adding organic matter, and seeding/planting native vegetation. Soil remediation will improve water infiltration, reduce potential for weed invasion, stabilize slopes, and improve tree growth and vegetation establishment (Figure 2). Over the course of the next five years, the DSD level in units should drop in all units.

Figure 2. Ground cover vegetation recovery one year after the Woodrat fire in Unit 6 (August 24, 2016)

3. Cumulative Effects

For the purpose of the project, proposed harvest units and associated temporary roads are considered activity areas. The cumulative effects areas are the same as those discussed in the section addressing direct and indirect effects.

Areas affected by DSD can take several decades to recover, depending on soil texture, depth of compaction, and loss of organic material (Powers et al. 2005; McNabb and Froehlich 1983). This analysis considers all activities from the 1960 to the present, as well as 20–50 years into the future.

Conditions in the project area are a result of both natural processes and human activities. Potential DSD within the analysis area can be attributed to fires or other past, present, or future management activities including timber sales, thinning projects, dispersed recreation sites, and grazing activities. Ongoing and upcoming projects within the activity areas include forest restoration, firewood cutting, invasive weed control, Woodrat Salvage project activities that include decommissioning temporary roads (existing roads and skid trails that will be used), and road maintenance. Recent restoration projects in the analysis area

include BAER treatments and Woodrat fire suppression rehabilitation. Ongoing activities are associated with the Road, Administrative, and Recreation Site Maintenance project. Although there are numerous projects, disturbances, and semi-permanent features within the analysis area, the Woodrat fire is the largest factor that will affect DSD and erosion within the analysis area. For more detailed analysis of erosion and sedimentation risk see the Hydrology specialist report.

Timber Harvest—Harvest methods prior to the 1990s often consisted of hand felling trees, unrestricted tractor skidding and extensive machine piling of slash. Ground-based logging occurred on slopes exceeding 35% and dense networks of excavated roads and skid trails were commonly constructed. These practices frequently resulted in extensive compaction, rutting, and areas of scraped or displaced topsoil and organic matter. Machine piling of slash often removed small organic material, large coarse wood, and topsoil. Forest practices have changed since then. Project design features, Best Management Practices (BMPs), and Forest Plan standards and guidelines have been developed to reduce the extent of detrimental disturbance and maintain soil productivity. Designated skid trails, retention of woody material, operating under dry conditions, and limiting ground-based skidding activities to slopes less than 35% are now common practices. Slash treatment techniques have changed from dozer piling to excavator piling along designated trails, so that less soil displacement and compaction occurs, reducing the detrimental effects to soil.

Since the 1990s, 50% of the proposed action area has been harvested with approximately 233 acres of intermediate and regeneration harvest. The most notable effects from harvest activities were compaction, displacement, and burned areas at landings. In steeper units, impacts were more dispersed. Less steep units had linear disturbance, mostly in the form of compacted skid trails and landings.

Fire - The Woodrat fire burned about 2,505 acres of National Forest System lands. About 352 acres are classified at high burn severity, almost 439 acres as moderate burn severity, 1,305 acres as low burn severity, and the remainder was unburned or unclassified. High and moderate burn severity areas have 50 to 100 percent bare soil exposed, much of it with reduced capacity for water infiltration.

Roads - Roads also influence soil, with long-term to permanent impairment of soil productivity. Although system roads are excluded in the determination of whether projects meet Forest Plan and Regional standards, these roads are a part of the existing condition. Within the project area, approximately 18 miles or 72 acres of system roads occur where topsoil and subsoil have been displaced, mixed, or lost to erosion. This acreage represents about 3% of the project area.

Recreation - Recreation activities that were noted during field surveys include dispersed camping, off-highway vehicles (OHVs) and full-size vehicle use, fuelwood cutting, and hunting. Dispersed camping is generally located on already disturbed sites along system roads. Effects from recreation activities are primarily associated with full-size vehicles and OHVs using system roads during wet conditions, creating wheel ruts that concentrate water flow. Disturbance from recreation activities within harvest and burn units is anticipated to be negligible (less than one percent).

Conditions in the project area are a result of both natural processes and human activities. Potential DSD within the analysis area can be attributed to fires or other past, present, or future management activities including timber sales, thinning projects, dispersed recreation sites, and grazing activities. Ongoing and upcoming projects within the activity areas include forest restoration, firewood cutting, invasive weed control, road decommissioning, and road maintenance. Recent and future restoration projects in the analysis area include BAER treatments and fire suppression rehabilitation for the Woodrat fire as well as activities associated with the Road, Administrative, and Recreation Site Maintenance project. Although there are numerous projects, disturbances, and semi-permanent features within the analysis area, the

Woodrat fire is the largest factor that will affect DSD and erosion within the analysis area. For more detailed analysis of erosion and sedimentation risk see the Hydrology report.

C. Regulatory Framework

The Woodrat Salvage project was designed to meet the standards set forth in the following Federal and State laws and regulations pertaining to the management of soil resources would be applied to the project:

1. National Forest Management Act (1976)

National Forest Management Act of 1976 (NFMA) 16 USC 1604(g)(3)(i): This Act recognizes the "fundamental need to protect and where appropriate, improve the quality of soil, water, and air resources." NFMA directs management of soil and land productivity to avoid "substantial and permanent impairment of the productivity of the land …. And … to maintain or improve soil quality", and to "insure that timber will be harvested from National Forest System lands only where…. soil, slope, or other watershed conditions will not be irreversibly damaged".

2. Idaho Forest Practices Act (1974) and Idaho Forestry Best Management Practices (BMPs):

The Forest Practices Act was passed in 1974 to assure the continuous growing and harvesting of forest trees and to maintain forest soil, air, water, vegetation, wildlife, and aquatic habitat. This act regulates forest practices on all land ownership in Idaho. Forest Practices on National Forest lands must adhere to the rules pertaining to water quality (IDAPA 20.02.01). Idaho Forestry BMPs are included in the Idaho Forest Practices Act.

3. Forest Service Manual 2500 – Watershed and Air Management

Forest Service Manual 2500 Watershed and Air Management has been updated by the Northern Region (R1) Supplement 2500-99-1 (Regional Soil Quality Standards), which updates and clarifies the previous soil quality supplement (FSH 2509.18-94-1, Chapter 2) based on recent research and collective experience. The analysis standards address basic elements for the soil resource: (1) soil productivity (including soil loss, porosity; and organic matter), and (2) soil hydrologic function. These Regional Soil Quality Standards require that detrimental management impacts to the soil resource are less than 15 percent of an activity area and that retention of coarse woody material is appropriate for the habitat type. In areas where more than 15% detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality. Region 1 Soil Quality Standards found in FSM 2500 Supplement 2500-14-1 (USDA 2014) specify that at least 85% of an activity area (defined as a land area affected by a management activity) have soil that is in satisfactory condition. In other words, detrimental impacts (including past management impacts) shall be less than 15% of an activity area. In areas where less than 15% detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 15%.

4. Soil and Water Conservation Practices (SWCPs) Handbook

Soil and Water Conservation Practices (SWCPs) Handbook - FSH 2509.22 provides direction in Region 1 for the implementation of Watershed Conservation Practices or Best Management Practices (BMPs). Best Management Practices are designed to achieve compliance with the Clean Water Act (Sections 208 and 319 Non-point Source Pollution) and State of Idaho Water Quality Standards.

D. Forest Plan Consistency

The Clearwater Forest Plan standards related to soils listed on page II-33 of the Plan would also be met as explained in Table 14. Best Management Practices and project design features used to meet Forest Plan standards would fulfill the objectives related to soils in the project area.

Table 14. Clearwater Forest Plan (1987) standards and compliance

Standard	Compliance Achieved By:
Manage activities on lands with ash caps such that bulk densities on at least 85 percent of the area remain at or below 0.9 gram/cubic centimeters.	Project design and mitigation measures to minimize soil erosion, compaction and displacement.
Design resource management activities to maintain soil productivity and minimize erosion.	Design and mitigation measures to maintain or improve soil productivity and stability were developed throughout this project.
Minimum coordinating requirements on land types with high or very high mass stability or parent material erosion hazard ratings are: •The field verification of the mapped unit and predicted hazard rating. •Review road locations using a team consisting of an engineering geologist, hydrologist, soil scientist, and a silviculturist. Assess concerns and possible mitigation measures to determine if a geotechnical investigation is needed •After the "P" line has been located, stake mitigating road designs, using the original ID team members and road designer.	Field verification for road locations and units with high mass wasting potential will occur prior to project implementation.
Review silvicultural prescriptions and unit locations on landtype 50 (old slump) to determine whether vegetation removal may contribute to slope instability.	Units 5, 6, 7, and 13 are located on Landtype 50, which is highly unstable, previously mass-wasted sites. The proposed silvicultural action is to remove the boles of dead, non-transpiring trees that were killed by the fire. Increased soil water content associated with reduced vegetative transpiration is due to the fire, not to any proposed management action. Because removal of roots and root systems will not happen as part of the proposed action, the mechanical reinforcement provided by the roots will remain until the roots decay and become part of the soil organic matter. As the roots are decaying, new trees will be growing, transpiring, and creating new root systems.

3.6 Hydrology

A. Affected Environment

The Woodrat Salvage project analysis area encompasses most of the Big Smith—Middle Fork Clearwater and Pete King subwatersheds (Table 15). Annual precipitation in the project area ranges from approximately 25” to 30”per year, and up to 40” in the higher elevations. Most precipitation occurs from November to March.

Table 15. Woodrat Salvage areas by subwatershed

Subwatershed, HUC 12	HUC12 (acres)	Fire Area in Subwatershed (acres)	Proposed Salvage units (acres)	Fire Area is % of watersheds	Proposed Salvage % of HUC12 Area
Big Smith—Middle Fork Clearwater	28,890	3,008	327	10.4	1.1
Pete King	17,630	9	0	<1	0

1. Geographic Scope

The Big Smith—Middle Clearwater subwatershed is used for the cumulative effects analysis. The extent of cumulative watershed effects is dependent on the scale of the watershed. The extent of changes in water and sediment yield is inversely proportional to stream order (MacDonald 1989) so detectable changes would not be expected beyond these scales due to the dilution of effects. Direct effects from the Woodrat Salvage project were analyzed at the subwatershed scale and will be increasingly diluted as analysis moves to larger areas, such as watersheds and sub-basins.

Because the majority of the Big Smith—Middle Clearwater subwatershed is mostly on National Forst System (NFS) lands, there will be some minimal water yield effects from State lands that are in the Big Smith—Middle Clearwater subwatershed. Because the analysis included the entire subwatershed, any water yield effects from other activities such as the Road, Administrative, and Recreation Site project and the Idaho Department of Lands Roast Duck salvage are accounted for

Both the existing conditions and the effects analysis area will be at the subwatershed (HUC12) to reflect downstream effects at a measurable scale. The extent of cumulative watershed effects is dependent on the scale of the watershed. The extent of changes in water and sediment yield is inversely proportional to stream order (MacDonald 1989) so detectable changes would not be expected beyond these scales due to the dilution of effects.

2. Methodology

The WEPP:ERMiT, the Water Erosion Prediction Project; Erosion Risk Management Tool, was used to predict sediment yield from the wildfires (Robichaud, 2014). The Disturbed WEPP erosion model (Elliot and Hall, 2010) was used to predict sediment yield from harvest activities. Both estimate the amount and probability of erosion generated within areas of interest. They also predict the amount and probability of sediment which may be delivered to streams. User-input variables include: climate, soil texture, slope, plant community, surface residue cover, and stream buffer slope and width.

The WEPP:Road model (Hall and Anderson, 2016) was used to predict the amount of erosion from temporary road construction activities. It predicts the amount of sediment coming off the road prism and how much of that sediment leaves the buffer and enters streams. User-input variables include: climate,

soil texture, road design, road and fill slope, buffer width and length, and road surface type and level of use. As with most modeling efforts, WEPP models are used to provide estimates for comparison of alternatives, not absolute values.

An Equivalent Clearcut Area (ECA) analysis using treatment and recovery coefficients from Ager and Clifton (2005) was used to determine existing and percent increase in ECA. The rationale of the ECA analysis is that water yield increases when vegetation is removed, whether by natural disturbance such as fire or by human disturbance. ECA analysis is commonly used as an indicator of the extent to which watershed vegetation has been altered by past and proposed management activities. As with most modeling efforts, ECA models are used to provide estimates for comparison of alternatives, not absolutes. Limitations result from the complexity of variables affecting watershed functions and necessary model simplifications such as not accounting for elevation, aspect, or the road systems that effect water routing. The ECA treatment coefficient used for road areas is the same as an unrecovered clearcut even though many roads have overgrown somewhat with vegetation. This will help ensure that ECAs are not underestimated.

The balance of water yield and sediment yield in a watershed influences the water quality/quantity of a stream system. Water yield refers to stream flow quantity and timing and is a function of water, soil, and vegetation interactions. Changes in the amount or distribution of vegetation can affect water yield and ultimately alter stream channel conditions.

3. Existing Condition

Conditions in the project area are a result of both natural processes and human activities. Past human related activities include road building and maintenance, recreation, fire suppression, and previous harvest and thinning activities (1950s to 2014). Past harvest and associated road construction have had the most impact; with some increases in water yield and sediment yield. In 2015, the Woodrat fire burned in portions of the Big Smith—Middle Clearwater, Maggie Creek, Suttler Creek – Middle Fork Clearwater, and the Middle Lolo subwatershed. The Woodrat salvage project activities will occur and be analyzed only in the Big Smith—Middle Clearwater subwatershed; the only project associated action in the Pete King Creek subwatershed is reconstructing the 418 Road, no further subwatershed-level analysis will be done for the Pete King subwatershed.

In 2015, the Woodrat fire burned in portions of the Big Smith—Middle Clearwater and the Middle Lolo subwatershed on National Forest System lands. The Burned Area Emergency Response (BAER) Team conducted a soil erosion risk analysis in order to identify potential risks to resources and to recommend measures that may help prevent damage if needed. A rapid, broad-scale modeled assessment using ERMiT evaluated the erosion risk and prioritized where some intervention may be needed. ERMiT is a web-based application that uses Water Erosion Prediction Project (WEPP) technology to predict erosion in probabilistic terms on burned and recovering forest with and without the application of mitigation treatments. The analyses does not quantify sedimentation or routing to streams; instead it refers to sediment transport-or delivery from one point to another on the landscape. The model assumes limited soil cover; however, it does not reflect the situation often documented in the field such as needle cast and ground cover or shrub regrowth which often occurs within a few months of the fire. This helps to slow overland flow and erosion of precipitation comes slowly and functions as a natural mulch. As a result of this and other analyses, the team determined that natural recovery would easily occur in the fire area which would greatly reduce the erosion potential after one and two years; therefore the team did not recommend any hillslope treatments. Instead they focused recommendations for treatments around forest roads in the fire perimeter where undersized culverts or inadequate existing drainage posed the highest risk for direct sedimentation into streams.

Roads

There are approximately 140 miles of roads in the area covered in the Big Smith—Middle Fork Clearwater subwatershed and 80 miles in the Pete King Creek subwatershed. Watershed road densities range from 2.9 to 3.1 mi/mi^2 (Table 16). A watershed in high (good) condition generally has a road density of < 1 mi/mi^2. Watersheds with 1 to 3 mi/mi^2 are rated as moderate and >3 mi/mi^2 are rated as low (poor) condition (NOAA 1998). Watershed condition ratings based on road densities indicate that Pete King is in moderate condition and Big Smith—Middle Fork Clearwater is in poor condition but improving towards moderate road density levels.

Table 16. Road density by subwatershed

Subwatershed	Total roads (mi)	Road Density (mi/mi^2)
Big Smith—Middle Fork Clearwater	140	3.1
Pete King Creek	80	2.9

Water Yield

Water yield refers to stream flow quantity. Timing of water yield is of concern because stream flow is a key determinant of the energy available for erosion, transport, and deposition of sediment within channels. Increased water yields may be associated with channel scour, bedload movement, or redistribution of sediment in depositional areas.

Equivalent Clearcut Area (ECA) is often used as an indicator of water yield and represents the amount of forest canopy openings in the watershed. Existing roads are considered as permanent openings when estimating ECA.

The ECA analysis using treatment coefficients from Alger and Clifton (2005) and recovery coefficients adjusted for local conditions was used to determine the existing ECA condition. Forest canopy recovery is expected to occur after approximately 30 years based on local site observations. Past harvest, thinning, prescribed underburning, the 2014 Johnson Bar fire, the 2015 Woodrat Fire, and roads were all included in the analysis. Existing ECAs for the subwatersheds analyzed is summarized in Table 17 below. The current ECAs is within the acceptable limit of less than 20%. The ECAs of less than 15% indicate high (good) condition and 15-30% indicates a moderate condition (NOAA, 1998). Both the Big Smith-Middle Clearwater and Pete King subwatersheds are considered to have a good watershed condition rating based on ECA. Because the only project associated action in the Pete King Creek subwatershed is reconstructing the 418 Road, no further subwatershed-level analysis will be done for this subwatershed. Reconstruction of this road would not affect ECA.

Table 17. Equivalent Clearcut Areas (ECA) by subwatershed

Watershed	Pre-fire ECA	Fire ECA %	Existing ECA
Big Smith—Middle Clearwater	9.0	2.4	11.4
Pete King Creek	11.4	1.1	12.5

Sediment Yield

Active erosion of the landscape yields sediment to streams and occurs naturally or as the result of management activities. Because erosion rates are dependent on such variables as slope, soil type, and climate, they can vary widely between drainages within the same watershed and can be variable even within the same drainage. Natural sediment yield will temporarily increase because of the Woodrat fire of 2015 in the effected drainages until ground covering vegetation regrows.

WEPP Watershed Online was used to establish a range of baseline sediment yields in undisturbed landscape conditions in the drainages affected by the Woodrat fire, and to provide a basic range of erosion rates throughout the Big Smith Creek—Middle Fork Clearwater subwatershed. Ranges in post-fire sediment yield predictions are estimates of potential based on model runs from WEPP ERMiT. The baseline condition is unburned mature forest and sediment increases are modeled based on post-fire condition. There will be a slight increase in sediment above undisturbed conditions the first year after the fire (2016). After the second year (2017), or two growing seasons in which ground-covering vegetation can recover, sediment production due to the fires will mostly be absent. The Woodrat fire burned most severely in the Swan Creek drainage, while it had little effect in the Big Smith drainage. Table 18 below illustrates the increase in sediment yield over undisturbed conditions due to the Woodrat fire of 2015.

Table 18. Landscape sediment yield

Subwatershed	Undisturbed conditions (tons/acre)	Post-fire Increase in Sediment Yield	
		2016 (ton/acre)	2017 (ton/acre)
Big Smith—Middle Fork Clearwater	0.47—0.85	0—1.3	0—0.55
Drainage			
Big Smith	0.03—0.31	0.0—3.3	0.0—0.1
Little Smith	0.19—0.65	0.0—2.16	0.0—0.38
Swan	0.05—0.24	0.0—6.46	0.0—0.55

Water Quality

Beneficial uses and water quality criteria and standards are identified in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02). According to the 2012 Integrated Report, none of the streams associated with the project area are water-quality impaired by IDEQ standards despite the sediment levels reported in Big Smith Creek in 1997, and there are no streams on the current 303(d) list (IDEQ 2012 Integrated Report). All stream are fully supporting beneficial uses.

Table 19. Water Quality in the Woodrat Fire project area.

Subwatershed	Stream Name	Boundaries[a] Stream	Stream miles	Pollutant	Conclusions
Big Smith—Middle Fork Clearwater	Big Smith Creek	HW to Clearwater	3.8	na	Fully Supporting Beneficial Uses
	Little Smith Creek	HW to Clearwater	3.0	na	Fully Supporting Beneficial Uses
	Swan Creek	HW to Clearwater	2.0	na	Fully Supporting Beneficial Uses

[a] HW = Headwaters

B. Environmental Impacts

Direct, indirect, and cumulative effects areas are assessed at the Big Smith—Middle Clearwater HUC12; this are the lowest level at which effects would be seen. The analysis includes the effects of the fire, which covers 10% of the watershed (Table 15).

1. Effectiveness of Project Design Features

Protecting RHCA's and avoiding removal of trees in verified landslide prone areas will be highly effective at limiting management-caused sedimentation and loss of soils from the slopes. Riparian vegetative buffers are effective at filtering and capturing sediment from surface sheet flows under normal conditions.

Recontouring skid trails on unburned soils is effective for increasing infiltration capacity and reducing runoff (Foltz et al 2007) and covering rehabilitated trails with at least 50% slash cover will reduce potential surface erosion from trails by up to 90% (Wade et al 2012, Foltz et al 2009). Obliterating temporary roads as soon as possible will eliminate the opportunity for sediment transport to streams. Local monitoring showed no erosion on obliterated temporary roads and no delivery of sediment to RHCAs or streams from temporary roads (USDA Forest Service, 2014, unpublished data).

Retaining coarse woody debris will be effective for ensuring long-term soil productivity (Graham et al 1994; Graham et al 1999). Coarse wood debris will also significantly reduce surface erosion as described in low to moderate intensity rainfalls (Robichaud et al 2008).

2. Direct and Indirect Effects:

Alternative 1 – No Action

Roads

Road densities and conditions will remain the same as described in the Existing Conditions (Table 16

Water Yield

Water yield will increase due to the fires, but will return to pre-fire levels within 3-5 years as vegetation recovers (Ager and Clifton, 2005). None of the ECAs will exceed acceptable levels.

Sediment Yield

Sediment yield will increase due to the fires, but will return to pre-fire levels within 3-5 years as ground-covering vegetation recovers (Ager and Clifton, 2005). Sediment levels described in Table 18 will decline as the landscape recovers from the fire and other projects not associated with fire salvage occur (i.e. BAER culvert replacements).

Alternative 2 -- Proposed Action

Roads

The primary sources of excess sediment are roads and road crossings that are built on high-erosion locations, are poorly designed, or are poorly maintained. Cutslope slumping and bare soils can also be a chronic source of erosion, but sediment delivery to streams is largely dependent on the distance between the road and the stream channel. The greatest risk for sediment input from these roads is where the roadside ditches drain near to or directly into stream channels at road-stream crossings.

Because there are so few miles of proposed temporary roads, they will not meaningfully affect watershed ECA values or road densities. Most temporary roads will be decommissioned the same year of use, severely limiting the duration of effects on the landscape. Minimal erosion will be produced by the temporary roads due to the low road gradients, ridgetop locations, and long distances from stream and riparian areas. Any sediment that may enter the stream channels will not be distinguishable from naturally occurring erosion and will last only after initial construction, depending on precipitation. Drainage features required for temporary road building, which were not accounted for in the model, will further

reduce potential sediment from the amounts (0.04 tones maximum potential of sediment). Temporary roads will be obliterated immediately after use, eliminating further possibility of sediment delivery. Local monitoring showed no delivery of sediment to RHCAs or streams from temporary roads (USDA Forest Service, 2014, unpublished data). Temporary roads will be obliterated after use , eliminating further possibility of sediment delivery. Further discussion concerning road reconstruction and reconditioning for access and haul routes is located in 3.7 Fisheries and Aquatic Fauna section and corresponding Specialist report in the project record.

Water Yield

The effects of vegetative manipulation on water yield are complex, highly variable, and dependent on many independent factors such as elevation, climate, aspect, and especially precipitation. Water yield generally increases after vegetative treatments due to a reduction in transpiration and precipitation interception losses. Removal of vegetation has the potential to increase streamflow in the short term (0-10 years) due to changes in evaporation, precipitation, wind patterns, and soil infiltration and percolation (Fowler et al. 1987, Dunne and Leopold 1978). Removal of forest canopy can also affect snow accumulation and melt processes, often resulting in an increase in snowpack accumulation and melt rates, thereby increasing peak runoff rate and volume. Roads and skid trails typically increase overland flow due to soil compaction and also have water yield effects similar to timber harvesting due to forest canopy removal.

Slash treatment (broadcast burning or piling and burning) is proposed on the same acres as salvage harvest. Fire can have an effect on water quantity by removal of forest canopy and groundcover. The most important factors of the burn are: the severity of the fire on the soil surface, the steepness of the unit, and the soil type. Where measurable hydrologic responses occur following prescribed burning, they are greatest within the first year or two following a burn and then return to pre-fire levels as ground-covering vegetation recovers (Beschta, 1990).

Canopy loss and the resulting decline in precipitation interception is accounted for in the existing condition ECA. Project activities do not measurably increase ECA because it removes only dead or dying, non-transpiring trees. ECA levels will remain at 11.4% after project implementation (Table 17). A range of 20-30% ECA in a watershed is generally recognized as the point where water yield is increased beyond acceptable limits (Gerhardt 2000). Increased water yield from vegetation reductions of less than 20% of the watershed area could not be determined by measurements. At least 20% of a watershed’s canopy cover must be removed by either harvest or fire for a measurable increase in water yield (Bosch and Hewlett, 1982, Stednick, 1996). None of the Woodrat Fire area exceeded 20% or more of the watershed analysis area (Table 15). Removing dead, non-transpiring trees will no measurably increase ECA levels above those caused by the fire as desctibed in the existing condition (Table 17). Canopy loss and the resulting decline in precipitation interception due to the Woodrat fire is accounted for in the existing condition ECA. The proposed treatments would not increase the subwatershed ECA and water yield above acceptable levels.

Alternative 2 would maintain the subwatershed in the high (good) watershed condition (<15%). ECAs would decrease over time as vegetation recovery occurs. By 2026, ECA in the subwatershed would drop to 4% due to shrub and understory regrowth (Hornbeck, et al, 1993).

Cumulative effects for water yield included the Idaho Department of Lands portions of the Roast Duck salvage sale that located in the Big Smith—Middle Clearwater subwatershed. ECA is expected to remain below 15%, a good condition, when considering all harvest activities. This is a result of continuing vegetative recovery from past activities combined with restoration activities on National Forest System lands and the relatively small areas being impacted by the Woodrat Salvage project, By 2041, all ECA

effects because to the Woodrat fire as well as previous harvest activities would decline to zero. No stream channel alteration or erosion is expected from the project based on results from the ECA analysis and implementation of project design features. No cumulative effects are expected from project or IDL activities.

Table 20. Cumulative ECA for project actions, years 2016 and 2026

Subwatershed	Existing ECA 2016	ECA 2026
Big Smith—Middle Fork Clearwater	10.5	4

No effects that are related to water yield would occur beyond the cumulative effects analysis area. No stream channel alteration or erosion is expected from the Woodrat Salvage project based on results from the ECA analysis and implementation of project design features. No detrimental cumulative watershed effects due to proposed actions are expected.

Sediment Yield

The indicator used for sediment delivery from vegetation management is amount of sediment delivered to streams. The Disturbed WEPP model was used to estimate the amount of erosion and potential sediment produced from the project activities on both Forest Service and lands managed by the Idaho Department of Lands in the Big Smith, Little Smith, and Swan Creek drainages where the proposed actions will occur (Table 21).

Sediment yields can be considerably variable from year to year depending on differing weather conditions and availability of soil particles for detachment and transport. Vegetative loss from wildfire can increase sediment loads in stream channels that are within and adjacent to the fire (0 to 2 years), but sediment delivery to streams from harvest units tends to be low or non-existent. The use of mechanized equipment on skid trails, landings, and temporary roads causes soil compaction, which can limit infiltration and increase surface runoff and erosion. However, current design features and Best Management Practices are highly effective in reducing the effects of harvesting on surface erosion (Litschert and MacDonald, 2009), and minimizing sediment delivery to streams is controlled by providing riparian buffers (Megahan and King, 2004). Surface erosion from skid trails and temporary roads can be low if they are properly located, designed, and decommissioned immediately after use if possible. Woody material left on the landscape, and PACFISH buffers would capture and store most of the erosional material. As ground covering vegetation is re-established, hillslope erosion would continue to diminish.

Sediment would temporarily increase over natural ratesentirely as a result of theWoodrat fire. The proposed actions would not increase sediment yield in the Big Smith—Middle Fork Clearwater. Modeled estimates indicate no potential for measurable sediment delivery to streams from these activities (Table 21). This is a result of a very low percentage of area affected by the proposed actions, the extensive use of skyline operations, locating temporary roads on ridgetops, and other project design features that will limit detrimental effects to watershed resources.

Table 21. Sediment yield from proposed actions by drainage

Drainage	Harvest acres	Sediment Yield (tons/acre)	
		Existing condition	From Proposed Harvest Actions
Big Smith	29	0.0—0.33	0.0
Little Smith	211	0.0—2.16	0.0
Swan	33	0.0—6.46	0.0

Based on the implementation of project design features and adherence to Idaho Best Management Practices, the Woodrat Salvage project harvest activities would produce no measurable increase in any pollutants and therefore would have no impacts to Big Smith—Middle Clearwater water quality and beneficial uses.

3. Cumulative Effects

Geographic Boundary: The Big Smith—Middle Clearwater subwatershed is used for the cumulative effects analysis. The extent of cumulative watershed effects is dependent on the scale of the watershed. The extent of changes in water and sediment yield is inversely proportional to stream order (MacDonald 1989) so detectable changes would not be expected beyond these scales due to the dilution of effects. Direct and indirect effects from the Woodrat Salvage project were analyzed at the subwatershed scale and will be increasingly diluted as analysis moves to larger areas, such as watersheds and sub-basins.

The majority of the subwatershed is on National Forest System lands, but there will be some minimal water yield effects from lands managed by the Idaho Department of Lands. Activities assessed for cumulative effects included the Road, Administration, Recreation Site Maintenance project and the Idaho Department of Lands Roast Duck salvage project.

Time Frame: Implementation for the Woodrat Salvage project area is scheduled to begin in 2017. The temporal frame for watershed cumulative effects is from the year 1990 to 2042. The beginning of this time frame is based on harvest activities in the project area occurring 25 years previous to the fire, the estimated time necessary for ECA levels to recover completely and no longer be detectable. The time frame continues to year 2042, approximately 25 years after project implementation and the amount of time estimated for complete ECA recovery.

Area of soils disturbance resulting from past road decommissioning and storage are expected to be stabilized and revegetated within three to five years.

Past harvest and associated road building activities have occurred throughout much of the subwatershed. Timber sales conducted between the early 1950’s and late 1980’s resulted in widespread and persistent detrimental impacts to watershed hydrology due to past management activities that include new road construction, little to no tree retention in regeneration harvest areas, and riparian harvest (including the clearcutting of headwater tributaries). These past activities caused increased sedimentation; reduced woody material recruitment to streams; increased water temperature due to harvest in riparian areas; and increased water yields due to large clearcut areas. For the most part, adverse watershed effects from historical harvest activities have diminished with natural recovery (e.g. vegetative growth) in previously disturbed areas.

Forest management practices have changed extensively since then. Project design features, Best Management Practices on both Forest Service and non-Forest Service lands, and Forest Plan guidelines have been developed in order to reduce ground disturbing activities and associated detrimental effects. Operating under dry conditions, implementing PACFISH buffers, retaining trees in regeneration harvest units, and limiting ground-based yarding to slopes less than 35 percent are now common practices.

Based on analysis that predicted no measurable effects beyond the existing conditions and also on the implementation of project design features and adherence to Idaho Best Management Practices, the Woodrat Salvage project would produce no measurable increase in water yield, in sediment yield from temporary roads, and in landscape sediment. Therefore, the activities analyzed in this report would have no impacts to the water quality and beneficial uses for the Big Smith—Middle Fork Clearwater

subwatershed. Because direct and indirect effects are predicted to be minimal or non-existent, there would be no measurable cumulative effects to water and sediment yield.

C. Regulatory Framework

The proposed action has been reviewed and is determined to be in compliance with the management framework applicable to this resource below. The laws, regulations, policies and Forest Plan direction applicable to this project and this resource are as follows:

1.Clean Water Act

The Clean Water Act stipulates that states are to adopt water quality standards. Included in these standards are provisions for identifying beneficial uses, establishing the status of beneficial uses, setting water quality criteria, and establishing BMPs to control nonpoint sources of pollution.

Section 313 of the Clean Water Act requires Federal agencies to comply with all Federal, state, interstate and local requirements, administrative authority, and process and sanctions with respect to control and abatement of water pollution. Executive Order 12088 also requires the Forest Service to meet the requirements of this Act. Therefore, all state and Federal laws and regulations applicable to water quality would be applied. These include 36 CFR 219.27, the Clean Water Act, the Clearwater National Forest Plan, terms and conditions of the Forest Plan Lawsuit Settlement (1993), Idaho state BMPs and Stream Alteration procedures.

2. Executive Orders 11988 and 11990

These orders provide for protection and management of floodplains and wetlands. There are no floodplains for wetlands in the Woodrat Salvage project area.

3. Idaho Water Quality standards

EPA regulations require each state to adopt an anti-degradation policy as one component of its water quality standards. The objective of the Idaho Anti-degradation Policy is, at a minimum, to maintain and protect existing instream water uses and the level of water quality necessary to protect those uses. Beneficial uses and water quality criteria and standards are identified in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02, IDAPA 37.03.02).

4. Idaho Forest Practices Act

This legislation regulates forest practices on all land ownership in Idaho. Forest practices on National Forest Sysytem lands must adhere to the rules pertaining to water quality (IDAPA 20.02.01). These rules are also incorporated as BMPs in the Idaho Water Quality Standards.

5. Idaho Stream Channel Protection Act

This legislation regulates stream channel alterations between mean high water marks on perennial streams in Idaho. Instream activities on NFS lands must adhere to the rules pertaining to the Idaho Stream Channel Protection Act (IDAPA 37.03.07). These rules are also incorporated as BMPs in the Idaho Water Quality Standards.

D. Forest Plan Consistency

1. Clearwater Forest Plan

Forest Plan water quality standards are found in the Clearwater National Forest Plan on pages II-27 through II-29 (USDA 1987). Appendix K of the Clearwater Forest Plan lists Fish/Water Quality standards

for several streams in the project area. Forest Plan standards for water apply to this project and would be met as displayed in Table 22.

The Clearwater Forest Plan was amended in 1995 by PACFISH/INFISH with management direction for inland native fish on Federal lands, including the North Fork Clearwater River Basin. The PACFISH/INFISH Amendment defined Riparian Habitat Conservation Areas (RHCA), set riparian management objectives (RMOs) and set guidelines for management activities. Default RHCAs would be used for project implementation. PACFISH/INFISH standards indicate that new projects are not to adversely affect RMOs (pool frequency, water temperature, woody material, bank stability, lower bank angle and width/depth ratio.)

Table 22. Compliance with Clearwater National Forest Plan Water Standards

Standard	Compliance Achieved By
Secure favorable condition of flow by maintaining the integrity and equilibrium of all stream systems.	No measurable increase in peak flow due to proposed actions. Channel processes would not be altered.
Manage water quality and stream conditions to assure management activities do not cause permanent or long-term damage to beneficial uses.	Management activities would not degrade water quality or stream conditions due to BMP implementation. Beneficial uses would be maintained.
Apply BMPs to project activities to ensure water quality standards are met or exceeded.	BMPs listed in the EA design criteria will be implemented.
Manage all waters under a basic standard. In addition to standard d., manage all watershed systems considered important for the fishery resource based on 1) No effect, 2) High Fishable, 3) Moderate Fishable, 4) Low Fishable, and 5) Minimum Viable.	Project is managed to meet all appropriate standards.
Design, schedule and implement management activities that would: 1) maintain water quality and stream conditions that are not likely to cause sustained damage to the biological potential of the fish habitat, 2) not reduce fish habitat productivity in the short-term below the assigned standard, 3) maintain water quality in a condition that is not likely to inhibit recovery of the fish habitat, and 4) require a watershed cumulative effects analysis	Project design features listed in Chapter 2, maintain water quality, channel conditions, and fish habitat. A cumulative watershed effects analysis was completed for this project.
Conduct nonpoint source activities in accordance with applicable BMPs as referenced in *Idaho Water Quality Standards and Wastewater Treatment Requirements* and *Soil and Water Conservation Handbook.*	BMPs listed in the EA design criteria will be implemented.

2. Forest Plan Lawsuit Stipulation of Dismissal

On September 13, 1993, the Forest Service signed a settlement with the Sierra Club and the Wilderness Society representing nine co-plaintiffs and agreed to proceed only with projects, which would result in “no measurable increase” in sediment production in drainages currently not meeting Forest Plan standards. To support and improve water quality in these watersheds, this project has been designed to result in no measurable increase in sediment as described in the 1993 Forest Plan Lawsuit Settlement Agreement. For this project, the harvest activities are designed to meet the appropriate standards/criteria.

Each relevant watershed was evaluated to determine if it meets Forest Plan standards for sediment and/or desired conditions. The project proposed actions are then evaluated to determine if they result in “no measurable increase” in sediment. Project activities have been designed to produce no measureable increase in stream sediment in order to protect water quality.

3.7 Fisheries and Aquatic Fauna

A. Affected Environment

1. Geographic Scope

The information provided in this report includes only those streams located within the 6,200 acre project area which includes all of Big and Little Smith, Swan Creek and a 450 acre portion of the Middle Fork Clearwater Face area. These areas were selected as the proposed actions have the potential to affect fish or their habitats in them. Any larger area would dilute the potential effects that the project may cause.

The geographic boundary for cumulative effects is the Swan, Little Smith, Big Smith, Middle Fork Clearwater River face drainages. The effects of any actions would be diluted at an area larger than this.

2. Analysis Methodology

A review of past data and forest documents was conducted to assess conditions in project area streams. This includes the Interface Fuels Environmental Assessment (2009) and Clearwater National Forest contracted stream habitat and fish surveys conducted on Big and Little Smith Creeks and Swan Creek (Isabella Wildlife Works, 1997). These reports document conditions for aquatic and riparian habitat, and fish densities by species and location. Field visits of the burned area were conducted during and after the fire in 2015. General observations of the area and streams was also made prior to the fire during field visits to the area in 2008. GIS was used to obtain information on past projects, unit locations and acreages, and other spatial information. The Burned Area Reconnaissance Classification (BARC) map was used to assess the general severity of the fire (based on the effect to the soil resource) and how, in general, the fire burned. Cobble embeddedness surveys were also conducted in Big and Little Smith Creeks in July of 2015 to determine compliance with the Forest Plan Appendix K water quality objectives.

The issue indicator used for this assessment is the number of stream crossings where sediment could be potentially delivered to streams from roads as it is the only management-related factor that could negatively affect aquatic species and their habitats. Stream temperatures, large woody material, bank stability and other instream factors were not considered as these would be maintained through PACFISH buffer retention. No harvest would occur within PACFISH buffers, including verified landslide prone areas.

Clearwater Forest Plan direction and all Federal and State laws and regulations applicable to watershed and fisheries resources would be applied to the Woodrat Salvage project, including the Clean Water Act, Endangered Species Act, Idaho State Water Quality Standards, and the Idaho Forest Practices Act.

3. Existing Condition

Aquatic Habitat and Species

Streams within the project area are typically steep (>10%), have many natural upstream migration barriers (bedrock steps), and are small enough in size that the amount of available fish habitat is limited. There are a total of 6 miles of fish bearing streams in Big Smith and Little Smith Creeks and the mainstem Middle Fork Clearwater River. There are 41 miles of non-fish bearing streams in Little Smith, Big Smith, and Swan Creeks.

A limited amount of stream habitat information is available for this area. Stream habitat surveys were conducted on Swan, Little Smith, and Big Smith Creeks in 1997 by Isabella Wildlife Works.

The survey data for all streams is dated (1997) but is still assumed to be adequate in describing baseline environmental conditions. This is due to the very low amount of timber harvest activities since the data was collected and the associated BMPs and design features that were implemented in order to minimize effects to streams. The following projects have occurred in the Middle Fork Clearwater portion of the project area since the data was collected: Big Smith (1997), Bridge Creek Salvage (1998), Powerline Salvage (1998), Swan Creek Prescribed Fire Project (2004), Interface Fuels 2 Fuel Reduction Project (2010), Smith Creek Road Decommissioning (2011) and Big Smith and Little Smith Culvert Replacements (2004 and 2014). All of the harvest projects retained PACFISH RHCAs and the road decommissioning and culvert replacements were designed to reduce management related sediment to streams. The effects of those management activities on project area streams are expected to be negligible based on local monitoring and therefore are not expected to have negatively changed those components that were surveyed.

Little Smith Creek

The 1997 surveys showed that Little Smith Creek is a steep channel. It has moderate to high gradients (average of 12%) and riffles comprising 55% of the habitats. The stream is dominated by gravel substrates (56%) which are suitable for spawning and summer rearing habitat for fish and other aquatic species. However, cobble embeddedness levels (measured near the mouth of the stream in 2015) was high at 60% which limits both spawning and rearing habitat potential for fish. The desired condition is 30% or less. The high levels are likely associated with continued road issues in the upper portion of the drainage where cross drains have not been installed to hydrologically disconnect roads, and their associated sediment, from streams. Less than 1% of the area was identified as spawning habitat and only 10% of the lower reach was identified as winter rearing habitat. The stream was rated as having excellent bank stability (93%), excellent pool quality, and fair instream and bank cover. Riparian areas are dominated by cedar, Douglas-fir, grand fir, and mixed shrubs. Trees are mostly mature with average sizes ranging from 15” to 20” in diameter. Streams in proposed treatment units are well shaded by both the vegetation and surrounding topography even after the Woodrat fire.

Little Smith Creek has 1.1 miles of fish bearing stream and 11 miles of non-fish bearing streams. Fish surveys indicated that very low densities of westslope cutthroat trout, a Regional Foresters Sensitive species, occur in this stream. There are no fish bearing streams within the fire perimeter, however they do occur downstream about 0.2 miles from it. The lack of quality spawning habitat and small stream size is likely the cause. There are no ESA listed species in this stream.

The Forest Plan standard for Little Smith Creek is “high fishable” for cutthroat trout. While the stream meets its sediment yield standard, it does not meet desired conditions for cobble embeddedness. The project must therefore be designed to produce no measurable sediment to the stream as required by the Clearwater Forest Lawsuit Settlement Agreement (1993).

PACFISH Riparian Management Objectives (RMOs) were met for bank stability, large woody debris, and width to depth ratio. Riparian Management Objectives were not met for pool frequency or stream temperature.

There are 24 road/stream crossings within Little Smith Creek of which 11 are on roads that could be used for hauling. A total of 6 occur on native surfaced (dirt) roads and 5 are on a graveled road. These crossings have the potential to add sediment to streams during log haul operations. Reconstruction of the native surfaced roads is proposed.

About 150 acres of the Little Smith Creek drainage is within lands managed by the Idaho Department of Lands and the remaining 1,440 acres is managed by the Forest Service. The Woodrat fire affected about 900 acres (57%) of the drainage with 125 acres burned with high severity mostly on ridgetops, 100 acres

were moderate and occurred mostly on midslope and ridgetop areas, and 675 acres burned with low severity. Only about 0.3 miles of stream experienced high severity burn, 0.4 miles were moderate and 3.2 miles were low severity. The remaining 8.2 miles were not burned. Streams adjacent to the proposed treatment units experienced low severity fire or were unburned and remain well shaded by the vegetation even after the Woodrat fire. In areas where high and moderate severity fire occurred, fire killed trees have fallen and increased instream and riparian downed wood levels.

The project would salvage a total of 185 acres (11%) and construct 1.6 miles of temporary road in the Little Smith drainage. Roughly 1 mile of swing trail on ridgetops would also be used. A total of 2.5 miles of road reconstruction and 2.5 miles of reconditioning would occur in this drainage.

Big Smith Creek

The 1997 surveys showed that Big Smith Creek has a moderate gradient (4%) in the lowest reach and becomes a steep channel (18% and higher) about midway up the stream. It contains equal numbers of pool and riffle habitats. The stream is dominated by gravel (38%) and sand (22%) substrates. Cobble embeddedness levels (measured near the mouth in 2015) were high at 62% which limits both spawning and rearing habitat for fish. The high levels are likely associated with continued road issues in the upper portion of the drainage where cross drains, and their associated sediment, have not been installed to hydrologically disconnect roads from streams. In addition, road decommissioning in the last few years may have contributed some sediment to these streams. No spawning habitat was identified in the 1997 surveys. Only 2% of the area was identified as winter rearing habitat due to a lack of pool depth. The stream is rated as having excellent bank stability (93%), good pool quality, fair instream cover, and poor bank cover. Riparian areas are dominated by mixed shrub species with subdominant component of mixed conifers. Sixty percent of the trees are mature (>15” diameter). Streams were well shaded by both the existing vegetation and by the surrounding topography.

Big Smith Creek has 2.5 miles of fish bearing stream and 21 miles of non-fish bearing streams. Fish surveys indicated that low densities of inland redband and westslope cutthroat trout occur in this stream. This is due to the lack of quality spawning and winter rearing habitat. In addition there is a culvert under US Highway 12 at the mouth of the creek that is a barrier to upstream fish migration. All culverts associated with Highway 12 are under the control of the Idaho Department of Department. While fish may leave the stream and enter the Middle Fork Clearwater River, they cannot return to Big Smith Creek. There are no ESA listed species in this stream as a result. The nearest fish bearing stream is 0.5 miles from the burned area.

The Forest Plan standard for Big Smith Creek is “high fishable” for cutthroat trout. While the stream meets its sediment yield standard, it does not meet desired conditions for cobble embeddedness. The project must therefore be designed to produce no measurable sediment to the stream as required by the Clearwater Forest Lawsuit Settlement Agreement (1993).

PACFISH Riparian Management Objectives (RMOs) were met for bank stability, large woody debris, width to depth ratio, and fish rearing temperatures. They were not met for pool frequency or fish spawning temperature.

There are 39 road/stream crossings within Big Smith Creek of which 9 are on roads that could be used for hauling. A total of 3 occur on native surfaced (dirt) roads and 6 are on a graveled road. These crossings have the potential to add sediment to streams during log haul operations. Reconditioning of the native surfaced road is proposed. An additional 8 crossings are on one road that would be reconstructed to improve watershed conditions but not used for haul.

The Woodrat fire affected only 150 acres (4.7%) of the drainage with most occurring in the low severity burn category. Roughly 10 acres burned in each of the moderate and high severity categories. Only about 0.3 miles of stream were burned in low to moderate severity. Streams adjacent to the proposed treatment units remain well shaded by the vegetation even after the Woodrat fire.

The project would salvage a total of 55 acres (2%) and construct 1.1 miles of temporary road in the Big Smith drainage. Roughly 0.6 miles of swing trail on ridgetops would also be used. A total of 7.9 miles of road reconstruction and 3.3 miles of reconditioning would occur in this drainage.

Swan Creek

Swan Creek is dominated by steep and narrow channels (Rosgen type A) and has an average gradient of 15%. The substrate is dominated by sand and bedrock. The stream is rated as having excellent bank stability, good pool quality, and fair instream and bank cover. Cobble embeddedness levels average 45% which exceeds Forest Plan desired conditions of 30%. The high levels are likely associated with roads in portions of the drainage where cross drains, and their associated sediment, have not been installed to hydrologically disconnect roads from streams. Riparian areas are currently dominated by western redcedar, Douglas-fir, grand fir, and mixed shrub species. Trees are well distributed in size ranging from 5” to 20” in diameter. Streams in proposed treatment units are well shaded by the vegetation.

There are 6 miles of non-fish bearing stream in Swan Creek with only the first 250 feet near the mouth being considered as fish-bearing. There are a number of natural bedrock barriers that prevent fish from accessing or using this stream. The culvert under US Highway 12 is also an upstream migration barrier.

The Forest Plan standard for Swan Creek is “Basic” due to a lack of fish in the drainage. The project must be designed to maintain the stability and function of the stream and must be fully recoverable in time.

PACFISH Riparian Management Objectives (RMOs) were met for bank stability, large woody debris and width to depth ratio. They were not met for pool frequency or stream temperature.

There are 15 road/stream crossings within Swan Creek of which 9 are on roads to be used for hauling. A total of 5 occur on native surfaced (dirt) roads and 4 are on graveled roads. These crossings have the potential to add sediment to streams during log haul operations. All haul roads in Swan Creek are proposed for reconstruction.

About 350 acres of the Swan Creek drainage is managed by the Idaho Dept. of Land lands and the remaining 640 acres is managed by the Forest Service. The Woodrat Fire affected about 615 acres (56%) of the drainage with 120 acres in high severity burn, 95 acres in moderate and 400 acres in low. Roughly 70% of the high and moderate burn severity occurred on state lands. About 0.3 miles of stream burned with high severity on private lands and 0.1 burned on Forest lands. Roughly 0.2 miles burned with moderate and 1.2 miles burned with low severity. Streams within the proposed treatment units remain well shaded by the vegetation even after the Woodrat fire. In areas where high and moderate severity fire occurred, fire killed trees have fallen and increased instream and riparian downed wood levels.

The project would salvage a total of 53 acres (5%) and construct 0.5 miles of temporary road in the Swan Creek drainage. Roughly 0.9 miles of swing trail on ridgetops would also be used. A total of 6.4 miles of road reconstruction and 1.8 miles of reconditioning would occur in this drainage.

Middle Fork Clearwater Face

There are 3 miles of small non-fish bearing streams that are tributary to the Middle Fork Clearwater River. These streams are small (<6”-24”) and all have very steep channel gradients, and low water volumes and depths. Substrates are dominated by cobble and small gravel.

There are 1.5 miles of the mainstem Middle Fork Clearwater River within the project area. The entire length is designated critical habitat for ESA listed bull trout and steelhead trout and is used as feeding and rearing habitat and provides a migratory corridor for fish moving upstream to spawning areas. The mainstem is also designated critical habitat for fall chinook salmon and Essential Fish Habitat (EFH) for spring chinook and coho salmon. Fall chinook are also known to spawn within the 22 mile length of the Middle Fork. Westslope cutthroat trout are also present. It is not known if Pacific lamprey or western pearlshell mussels occur in the Middle Fork; however lamprey are likely to use it as a migratory corridor to access upstream spawning habitats.

The Forest Plan standard for the Middle Fork Clearwater face drainages is “Basic”. The project must be designed to maintain the stability and function of the stream and must be fully recoverable in time. The standard for the mainstem of the Middle Fork Clearwater River is no effect for steelhead.

There are 16 road/stream crossings within Middle Fork Clearwater Face drainage of which 12 are on roads to be used for hauling. Eight occur on native surfaced (dirt) roads and 4 are on a graveled road. These crossings have the potential to add sediment to streams during log haul operations. The roads used for haul are proposed for reconstruction or reconditioning.

The Woodrat fire affected about 170 acres of this 450 acre portion of the Middle Fork Clearwater River area. About 40 acres burned with high severity, 20 acres with moderate, and 45 acres with low severity. About 0.1 miles of stream burned with high severity, to 0.2 miles burned with moderate and 0.7 miles were burned in low severity. Streams adjacent to proposed treatment units remain well shaded by the vegetation even after the Woodrat fire.

The project would salvage a total of 84 acres and construct 0.5 miles of temporary road in the assessed portion of the Middle Fork Clearwater Face drainage. Roughly 0.3 miles of swing trail on ridgetops would also be used. A total of 3 miles of road reconditioning and 3 miles of reconstruction would occur in this drainage.

Upper Pete King

Roughly 80 acres of the 4,800 acre Upper Pete King drainage experienced low severity fire. These acres are not associated with the Woodrat Fire. This drainage is only included in the analysis due to the 4.1 miles of proposed road reconstruction on Forest Road 418 that occurs within the drainage. The road would be used for log hauling activities. No harvest is proposed. There are 10 road/stream crossings on this road with 7 on the graveled portion and 3 on the native surfaced portion of the road. There is potential for sediment delivery to the streams near the crossings during log haul operations. One crossing occurs on a fish bearing stream, will be replaced in 2016, and will include cross drain culvert installations near the pipe.

There are 6 miles of fish bearing and 35 miles of non-fish bearing streams in this area. Westslope cutthroat trout are known to occur in the stream adjacent to Road 418. Designated critical habitat for steelhead occurs 1 mile downstream from proposed road reconstruction activities.

B. Environmental Impacts

This section describes the direct, indirect, and cumulative effects of the project on threatened, endangered, and sensitive species and their habitats.

1. Effectiveness of Project Design Features

PACFISH Buffers

Riparian Habitat Conservation Areas (RHCAs) would be implemented in the project area (300’ on fish-bearing, 150’ on non-fish bearing perennial, and 100’ on intermittent streams). There are a minimum of 1,100 acres within the RHCAs.

All management activities since 1995 implemented PACFISH RHCAs in order to eliminate or reduce impacts to riparian areas and streams. With no new large disturbance in RHCAs, there should be no negative changes to the measured habitat parameters as a result of more recent management activities. Various field reviews and monitoring activities support the conclusion that the habitat conditions have improved since the writing of the Forest Plan in 1987. Much of the recovery is likely a result of less land disturbing activities, better application of BMPs, RHCA retention, and better road design (CNF, 2008; pg. 91). Preliminary monitoring results from the PACFISH/INFISH Biological Opinion (PIBO) monitoring across the Upper Columbia River Basin overall indicate an improving trend in residual pool depth, wood frequency, bank stability, and undercut banks at managed and unmanaged sites between 2001 and 2012 (USDA, 2012). A decreasing trend in pool percent and median substrate size were observed in both managed and unmanaged sites. There was an increasing trend in percent fines at unmanaged sites and no significant trend at managed sites.

Recent monitoring indicates that RHCA implementation adjacent to timber harvest units has prevented harvest-related sediment from reaching streams. Post-timber harvest monitoring in 2014 was conducted on the Lochsa District (USFS, unpublished data, 2014). A total of 23 miles of RHCA perimeters were walked after timber harvest and burning activities were completed. There was no evidence of sediment moving from the treated area into the RHCAs or streams in any of the harvest units. This was due to the retention of the mostly intact duff layer and ground surface woody material within the unit itself. If overland sediment was to reach the buffer, it would not reach streams due to the retention of all vegetation and downed woody material within the RHCA. This has been consistently observed during post-harvest walk-through surveys (K. Smith personal observations of post-harvest/burning units 2001-2014). No-harvest buffers of 100’- 150’ adjacent to timber sales have also been shown to be adequate in protecting the riparian vegetation necessary to maintain natural stream temperature levels (Ott et al 2003; Lee et al 2004; Sridhar 2004; FEMAT 1993). PACFISH buffers greatly exceed these guides on fish bearing streams and meet the guides on non-fish bearing and intermittent streams.

Road Work

Road reconditioning or reconstruction would be used to improve road drainage and reduce potential erosion on road surfaces. Dust abatement would be used on main haul routes to limit sediment input to road ditches and streams. These design features have been shown to be effecting in reducing the amount of sediment introduced to streams from roads.

Road reconditioning includes brushing, blading, and spot surfacing roads with gravel where needed. Foltz (2008) showed that the use of high quality aggregate (gravel) produced 3 to 17 times less sediment than marginal quality aggregate. The basalt aggregate used for project roads is composed of basalt which is considered high quality as it does not easily break down into smaller, dust forming particles. Placing gravel on roads has been shown to reduce sediment runoff from the road surface (Meehan 1991). Burroughs and King (1985) conducted a study in Idaho using simulated rainfall to generate runoff and sediment yield from forest roads, ditchlines, and fill slopes. Results from the study showed that graveled surfaces produced only 25% as much reduced sediment yield when compared to no surfacing. They also found that where dense grass cover was present on the fill slopes of the road, sediment yield was reduced

by 99%. The cut and fill slopes of roads within the analysis area are densely vegetated with grasses, shrubs, and trees. The majority of ditchlines also contain grasses, which can trap sediment.

Road reconstruction includes adding cross drain culverts near flowing streams in order to divert ditch water and its associated sediment onto the forest floor instead of into the stream (i.e. hydrologic disconnection of roads). Damian (2003) found that installation of cross drains at optimum sites reduced sediment delivery by 76%. The most important location for a cross drain was within 100'-200' from a stream crossing. Local monitoring of cross drain culverts on the Lochsa Ranger District indicate similar results of road-related sediment being diverted away from streams (K. Smith, 2008). Monitoring showed that only 1 out of 37 pipes routed ditchline flow down the forested slope and into a stream channel. A different design on that one pipe would have prevented any routing to the stream. The remaining pipes routed sediment for an average of 40 feet downslope from the culvert outlet, with no delivery to streams. Cross drains are therefore considered effective at diverting road related sediment away from streams.

Dust abatement on log haul roads is designed to minimize the amount of road related sediment (via fugitive dust and road surface erosion) added to streams. A 1993 study by Sanders and Addo showed that dust abatement produced half the amount or less of dust as untreated graveled roads. They also showed that traffic speeds affect the amount of dust produced. Slower traffic speeds (20 -30 mph) produce half as much dust as higher speeds (40+ mph). Log haul traffic speed is not expected to exceed 30 mph and would be closer to 20 mph due to the narrow, twisty road network in the project area.

Best Management Practices

Best Management Practices (BMPs) would be followed for all action alternatives as stipulated by the Idaho Forest Practices Act. Idaho water quality standards regulate non-point source pollution from timber management and road reconstruction activities through the application of BMPs. The Clearwater National Forest has an excellent record of successful implementation of BMPs. Between 1990 and 2002, the Forest had a BMP implementation rate of 98% and a 97.8% rate of effectiveness (Clearwater National Forest, 2003). Survey results from 2004 through 2008 indicate implementation and effectiveness rates of 98% or greater. The same BMPs would be applied to the Woodrat Salvage project and are expected to have similar results.

2. Alternative 1 - No Action

Direct and Indirect Effects

No salvage logging, road reconditioning, or road reconstruction would occur under the No Action Alternative.

There would be no direct effects to streams from the No Action alternative since no disturbance would occur in stream channels or streamside areas.

There could be indirect effects to streams from the No Action alternative. Roads needed for future management that may be contributing sediment to streams via ditchlines would continue to do so until further funding is obtained to improve them. This could result in a continued chronic source of sediment to streams. The amount of road-related sediment currently added to streams is unknown; however, field surveys indicate that few cross drains or other drainage structures occur within 100' of stream crossings but do occur outside of this distance. Direct observations of ditchline sediment being directed into one project area stream was observed in June of 2016.

3. Alternative 2- Proposed Action

Direct Effects

No direct effects to streams would occur from road reconditioning or cross-drain culvert installation activities since no stream channels would be disturbed. Cross-drain culverts would be installed within 100 feet of stream channels but there is no mechanism present to deliver sediment to streams from this activity.

No direct effects to streams or aquatic species would occur from temporary road construction activities since all roads would be located on or near ridgetops where there are no stream crossings and the roads would be decommissioned after use. Decommissioning results in a bumpy texture in the road with woody material spread over it. Based on recent monitoring of temporary roads on the Clearwater NF (USFS, unpublished data, 2014) no mechanisms are present that could deliver sediment into stream channels from these roads; RHCA implementation combined with the retention of vegetation and woody debris within harvest units act as barriers to potential sediment delivery. The action alternatives are not expected to directly affect Idaho State standards.

Indirect Effects

No changes to stream temperature, bank stability, or wood input are expected due to RHCA retention adjacent to harvest units. Aerial photos and field observations indicate that all streams adjacent to treatment areas have good forest cover and will continue to provide stream shading, bank stability, and short and long term large woody material input.

No indirect effects to streams are expected from timber harvest or temporary road construction as RHCAs are effective at preventing sediment delivery to streams from these activities (USFS unpublished data, 2014). RHCAs are mostly intact after the Woodrat Fire and continue to provide shade, bank stability, and wood to streams, as well as sediment filters from eroding hillslopes.

About 11 miles of road reconditioning would occur and could include road grading, surfacing and removal of small slumps that block ditchlines. Road reconditioning could indirectly add sediment to streams through surface erosion after blading and subsequent delivery via roadside ditches. The factors affecting the amount include the roads slope, surfacing materials, the amount of traffic, and contributing road area when combined with rainfall intensity/duration and snowfall (MacDonald and Coe, 2008). The risk of delivery is expected to be low due to BMP implementation including cross-drain culvert or drivable dip installation. The zone where erosion could enter streams typically lays between the cross drain and the live stream crossing itself. Roads in the project area typically only have the uphill side ditch draining toward the live stream. The downhill ditches are drained into cross drain culverts away from streams. This equates to a maximum of about 100’ of road length for each crossing. There are an estimated 17 crossings over which blading could occur on reconditioned roads. This equates to about 0.3 miles of road over the entire project area where sediment could be added to streams. Effects from sediment delivery to the crossings on reconditioned roads are expected to be localized (less than 600’ downstream based on Forest monitoring of culvert replacements) and short-term due to the minor amounts of sediment that could be added to streams. In addition the areas between the roads and streams are well vegetated and able to filter sediment moving off of the road surface.

About 25 miles of road reconstruction would occur. Road reconstruction would install cross drains or similar structures within 100’of a possible 30 stream crossings which would intercept ditchline flow and route sediment away from stream channels. Most streams are small in size (<30”) with low flows which would also help to limit the amount of sediment delivery from project activities. The long term effects of cross drain additions would be beneficial when compared to the existing condition. Road reconstruction

activities would allow for a long term sediment reductions from roads that could help to meet Forest Plan desired sediment conditions.

The use of 36 miles of roads for log hauling are not expected to generate measurable amounts of sediment in streams due to road reconstruction, reconditioning and dust abatement activities. When combined, these activities are expected to greatly reduce sediment delivery to streams.

The expected net reduction in sediment delivery from roads should allow stream substrates to become less embedded over time. This should improve habitat for fish spawning, incubation, and rearing which could lead to increased survival and production.

4. Cumulative Effects

Alternative 1

The geographic boundary for cumulative effects is the Swan, Little Smith, Big Smith, Middle Fork Clearwater River drainages. The effects of any actions would be diluted at an area larger than this. The Pete King drainage was not included as no measurable affects to sediment would be expected from road reconstruction or reconditioning activities due to a limited number (7) of stream crossings. Over the long term, these activities are expected to have positive effects on the drainage but are small on the scale of the drainage. Log haul is not expected to increase sediment to streams due to cross drain culvert installation and dust abatement activities.

The only factor considered for cumulative effects is sediment input since instream wood levels, bank stability, or stream temperature would not be affected by project activities. Sediment increases can negatively affect aquatic habitat and species by filling of the interstitial spaces in the gravels where eggs are deposited. This can suffocate developing embryos or prevent their migration out of the gravel and into the water column. Increased levels can also reduce the quality of winter rearing habitat by preventing fish from using accessing preferred hiding cover under larger cobble and gravel substrates (Waters, 1995; Meehan, 1991).

The time frame for assessment of past/present/future foreseeable projects, including those on state lands is from 2015 through 2018. The time frame starts when cumulative effects activities began and ends two years after activities are expected to be completed. The additional 2 years was added as it is the expected amount of time it will take for shrubs and ground cover to respond after activities occur. The growth of shrubs and other ground cover limits the potential overland flow of sediment both in harvest units and where road work activities are conducted.

The only past, current or future foreseeable projects occurring within the cumulative effects time frame are the Idaho Deptartment of Lands fire salvage projects which occurred in 2015, the Upper Pete King Culvert Replacement Project (2016), the Forest’s Road, Administrative, and Recreation Site Maintenance project (2016), the BAER Road Reconditioning and Culvert Replacement project (2016), and the Smith Creek Road 101 Road Reconstruction project (2017).

Machine constructed firelines constructed during the Woodrat fire were not considered as they would have no effect on instream sediment. Roads and machine constructed lines were used as firelines throughout the Woodrat Fire. Very few hand linen was constructed due to the lack of crews at the time. All machine lines on Forest lands were decompacted and woody material placed on their surfaces. No erosion was observed on these lines in 2016. Closed or only seasonally opened roads that were used had drainage reestablished (rolling dips and ditches cleaned) in order to minimize road surface erosion. A review of several of the roads in 2016 showed where erosion did occur, it did not enter streams. A large portion of these roads would be reconditioned or reconstructed under the proposed project.

Idaho Dept. of Lands conducted fire salvage harvest on 205 acres (21%) in the Swan Creek drainage and 65 acres (5%) in the Little Smith drainage. Idaho Forest Practices Acts guidelines were followed. These are expected to provide sediment filtering areas near streams where downed wood was not removed and in unharvested areas that did not burn. Most of the mainstems of Swan and Little Smith Creeks on IDL lands burned with low severity or did not burn. A field review of IDL harvested areas occurred in May of 2016. IDL retained streamside buffers as well as trees within harvest units. Logs were yarded using skyline systems. No ground based tractor logging was evident at that time. There appears to be adequate downed wood and live trees throughout the Swan and Little Smith drainages, as well as unburned areas on IDL lands that would result in the reduced risk of soil erosion, increased peak flows and sediment delivery to streams.

The Road, Administrative, and Recreation Site Maintenance project would conduct up to 300 acres of roadside salvage of dead and dying trees within the Woodrat Salvage project area. Of the total acres, about 15 acres occur within RCHAs where trees would be dropped and left on site. Roughly 70 of the acres overlap with the Woodrat Salvage units and have already been accounted for in the direct and indirect effects analysis. Only 230 acres of the Road, Administrative, and Recreation Site Maintenance project are therefore considered in cumulative effects. In all likelihood, fewer acres than this are expected to be harvested as field reviews indicate that much of the hazard tree felling along the Swan Creek and Smith Creek Roads was conducted during suppression activities in order to provide for firefighter safety. The fire burned mostly with low severity along these roads leaving a large live component of trees after both the fire and the hazard tree felling activities. Not all trees within the proposed Road, Administrative, and Recreation Site Maintenance project units are expected to be removed.

BAER treatments would occur on the Swan Creek Road (FS 5503) and Smith Creek Road (FS 101). Treatments include 3 culvert replacements and installation of drivable dips on the Swan Creek Road and 1 culvert replacement on the Big Smith Road. The treatments are designed to reduce sediment input to streams from roads. The drivable dips would divert ditchline and road surface sediment onto the forest floor away from streams, and the new culverts would be increased in size to reduce the risk of failure and subsequent input of sediment into Swan and Big Smith creeks at the 4 crossings. The culvert replacements would add about 5 pounds of sediment per crossing to streams (Foltz et al, 2008) with turbidity increases being evident for about 600’ downstream (Clearwater NF monitoring). The effects would be localized and short-term (<1 day per site) and are not expected to have long term negative effects on aquatic habitats or species.

The Smith Creek Road 101 Road Reconstruction project would reconstruct 6 miles of Forest Road 101, with all occurring in the project area. The activities include the installation of cross drain culverts needed to hydrologically disconnect streams from roads and the replacement of roughly 9 culverts that are aging or may be undersized. None of these culverts occur on fish bearing streams. Culvert replacements could add up to 45 pounds of sediment into project area streams. Blading and or rocking of the road may also occur and would have minimal effects on sediment as previously discussed under project activities.

There were about 5 miles of road decommissioning in the analysis area prior to 2015 and although they no longer contribute to negative cumulative sediment effects, they have contributed to positive cumulative effects through the reduction of stream crossings and roads on the landscape. A total of 2 culvert replacements have occurred within the area but are also outside the cumulative effects timeframe.

No measurable negative cumulative effects related to Alternative 1 are expected. The roads most likely to contribute sediment to streams are the Swan Creek and Big Smith Roads. This alternative would not improve road drainage through reconstruction or reconditioning on these roads; however the BAER treatments are expected to reduce the risk of sediment input which would be an improvement over the existing condition. Roadside hazard tree removal is not expected to add sediment to streams due to the

presence of extensive ground cover vegetation, downed wood and expected limited tree removal which will limit surface erosion potential and delivery to streams. In addition, most riparian areas did not burn and have the capability to filter sediment from roadside activities. The BAER treatments are also expected to occur prior to salvage activities therefore appropriate drainage would be in place to route sediment from the roads away from streams. The Upper Pete King Culvert Replacement project would likely add minimal amounts of sediment to Upper Pete King Creek; however the effects would be short-term and localized with no measurable increase in sediment downstream. The replacement of up to 9 culverts associated with the Road 101 Reconstruction project could add sediment to Big and Little Smith Creeks but the amount is not expected to be measurable at the mouth of the streams. There would be a positive cumulative effect to streams as a result of road improvement and culvert replacements. Long term sediment reductions are expected to occur as a result. Idaho Forest Practices Act guideline implementation on State lands is expected to provide sediment filtering areas near streams through buffer retention and shrub/forb/small tree retention in areas that did not burn or were not harvested.

There could be effects to stream channels from the Woodrat fire resulting in possible increases in peak flows, channel cutting and downstream sediment delivery. The amount cannot be estimated but effects would most likely occur in the Swan and Little Smith drainages where high severity fire occurred. The moderate and low severity burn areas have a much lower to no risk of increased peak flows due to the mostly live vegetation that remained after the fires.

Alternative 2

The cumulative effects analysis area boundary, timeframe, and past, present and foreseeable projects are the same as those described for the No Action alternative.

No sediment effects to streams from timber harvest (including the Road, Administrative, and Recreation Site Maintenance project) or temporary road construction on federal lands are expected. Harvest on lands managed by the Idaho Department of Lands (IDL) would follow Idaho Forest Practices Act guidelines. These are expected to provide sediment filtering areas near streams where downed wood is not removed and in vegetated but unharvested upslope areas that did not burn. A field review of IDL harvested areas occurred in May of 2016. IDL retained streamside buffers as well as trees within harvest units. Logs were yarded using mostly skyline systems. Limited ground based tractor logging was evident on ridgetops. There appears to be adequate downed wood and live trees throughout the Swan and Little Smith drainages, as well as unburned areas on IDL lands that would result in the reduced risk of soil erosion, increased peak flows and sediment delivery to streams. With no direct or indirect effects expected from federal land harvest, no cumulative effects from harvest are expected. The combination of Forest Practices Act guidelines on State lands and RHCA retention on federal lands would provide for stream protection and minimize or eliminate the amount of sediment entering streams from harvest activities. The mostly unburned RHCAs would also act as filters limit delivery to streams.

The combination of road reconstruction, reconditioning, BAER treatments, the Upper Pete King culvert replacement, and Smith Creek Road 101 Reconstruction project would improve road drainage and increase culvert sizes in order to reduce road related sediment input to streams. The amount of sediment added to streams as a result of these actions is not expected to be measurable at the mouth of the streams. The effects of the combined projects are expected to result in a long-term positive cumulative effect to streams through a reduction in road related sediment.

There would be no direct effects, and indirect effects are not expected be measurable from harvest and road use activities, therefore no cumulative effects to instream sediment are expected. Effects are expected to be minimal due to design feature and BMP implementation.

C. Regulatory Framework

PACFISH

The Forest Plan was amended in 1995, following a joint decision (commonly called PACFISH) by the U.S. Forest Service and Bureau of Land Management for managing anadromous fish-producing watersheds on Federal lands. The interim direction provided by PACFISH identifies and defines Riparian Habitat Conservation Areas (RHCAs), establishes Riparian Management Objectives (RMOs), and applies standards and guidelines to RHCA to meet the RMOs. PACFISH default RHCAs include those areas within 300 feet of fish bearing streams, within 150 feet of non-fish bearing streams, and within 100 feet of intermittent streams and wetlands and verified landslide prone areas. PACFISH buffer widths exceed state best management practice standards.

The project complies with PACFISH in that the project would not retard the attainment of Riparian Management Objectives for bank stability, width to depth ratio, instream large woody debris, pool frequency, or water temperature. Project activities would allow for improvement in large wood, pool frequency, and water temperature overtime as no riparian areas would be harvested. Bank stability would be maintained throughout the drainage as a result of RHCA retention and limited increases in modeled water yield. Adding cross drain culverts would reduce the potential amount of sediment reaching streams from ditchlines. This would be beneficial over the long term (decades). The project complies with PACFISH standards and guidelines for timber harvest and road-related activities by not conducting timber harvest in RHCAs (Guideline TM-1) and reconstructing road and drainage features to control sediment delivery (RF-3a).

Endangered Species Act

The U.S. Fish and Wildlife Service and NOAA Fisheries updated species lists were accessed via the World Wide Web on July 7, 2016. The following listed fish species were identified in Idaho County: fall Chinook salmon, steelhead trout and bull trout, all of which are listed as threatened. None are known to occur within Swan, Little Smith or Big Smith Creeks. All three species occur within the Middle Fork Clearwater River mainstem as does their designated critical habitat which acts primarily as a feeding, migratory or overwinter rearing habitat. The mainstem also contains Essential Fish Habitat (EFH) for spring Chinook and coho salmon.

Since the Clearwater Forest Plan was published in 1987, the Regional Forester has approved an updated sensitive species list for the Clearwater National Forest (June, 2008). This list includes four fish species: westslope cutthroat trout, interior redband trout, Snake River spring chinook salmon, and Pacific lamprey. An additional update was made in 2011 which added western pearlshell mussel to the list. Available data shows that only westslope cutthroat trout occur in analysis area streams.

There would be long-term (decades) positive indirect effects to aquatic habitats in the project area as a result of road improvement activities. Effects to listed steelhead, bull trout, fall Chinook salmon and salmon EFH in the Middle Fork Clearwater River are not expected to be discernable from the effects of the fire. The Woodrat Fire burned 1,870 acres with the majority burned at low to moderate severity, although there were pockets of high severity mostly on state lands. The fire may result in local effects to streams, although stream effects would not be expected to persist beyond 2 years.

Based on the scope and location of proposed activities in relation to the nearest occupied and designated critical habitat in the Middle Fork Clearwater River or Pete King Creek, sediment effects to streams, if any, are expected to be immeasurable. The distance between proposed harvest activities and occupied or critical habitat ranges from 0.4 to 2.6 miles. Hillslopes and RHCAs retain sufficient wood and vegetation to trap sediment that may move down slopes toward streams. Temporary road construction would occur

near ridgetops with no stream crossings. The closest road used for haul where a culvert is present is graveled (Swan Creek) and occurs within 500’ of the river. There is a cross drain culvert within 100’ of this crossing that diverts ditchline flow away from the stream. Sediment effects from road work and log haul are expected to be immeasurable due to the small stream sizes when combined road improvement activities which are designed to reduce sediment input to streams. In addition, any minor sediment effects are expected to be diluted by river; therefore the likelihood of measurable effects to listed species or their habitat is therefore considered negligible.

The project would not adversely affect steelhead trout, bull trout, fall chinook salmon or Essential Fish Habitat for salmon within the Middle Fork Clearwater River or steelhead critical habitat in Pete King Creek. Although the projects could result in local short term increases in sediment yield in the tributary drainages, this sediment is not of a magnitude that it would result in measurable increases downstream in the mainstem river or Pete King Creek.

Regional Forester Sensitive Species

The project would not measurably increase sediment or cobble embeddedness in Little Smith, Big Smith, Swan or Pete King Creeks and therefore would not contribute to the listing of sensitive species to ESA listed species in these streams.

Negligible effects to cutthroat trout could occur in Little Smith Creek. The closest harvest unit and log haul road is 500’ from the fish bearing portion of Little Smith Creek. Timber harvest is not expected to add sediment due to RHCA retention. Sediment from road improvement activities are 0.3 miles upstream from fish presence and are not expected to measurably deposit in downstream habitats were these species occur. Log haul could add minor amounts of sediment to Little Smith Creek at 11 stream crossings; however the road would be dust abated to limit the amount. Log haul may add negligible amounts of sediment to Little Smith Creek and therefore may impact individuals, but would not lead to their listing under ESA. The project would have long term beneficial effects to the species from reducing road-related sediment input to streams.

Activities are not expected to affect aquatic habitats or sensitive fish species in the Middle Fork due to its distance away from the actions when combined with the large size of the river. Any minor sediment effects are expected to be diluted by river.

The project would have no impact on spring Chinook salmon, Pacific lamprey or pearlshell mussel as they are not known to occur within the smaller drainages, within close proximity of proposed activities, or would not result in effects to preferred habitats in the Middle Fork Clearwater River or Pete King Creek.

Clean Water Act

The Clean Water Act stipulates that states are to adopt water quality standards. Included in these standards are provisions for identifying beneficial uses, establishing the status of beneficial uses, setting water quality criteria, and establishing Best Management Practices (BMPs) to control non-point sources of pollution.

The proposed action is consistent with the Clean Water Act and Idaho Water Quality standards in that it will maintain beneficial uses within the project area through RHCA retention, BMP implementation and road improvement activities.

Idaho State Water Quality Standards

Environmental Protection Agency regulations require each state to adopt an anti-degradation policy as one component of its water quality standards. The objective of the Idaho Anti-degradation Policy is, at a minimum, to maintain and protect existing instream water uses and the level of water quality necessary to protect those uses. Beneficial uses and water quality criteria and standards are identified in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements. The designated beneficial uses for the Middle Fork Clearwater River and Yakus Creeks are cold-water aquatic life, primary contact recreation, domestic water supply, and special resource waters. IDEQ (2014) has determined that the Middle Fork Clearwater and Yakus fully supports their beneficial uses. Big Smith, Little Smith and Swan Creeks were not assessed.

Idaho Forest Practices Act

Regulates forest practices on all land ownerships in Idaho. Forest Practices on national forest lands must adhere to the rules pertaining to the Act (IDAPA 20.02.01). The rules are also incorporated as BMPs in the Idaho Water Quality Standards.

D. Forest Plan Consistency

Clearwater Forest Plan

Forest standards for water resources are found in the Clearwater National Forest Plan on pages II-27 through II-29. The Plan directs that forest management activities do not cause permanent or long-term damage to existing or specified beneficial uses; apply best management practices to ensure water quality standards are met or exceeded; manage all water under appropriate Forest Plan Appendix K designated standards to maintain the physical and biological stability of streams on the Forest.

The activities are consistent with the Clearwater National Forest Plan standards. They will maintain the potential fish habitat relative to the streams natural potential and allow for full recovery over time (CNF, pg. K-3) through RHCA retention and road improvement, thus allowing natural processes to occur. Activities are also consistent with the Forest Plan Lawsuit Settlement Agreement as they would not contribute to measurable increases in sediment at the mouth of streams. Ground disturbing activities would occur outside of RHCAs with the exception of road improvement activities.

Clearwater Forest Plan Lawsuit Settlement Agreement (1993)

The Forest must abide by the Lawsuit Settlement Agreement of 1993. The agreement, in part, states that for projects where streams are below Forest Plan sediment yield standards, the project would produce no measurable increase in sediment as measured at the mouth of the stream or where the stream exits the Forest boundary. Determining that a stream is below standard would be completed using cobble embeddedness data. The project has been designed to cause no measurable increase in sediment since none of the streams meet desired conditions for cobble embeddedness.

3.8 Wildlife

A. Introduction

The forest structure in the Woodrat Salvage project area was created by management activities and natural events (wildfire, insect and disease outbreaks, weather events (drought, climate change, and so on)). Fire and harvest history in the project area would be found in the Fuels and Silviculture sections. Other natural and human-caused events are considered in other sections of this chapter (vegetation, fuels, aquatics, noxious weeds, rare plants, soils, and watershed).

The 2015 wildfire event produced the present/existing vegetation in the Woodrat fire perimeter. Moderate to high severity burns reduced canopy cover and dense tree structures: resulting in the loss of habitat for many forest dwelling species. Contrastingly, the reduction or loss of vegetation increased potential habitat for species that prefer post-fire conditions or more open, temporal landscapes. The fire created a large number of snags that would provide habitat for cavity-nesting birds, lose or peeling bark that bats may use for roosting, and hollowed (burned out interiors) logs/snags that may be used as future dens for mammals.

The proposed action would cause minimal to no effect on wildlife species; as the Woodrat fire created the loss, reduction or gain of wildlife habitat. Salvage activities would reduce some habitat that wildlife species prefer. Proposed reforestation efforts would replenish tree presence at a faster rate than natural recovery by about 3-5 years.

1. Geographic Scope

The geographic scope of potential effects on wildlife varies by species and may include review at multiple scales. Direct, indirect, and cumulative effects were considered for wildlife species and associated habitat in order to arrive at the final determination of effects. The species' status, habitat conditions, and population trends across varying scales were reviewed in order to consider potential effects from the project in context of larger-scale trends and Forest, Regional, and Federal goals. For those species that are unaffected by the proposal, or for whom effects are negligible or not measureable, additional analysis of cumulative effects was not conducted. See Table 23 for the list of species not analyzed in detail.

Generally, the fire perimeter from the 2015 Woodrat fire provides the unit boundary for evaluating the effects of management activities on wildlife. The area within the 2015 fire perimeter (6,500 acres) was a logical unit to evaluate effects of the proposed project as fires do not always follow watershed or other topographic boundaries in a predictable pattern across the forest. Some species have unique boundaries for analysis: elk analysis areas for elk habitat effectiveness calculations. Also, management direction would define a larger boundary of analysis for snag habitat, which is the boundary of the Clearwater National Forest.

2. Methodology

Wildlife analyzed for management actions on the forest include threatened and endangered species (identified by the United States Fish and Wildlife Service (FSW)), Forest Service Region 1 sensitive species, management indicator species (MIS) and neotropical migratory birds.

The Clearwater National Forest has one threatened species, Canada lynx, which has been verified by observations from experts. The USFWS recognizes the Forest as secondary habitat for the predator, as well as occupied habitat for threatened Canada lynx. In May 2016, the FWS designated the North American wolverine as a proposed species for Endangered Species Act (ESA) consideration. The mammal possesses large home ranges that include high altitude forests and areas of persistent (long-term) snow cover. The Forest Service Northern Region (R1) has identified 15 sensitive species that are

suspected or known to be on the Forest. The Clearwater National Forest Plan designated 10 management indicator species (MIS). Wildlife analyses include the baseline habitat conditions (created by all past management practices and natural events); direct, indirect and cumulative effects of the proposed actions; and cumulative effects of reasonably foreseeable projects. Region, Forest, local, and Idaho Fish and Game records were consulted on presence of species in the project area. Modeled vegetation layers (from GIS applications) were used for interpretation of species habitats or potential habitat for the animals' life stages. Data related to model vegetative features as potential habitat include: vegetation species, size, canopy cover, and elevation. Factors that may affect the former at the time of analysis include disturbances from timber harvests and fire events. The data was queried from GIS layers containing database information from FSVEG, VMAP and FACTS. Additional data layers (roads, trails, streams, land ownership and so on) were used to assist in the habitat analysis.

Finally, thresholds for disturbance of wildlife or its habitat are established by the Endangered Species Act, National Forest Management Act, Forest Plan goals and standards. Additionally, a summary of the analysis for threatened and endangered species and sensitive species by a determination statement on the effects of the project, other projects past, present and foreseeable, is at the end of each wildlife species section. For those species not analyzed in detail, see Table 23. Table 24 contains the species that are analyzed in detail.

Models and Surveys

Stand exam data from FSVeg would be the preferred data source for vegetative information in the development of wildlife habitat models; as it represents an accurate documentation of the vegetation within a specific stand location at the time of the exam. However, for reasons mentioned above, stand exam coverage is not complete for the entire Forest. To address gaps in FSVeg data availability within the project area the Biologist utilized the Region 1 Existing Vegetation Mapping Program (V-Map 2014): a vegetation model produced to provide a Forestwide geospatial database of existing vegetation.

"VMap is a remote sensed product which uses a combination of satellite imagery and airborne acquired imagery. The image data (i.e., pixels) are put through a process of aggregation to derive spatially cohesive units (i.e., polygons). A small portion of these polygons are then sampled through aerial photo interpretation and field data collection to determine their composition and through spatial statistics, unsampled polygons are given labels based on an analysis of the sampled polygons. Draft map products are then field verified and appropriate changes are made in the labeling algorithms. Final results are then used to populate the VMap base-level feature class. A variety of post-processing algorithms are then used to create the mid-level feature classes of the VMap database." (Brown and Barber 2012).

Field surveys were conducted in all proposed units for this project. Therefore, placement of units were in areas that burned with ≥ 50% mortality. Overall, the Forest incorporates information derived from a range of scientific research, observed evidence, and model projections utilizing the best data available at the time. Despite this, uncertainty is inherent in all scientific results. However, it is felt that this combination is the most valid approach for wildlife analysis until proposed or future models and/or field techniques are verified.

Snag Habitat

Management direction for snag habitat was to analyze at the Clearwater National Forest level, in order to capture the quantity and size of disturbances from wildfires across the landscape. Forest biologists used a forest-wide VMap model with the following attributes: all tree species greater than 5" dbh in size, and canopy cover greater than or equal to 10%. The size class and broad canopy cover would capture snag habitats used by the following species analyzed: black-backed woodpecker, myotis bats, pileated woodpecker, and other snag dependent neotropical birds.

The next step was to exhibit all areas affected by wildfires that burned in the past 6 years. This is a time frame that would capture the peak of potential insect activity on decayed wood, and an optimum foraging period for many woodpecker or other insectivore species (bats for instance). Some of these species (black-backed, three-toed, downy and pileated woodpeckers) would nest and reproduce in these areas during that period.

Results of the analysis show over 70 fires created approximately 82,200 acres of potential snag habitat on the CNF from 2009 through 2015. Over 49,000 acres of these acres were burned on the forest in 2015. Salvage harvests between 2009 and 2014 were minimal, with about 66 acres affected on the forest.

Cause-Effect Relationship

Potential effects of this project on terrestrial wildlife species are based on the best available information on habitat relationships and the known effects of management on wildlife and habitats. After preliminary analysis, some species were eliminated from further analysis: as they would not likely be affected by the proposed activities, or a lack of suitable habitat or expected presence, or they would be affected at a level that does not impact the population. This list can be found in the project record and Appendix E. Species that would not be affected by proposed activities from this project, and are dropped from further analysis in this report (Table 23).

Table 23. Wildlife species dropped from detailed analysis. Canada lynx is federally listed as a Threatened Species (T), and the North American wolverine is a Proposed Species (P). The belted kingfisher, grizzly bear and Shiras moose are forest Management Indicator Species (MIS). The bald eagle and gray wolf are both MIS and a sensitive species. All other species in the table are sensitive species: identified by the Regional Forester.

Species	Preferred Habitat	Determin-ation[a]	Rationale for Elimination from Detailed Analysis
Canada lynx *(Lynx Canadensis)*	Associated with relatively high-elevation, moist conifer forests that experience cold, snowy winters and provide a prey base of snowshoe hare.	NE	No preferred habitat exists in the Project area.
North American wolverine *(Gulo gulo)*	Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. Denning is shown to be strongly associated with persistent spring snow cover (Copeland et al. 2010). Wolverine forage in all forested habitats but particularly those where carrion can be found.	NLJ	No primary habitat was found in the Project Area. The proposed activities are not considered a threat to the mammal, due to the project's small scale size & disturbance in relation to the wolverine's large home range size.
Bald eagle *(Haliaeetus leucocephalus)*	Associated with large bodies of water with abundant fish that provide suitable foraging. Favor nest and roost sites in large mature trees or snags near water. In forested areas, they select the tallest trees for nesting that tend to have at least one exposed perch.	NI	No large bodies of water are in the project areas. Project would not harvest in riparian areas.

Species	Preferred Habitat	Determin-ation[a]	Rationale for Elimination from Detailed Analysis
Belted kingfisher *(Megaceryle alcyon)*	Use a range of aquatic habitats. Important requirements for breeding are nearly vertical earth exposures for digging nesting burrows and the presence of water supporting aquatic prey species. Clear water and unobstructed view of prey for successful foraging. Foraging habitat includes available perches, canopy cover, and location of pools.	NI	No habitat in the project areas.
Coeur d'Alene salamander *(Plethodon idahoensis)*	Associated with springs, seeps, spray zone. Usually found above ground at night during moist weather in the spring and fall and retreat into the narrow spaces between fractured rocks to avoid desiccation in the summer and freezing in the winter.	NI	No habitat in the project areas.
Fisher *(Pekania pennanti)*	Mesic mature forest habitats	NI	No activities proposed in modelled habitat found in project area. No detections of fisher in the project area.
Gray wolf *(Canis lupus)*	Closely associated with habitats that support prey animals (big game). Rendezvous sites include wetlands or small meadows with dense vegetation nearby. Follows prey base of big-game and other wildlife.	MIIH	The wolf is resilient to natural events on habitats. It will go where it can find prey. Individuals may be disturbed by project activities. No changes to motorized access or significant effects to prey species' populations.
Grizzly bear *(Ursus arctos horribilis)*	Multiple habitats of forest, meadow, clearing, riparian and above the timber line.	NI	Currently the Forest is considered in an unoccupied status for the bear
Harlequin duck *(Histrionicus histrionicus)*	Breeds on cold, fast-moving mountain streams with dense shrub/timber nearby and an absence of human disturbance. Adults stage on larger rivers before ascending to breed.	NI	The Woodrat Project would not affect streams with potential breeding habitat.
Pygmy nuthatch *(Sitta pygmaea)*	Ponderosa pine habitat, especially mature and old growth stands.	NI	Most of the potential habitat for the bird was burned in the Project Area. Project activities would not occur in any potential habitat.
Ring-necked snake	Associated with dry coniferous forest with brushy understory, open grasslands, rocky hillsides, and	NI	Ringneck snakes are associated with drier habitats. Most of the potential habitat was burned by the fire,

Species	Preferred Habitat	Determin-ation[a]	Rationale for Elimination from Detailed Analysis
(Diadophis punctatus)	early-seral riparian areas. This species requires moist microhabitats such as downed logs, rocks, or stumps.		leaving little cover or food for the snake. Only one documented observation of a ringneck snake on the Forest occurred in a steep rocky canyon in the Seven Devils Mountains (over 50 miles away).
Shiras moose *(Alces alces shirasi)*	Big-game species that is partially dependent during winter on mature timber, with understory of conifers or pacific yew.	NI	No habitat in the project area.
Townsend's big-eared bat *(Corynorhinus townsendii)*	Distribution strongly correlated with availability of caves and mines. Maternal roosts and hibernacula in the winter include mines, caves, or suitable buildings/structures. Foraging associations include: edge habitats along streams, adjacent to and within wooded habitats.	NI	There would be no project activities in or adjacent to caves or mines with open adits or shafts. Proposed activities would result in snag loss (occasional reports of the bat using hollows in large trees). The bat prefers roosting in large colonies, & have not been found in snags in this portion of their range.
Western (boreal) toad *(Anaxyrus boreas)*	Breed in shallow ponds, lakes, or slow moving streams. Adults occur in a variety of uplands.	MIIH	No impacts to potential breeding habitat. Activities may slightly increase mortality risk as individuals may be present in the project areas. This increase would not be measurable or discernible from normal public use.

[a] Determination: NE= No Effect, NLJ= Not Likely Jeopardize, NI = No Impact, MIIH = May impact individuals or habitat, but not likely to result in a loss of viability in the planning area, nor cause a trend to federal listing or a loss of species viability range wide.

Indicators are used in the analysis to determine the existence of a cause and effect relationship. Indicators are key habitat features that may be affected by the proposed project activities. Some of these are queried by the GIS models used to identify tree species, size by dbh, and canopy coverage. Indicators for each species vary and a discussion of the changes in suitable habitat for each species are provided in Table 23 and Table 24. Table 24 summarizes the wildlife species and wildlife habitat components analyzed in more detail. A description of their preferred habitat and the rationale for analysis are provided.

Table 24. Wildlife species analyzed in detail. Species may be listed as Regional Sensitive Species (SS), and/or as Management Indicator Species (MIS).

Species	Status	Determination[a]	Preferred Habitat	Rationale for Detailed Analysis
American marten (*Martes americana***)**	MIS	NLT	Marten generally occupy higher elevations in cold dry forests, with multi-storied, closed canopies, and mature trees. Abundant woody debris is preferred for den and forage habitat. Projects may result in removal of denning/ nesting structures and downed wood, which provides habitat for prey species.	The fire events reduced marten habitat. Some forage habitat from snags or downed woody remain, but probably won't be utilized until prey return to area after new vegetation begins to grow over burned areas. Project may affect downed woody material, and disturbance from activities to an individual marten near a unit.
Black-backed woodpecker *(Picoides arcticus)*	SS	MIIH	Strongly associated with burned forest and bark-beetle outbreaks. High-severity stand-replacing wildfires are particularly important for this species.	Project would result in reduction of burned forest habitat. Project may impact individuals.
Flammulated owl *(Psiloscops flammeolus)*	SS	MIIH	Mature or old-growth ponderosa pine and Douglas-fir forest.	Individual detected in 1996. Project may have impacts on large snag habitat.
Fringed myotis *(Myotis thysanodes)*	SS	MIIH	Known to use large snags in dry forest for roosting.	Project may have impacts on large snag habitat.
Long-eared myotis *(Myotis evotis)* **& Long-legged myotis (***Myotis volans)*	SS	MIIH	Occupy a wide range of habitats over a broad elevational gradient. Known to use large snags in conifer forests for roosting.	Project may have impacts on large snag habitat.
Northern goshawk *(Accipiter gentillis)*	MIS	NLT	Goshawk nest sites are characterized as having mature closed-canopy forest cover. Management activities in nest areas are restricted. Goshawk post-fledging area (PFA) is a broader area than the nesting area and is where young develop flying and hunting skills. The Required Design Features	Suitable nesting trees are unlikely to be impacted by the project as only dead or dying trees are removed. If goshawks were to nest near project activities, mitigations provided in the design features call for a 40-acre no activity nest buffer and for no activity to occur from 4/15 to 8/15 within 420-acres of the nest site. With the

Species	Status	Deter-mination[a]	Preferred Habitat	Rationale for Detailed Analysis
			afford protection for these areas.	mitigation, any adverse effects to goshawks would be avoided.
Pileated woodpecker *(Dryocopus pileatus)*	MIS	NLT	Dependent on large snags and decadent trees for nesting. Forages on dying trees, snags, and downed logs which are common elements of mature forest.	Project may have impacts on large snags and downed wood.
Rocky Mountain elk *(Cervus elaphus)*	MIS	NLT	Forage habitat includes open forest stands, meadows, shrub fields with grasses and upland shrubs. Hiding cover is defined as vegetation capable of concealing 90% of an elk at 200 ft. Thermal cover includes stands of conifer trees at least 40 feet tall with at least 70% canopy closure.	No changes to motorized access or consequential changes to habitat. Wildfire has reduced hiding cover, but increased forage will become available in 2-15 years post fire.

[a] Determination: NI = No Impact, MIIH = May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or a cause a loss of viability to the population or species; and NLT= Not Likely to cause a Trend that leads the species to being federally listed.

Species Viability

Habitat status and population viability at the Forest level is presented for some species based on Forest Service Northern Region analyses (Samson 2006a,b; Bush and Lundberg 2008). This provides a broader scale context relative to the Analysis Area. Samson's Conservation Assessment (2006a) work was based on literature reviews, habitat use in the Northern Region, estimates of habitat per national forest, short and long term viability evaluations for 4 species (northern goshawk, black-backed woodpecker, flammulated owl and pileated woodpecker). The conservation assessment is based on a principle-based approach to population viability analysis (PVA). The methods and background for this approach uses point observation data and vegetation inventory information based on Forest Inventory and Analysis (FIA) data to build wildlife habitat relationship models and analyze short-term viability. FIA produces statistical reports and analytical information on status and trends in forest area and location; species, size, and health of trees; total tree growth, mortality, and removals by harvest; wood production and utilization rates for various products; and forest land ownership during the period 1975 through July 2001. The Samson (2006b) habitat estimates added analyses on the fisher and American marten with the four previously mentioned species, and uses data through 2005. Samson estimates of forested habitat for each national forest in the USDA Northern Region were developed by remote sensing to provide estimates of forest versus non-forest habitats. He discusses threshold habitat amounts, home ranges of species and minimum viable population for six species. Bush and Lundberg (2008) review Samson's work and document updates to his habitat models (metric units, habitat types, formatting errors and so on) used in Region 1 and provide estimates of habitat amounts. All three of these documents and their authors are referred to in the wildlife sections for the concerned species. Their work is referred to as the potential amount of forest scale habitats for these species.

Discussion of the regional analyses is to compare project effects to the calculated amount of forest available habitat produced by the region. Viability of the concerned species is at a much larger scale than the project level.

The proposed action, in combination with past, present, and reasonably foreseeable future management actions in the analysis area, would not affect population viability or distribution of native and desired nonnative vertebrate species on the Forest. The Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2015) contains information on species of concern/ interest, including range-wide and State-wide status and known population information. At the Forest-wide scale, the Woodrat Salvage project would not disturb, agitate or bother populations to a degree that causes, or is likely to cause, a measurable decrease in productivity by substantially interfering with normal breeding, feeding, or sheltering behavior.

B. Affected Environment and Environmental Impacts

1. Regional Forester Sensitive Species

The Forest Service Manual directs the Regional Forester to identify sensitive species where species viability may be a concern (FSM 2670). The Forest Service is required to manage habitat for the species listed in the Regional Sensitive Species List to prevent further population declines (FSM 2670.22). Impacts of Forest Service activities must not impact sensitive species without an analysis of the significance of the adverse effects and the activities cannot result in a loss of species viability or create significant trends toward federal listing (FSM 2670.32).

The Northern Region of the Forest Service maintains a list of sensitive wildlife species that are known or suspected to occur on the Nez Perce-Clearwater National Forests. The most recent list was revised in 2011 (Table 23 and Table 24).

Black-backed Woodpecker

The black-backed woodpecker is a Clearwater National Forest (CNF) sensitive species. Studies of the woodpecker range from States of the U.S. and provinces of Canada. The bird forages for insects on many different tree species with a size of ≥ 10” dbh. The woodpecker preys on beetles and other insects that feed on dead or dying trees. The primary food source are woodborer beetles and their larvae, are most abundant within burned forests. In unburned forests, woodborers and bark beetles are found primarily in areas that have undergone natural disturbances, such as wind-throw, and within structurally diverse old-growth forests (Bull et al. 1986, Goggans et al. 1988, Hoffman 1997). Black-backed woodpeckers occur at highest densities in one to eight-year-old burns, which provide an abundance of snags for nesting, and large numbers of beetles and other wood-boring insects for feeding (Dudley et al. 2012, Dudley and Saab 2007, Hoyt and Hannon 2002). Burned forests are believed to act as source habitats from which birds emigrate once post-fire conditions become unsuitable. Nappi and Drapeau (2009) found high nest densities and reproductive success in a severely burned spruce forest. As the surviving tree tissue declines over time, the dependent beetles depart. Black-backed woodpecker nest success declines, and the bird moves on to habitat recently affected by wildfires, burns or insect infestations that are damaging trees.

Old forests may produce an insect food source that allows woodpecker populations to persist between fires in regions with long fire intervals. Hutto (2008) also found black-backed woodpecker presence was primarily influenced by the occurrence of high severity burn patches. Hoyt and Hannon (2002) detected black-backs in a burned area, but not in mature stands within 30 miles of the 2-year-old burn. However, the woodpeckers did occupy old coniferous stands located 45 to 90 miles from the recent burn. Old forests offer habitat for black-backed populations to persist between fires in regions with long fire intervals (Bonnot et al. 2008).

In a western Montana study of salvage-logged and unlogged recently burned forests, Hejl and McFadzen (1999) found that over 75% of black-backed woodpecker nests were located in the unlogged portions of burned forests. In southwest Idaho, during the first five years after a fire in ponderosa pine/Douglas-fir forest, four pairs of black-backs consistently nested in a 1,200 acre unlogged area, and another four nesting pairs nested in a different 1,200 acre unlogged area (Dixon and Saab 2000). Goggans et al. (1988) recommend that in recently fire-disturbed areas, 30-50% of burned acres be retained, depending on the size of the fire, in large, contiguous and interconnected blocks, in order to provide sufficient habitat for black-backed woodpeckers.

Population Trends: Breeding bird survey (BBS) data show a long-term upward trend of >0.25% per year since 1966 in northcentral Idaho (Sauer et al. 2011). Idaho Partners in Flight estimates a population of 4000 birds in Idaho. No records of black-backed woodpecker detection have occurred in the project area.

In Region 1 of the Forest Service, the black-backer woodpecker is considered a sensitive species (2011). Samson (2006b) indicates 29,406 acres of suitable habitat are required to maintain a viable black-backed woodpecker population in Forest Service Region One. Bush and Lundberg (2008) show over 450,000 (29%) suitable acres on the Clearwater Forest alone. As of February 2016, the 2015 fire season on the combined Nez Perce-Clearwater National Forests created over 190,000 acres of burned habitat; this is about 42,000 acres of that were on the CNF.

A discussion of Samson's work and Bush and Lundberg's (2008) modelling is located under the Species Viability section. Bush and Lundberg (2008) used their criteria for black-backed potential habitat: if the plot had 8 or more recently dead trees/acre between 8"-16" dbh. However, not all of these snag areas would have suitable habitat for the woodpecker if the trees have been dead 8 years or longer.

Alternative 1

The RAVG model (a Rapid Assessment of Vegetation Condition after Wildfire process delivers a suite of products within 45 days following containment of a wildfire that burns 1,000 acres or more of forested lands) shows about 2,209 acres burned at moderate to high severity in the Woodrat fire. The remaining 4,294 acres were unburnt or burned at low severity.

Trees damaged or killed by fire would provide potential habitat for black-backed woodpecker and other fire associated species. Areas burned at moderate to high severities would become primary habitat (nesting and foraging) for the woodpecker. The increased pulse of insect activity foraging on the dead and decaying trees would provide the black-backed woodpecker with habitat for up to 8 years after the fire. Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed. Forest recovery would occur by natural regeneration. Some areas that experienced high severity burns may have lost soil structure or nutrients in the soil that would support vegetation. In these areas, the recovery of vegetation would take years longer than in other sites.

Alternative 2

The fire event created primary habitat for the black-backed woodpecker. Prey would become more abundant as insect numbers increase to feed on the dead and dying wood. The black-backed woodpecker would remain in the area of up to 8 years to feed on beetles. During this time, the woodpecker would create tree cavities for nesting or resting, mate and raise its young.

Of the 6,500-acre fire, about 2,200 acres burned at moderate to high severity. Of this the Forest proposes to harvest 378 acres (17%) and the Idaho Department of Lands would harvest about 899 acres (41%). The Forest's proposed harvest would not occur in riparian or landslide-prone areas, leaving all snags in those locations untouched and available for use. Additionally, unit prescriptions would leave all dead or live ponderosa pine, white pine, and western larch and large cedar, Douglas-fir and grand fir (3.1. Vegetation

section). This prescription would retain a diversity of tree species, and snags that offer potential forage or nesting habitat for the woodpecker.

Project activities may harm or disturb black-backed woodpeckers. Some fatality may occur if a nest tree with young birds is cut down within a salvage unit. Noise and movement from machinery and humans may disturb birds in or adjacent to units, causing them to flee or avoid the areas during the operational periods. Unit harvests would not be conducted simultaneously. Instead, units would be grouped into timber sales that focus on time intervals to be completed for each sale. This would allow woodpecker activity to occur in undisturbed areas throughout the duration of the project.

Cumulative Effects

The boundary for cumulative effects is the Clearwater National Forest boundary, as it represents a landscape that provides disturbance events which provide potential habitat for the woodpecker. The time frame for effects on the black-backed woodpecker in the wildfire landscape is 8 years. Past projects involving road decommissioning, culvert replacements would not have impacted woodpecker habitat. Salvage projects from 2008 to present did reduce some potential habitat. Timber projects at the same time also reduced some dead or dying trees, but unit prescriptions left snags or large trees that may provide some foraging habitat for the bird.

Past, ongoing, or foreseeable projects in or adjacent to the Woodrat Salvage EA include the Interface Fuels II project (2009 EA), a State salvage harvest, Woodrat BAER Project, the Road, Administrative, and Recreation Site Maintenance project, and other fire salvages planned on Clearwater National Forest.

All of the Interface Fuels' project tree-thinning activities were completed by 2013. About 1,200 acres of live trees were commercially thinned or pre-commercially thinned. Thinning of live trees does not impact black-backed woodpecker's habitat. The tree-thinning operations reduced tree densities and left larger trees that would likely survive low severity fires. Another 212 acres were salvage harvested from a fire that occurred prior to 2009; an action that reduced potential habitat. About 300 acres of prescribed burning is left to complete the project. Prescribed burning would create snags; thereby, potential habitat for the woodpecker.

The Idaho Department of Lands (IDL) proposed to salvage 2,616 acres, not all of which would consist of trees affected by moderate to high fire severities. The project began in autumn of 2015, and is currently in operation. This action would reduce primary woodpecker habitat by 899 acres (41%) in the Woodrat fire perimeter.

The Woodrat BAER project has been implemented during summer of 2016, and would not impact black-backed woodpecker habitat.

The Road, Administrative, and Recreation Site Maintenance project proposes to drop and leave hazard trees along 12 miles of road within the Woodrat Salvage project area. The Road, Administrative, and Recreation Site Maintenance project would drop hazard trees in about 1 mile (15 acres) of roads that are adjacent to primary woodpecker habitat. This action would reduce primary habitat by less than 1%. All of the other area salvage projects generated by the 2015 fires on the CNF would remove small percentages of woodpecker habitat, as dead or dying trees would be cut and removed. Burned areas on landslide prone or riparian areas would not be harvested. Additionally, some areas that were severely burned to the point of where the tree(s) offer no market value, would be left standing.

Alternative 1

Black-backed woodpecker habitat has increased from the 2015 fire events and would be available as foraging and nesting habitat for about 8 years after the event. IDL harvest would reduce primary habitat by 41% in the Woodrat fire perimeter.

Under this alternative no reduction of black-backed woodpecker primary habitat would occur on federal land within the Woodrat fire perimeter. Forest recovery would vary according to the fire severity and surviving seed bed in the soil. Fire suppression and woodcutting would continue to reduce snags, though they may not be providing woodpecker habitat.

Alternative 2

The proposed Woodrat Salvage project would reduce black-backed woodpecker primary habitat by 17% on National Forst System lands within the project area. However, unit prescriptions would retain live trees and snags on average of at least 14 snags per acre; which would provide potential forage or nest habitat for the woodpecker. The IDL harvest would occur in 899 acres (41%) of primary habitat. The Road, Administrative, and Recreation Site Maintenance project would reduce another 15 acres of primary habitat along roads in the Woodrat Salvage project area. The combined salvage operations would reduce black-backed woodpecker habitat by about 58% in the Woodrat Salavge project area.

The proposed salvage harvests in the fires of 2015 on the CNF total about 2,500 acres by the US Forest Service and 2,616 acres by the Idaho Department of Lands. The combined Forest Service salvage (past and proposed) of 2,566 acres (out of the 82,200 acres burned forest-wide in the past 6 years) would affect about 3% of the potential snag habitat on the Forest. Therefore, the remaining 97% of habitat for snag-dependent species is well above the objective of 40% recommended by the Forest Plan.

The action alternative has potential direct effects (disturbance, fatality, displacement) and indirect affects (species avoidance during periods of project activities) to some individual black-backed woodpeckers. Finally, the action alternative would leave over 40% of potential habitat for the woodpecker unaffected by salvage operations. The latter habitat would provide forage, nesting and areas for displaced woodpeckers. On the forest scale, all proposed salvage harvest in the 2015 fire perimeters would affect about 3% of the present potential black-backed woodpecker habitat. That would result in a retention 97% of snags and black-backed woodpecker habitat: greater than the 30-50% recommendation by Goggans et al. (1988).

Other ongoing activities include firewood gathering and fire suppression. Firewood cutting would reduce snags along public roads that provide motorized access. Most woodcutters choose to avoid cutting burnt or blackened trees. Fire suppression would reduce potential habitat for the woodpecker.

Conclusion

Forest Plan elements being met by the project for the black-backed woodpecker include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have no impact on the black-backed woodpecker. Alternative 2 of the fire salvage project *may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species of the black-backed woodpecker.*

Flammulated Owl

The flammulated owl is considered a neotropical migrant, nests in tree cavities and preys on insects (Hayward and Verner 1994, Powers et al. 1996, Nelson et al. 2009). The diet of this owl consists mostly of nocturnal moths and insects gleaned from open tree branches, taken on the wing, or picked up from the ground. Linkhart et al. (1998) observed in Colorado that 80% of intensive foraging areas were in old ponderosa pine and Douglas-fir mixed forest. The owl forages in stands with low stem densities, moderately open canopies (35-65%), and very open understories. However, flammulated owls use dense

foliage for roosting (Hayward and Verner 1994). Roost sites may be found in multi-layered, mixed-conifer forests with a ponderosa pine or Douglas-fir component and pockets of dense foliage. Flammulated owl habitats in Idaho are typically mid-elevation mature or older open ponderosa pine and/or Douglas fir forest (IDFG 2005).

Nesting territories are documented between 20-60 acres in size, but flammulated owls have been known to forage as much as 0.5 miles from their nest (Reynolds and Linkhart 1992). There is also some evidence to suggest that flammulated owls may form loose colonial groups or congregations for the purposes of breeding.

Population Trend In Idaho, the flammulated owl has a State rank of S4 (apparently secure). There are no population trend data for Idaho. The owl is difficult to detect: it's nocturnal, has secretive behavior, and low population densities. In 2005 the Forest Service conducted an extensive survey effort for flammulated owls across Montana and Idaho (Cilimburg, 2006). This effort yielded a total of 243 widely distributed owl detections. Two owls were detected/heard on the Clearwater National Forest, but none of these records were in the analysis area. The US Fish and Wildlife database shows one owl detected in the project area in 2000, and FS Region 1 records show one owl detected about 1 mile outside the project area in 2010. No scientific evidence exists that the flammulated owl is decreasing in numbers in the Northern Region of the Forest Service (Samson 2006a).

Samson (2006a) States that few estimates of territory size are available for the flammulated owl. Some researchers suggest that the owl's habitat will decline due to fire suppression (Groves et al. 1997, Wright et al. 1997, Linkhart and Reynolds 2007), as suppression allows Douglas-fir trees to outcompete shade intolerant trees that are important for the owl. Another set of researchers (Nelson et al. 2009) suggest that flammulated owl habitat has declined over a period of 50 years. Their basis included the Jeffrey pine (which is not found on the Nez Perce-Clearwater National Forest), and 10 western States that are outside of Idaho. The latter is not a feasible study to lend conclusions as to potential owl habitat conditions on the Nez Perce-Clearwater National Forest.

Alternative 1

Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed; the forest would recover by natural regeneration. Since the area is basically drier and at lower elevations than most of the CNF, dry site habitats would dominate in the early seral stages. Ponderosa pine, Douglas-fir and grand fir would be the species most likely to populate the area. The owl's habitat was modelled for ponderosa pine and Douglas-fir stands, 10" or greater dbh, and canopy cover is 40-60%.

Areas that were unaffected or burned at low intensity would have retained most of the large tree species that the owl uses for foraging and nesting. Pockets of unburnt vegetation would provide food and cover for insects. Low severity burns would have destroyed or set back vegetation such as shrubs and small trees. Those understories may have temporarily (1-3 years) lost the ability to produce flowers or nectar sources important to lepidopterans or other plant structures that provide forage for other insects the flammulated owl preys on. As beetles and other insects move in to feed on the burnt or decaying matter, this may provide a pulse of food opportunities for the owl.

A small amount of potential flammulated owl habitat, about 32 acres on the CNF, burned at moderate to high severities. This acreage lost some of the larger ponderosa pine or Douglas-fir species that the owl depends on for nesting or perching. About 3 years post-fire, the understory in all burned areas (except those of high intensity burns) would provide some foraging habitat for the owl. In the areas that suffered high intensity burns, the recovery of shrubs and understory would take longer than 3 years post-fire to offer some forage. The return of nesting habitat may take up to 100 years for trees to develop the structure preferred by flammulated owls.

Alternative 2

Alternative 2 would salvage harvest in burned areas (moderate to high severities) that are not providing habitat for the owl. The understory vegetation that once provided a prey base for the owl was burnt, and will take a few years to recover. Some loss of snag habitat would occur as dead or dying trees are removed in the salvage sale. However, unit prescriptions would retain live trees and snags on average of at least 8 snags per acre; which would provide potential forage for the owl. As the understory vegetation recovers, the retained live ponderosa or Douglas-fir trees in the units would offer potential nesting habitat for the owl.

Noise and project activities may disturb an owl that is adjacent to a salvage unit, if present. All project activities would occur during daylight hours, so nightly foraging would occur in or along the edges of harvest units.

Tree-planting in at least 536 acres would assist in recovering areas with Ponderosa pine seedlings. The preferred species would be beneficial as future (about 80 years) recruitment habitat for the owl. Future prescribed burns would reduce fuels and promote more open areas with greater spacing between the larger trees. Combined, these efforts would produce future owl habitat.

Cumulative Effects

The cumulative effects area for flammulated owl is the 2015 Woodrat fire perimeter. The area contains potential habitat that would provide for mating pairs to nest, raise and feed their young to the adult stage. The time frame for cumulative effects is 80-100 years: the time it takes to develop large snags and trees used for nesting habitat.

Past projects of roadwork or decommissioning and culvert replacements did not impact owl habitat. Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA), a Idaho Department of Lands salvage harvest, Woodrat BAER project, Road, Administrative, and Recreation Site Maintenance project, and other fire salvages planned on Clearwater National Forest. Past timber/salvage projects created mixed results for owl habitat. All reduced tree canopy, yet created openings that supported understory vegetation favorable to insects the flammulated owl may prey on. Areas where dry sites were harvested would offer foraging habitat for owls, and large ponderosa pine or Douglas-fir trees in these units would present potential nesting habitat for the owl.

The Interface Fuels project created more open habitats with retention of large trees, such as Ponderosa pine and some Douglas-fir, and subsequently potential habitat for flammulated owl. The Idaho Department of Lands (IDL) salvage sale would remove some large trees in 109 acres that would provide nesting or perching habitat for the bird. The IDL salvage would retain other large trees as seed trees or structure that may be used by flammulated owls. Additionally, the IDL and Forest Service would plant trees for future forest products. The plantations would provide foraging habitat for the owl in areas where large trees are retained, and Ponderosa pine seedlings would be well represented in the plantations. This would create recruitment habitat for the owl in 10 to 20 years as forage, and about 80 years as nesting habitat.

The Woodrat BAER project would not impact flammulated owl habitat. The Road, Administrative, and Recreation Site Maintenance project, would impact 188 acres of hazard trees along 12 miles of road in the Woodrat project area: hazard trees would be dropped and left on the ground. The tree species affected by this action would consist primarily of grand fire and western cedar, with some small diameter Douglas-fir. This project would not impact owl habitat. The other area salvage projects would reduce snags. All live trees would be retained, as well as no harvest would occur in riparian areas, old growth or land-slide prone areas. Firewood gathering and fire suppression would continue.

Alternative 1

The IDL salvage harvest would reduce flammulated owl habitat by 28% in the Woodrat fire perimeter. Alternative 1 does not propose any federal activities in the Project area; therefore, there would be no impact to owl habitat.

Loss of habitat from wildfires that burned areas at moderate to high severities would impact flammulated owls during their selection for nest sites where prey is available. Over time vegetation would recover in burned areas, providing food for insects the owl preys on. Unburned or surviving, older ponderosa pines would provide potential nesting habitat. Pines regenerating from the fire would become potential nesting habitat in about 80 to 100 years.

Fire suppression would continue, which would allow an increase of shade tolerant trees, and higher tree densities. This management tool would not be beneficial for creating or maintaining flammulated owl habitat. Fire suppression would limit the amount of large trees lost to wildfire, which may benefit owls in dry site forests. Suppression would also reduce more open habitats the owl prefers. Wood cutting would continue to occur, though many firewood collectors would avoid burned wood.

Firewood gathering would continue to occur along roads which allow public access. Some potential owl habitat of dead or dying trees may be lost, but many woodcutters shy away from collecting previously burnt wood.

Alternative 2

The IDL salvage harvest would reduce owl habitat by 28% in the Woodrat Fire perimeter. On the CNF portion of the Woodrat Salvage project, no salvage would occur in owl habitat. Unit prescriptions would retain on average 14 live/dead trees per acre. Those remnant ponderosa pine or Douglas-fir species would provide potential habitat for the flammulated owl in dry sites.

The Road, Administrative, and Recreation Site Maintenance project would reduce snags and remove large dead or dying trees along roads, but would not occur in potential flammulated owl habitat. The combined federal proposed actions would not affect owl habitat. The IDL salvage would reduce flammulated owl habitat by 28% within the Woodrat fire perimeter.

Upon completion of the salvage harvest, trees would be planted, with a large representation of ponderosa pine in the lower elevations. Forest openings caused by insect and disease damage or future fires would augment forage opportunities for the owl. Some disturbance to individual owls that are near the salvage operations may occur. Habitat would increase as tree density is reduced and ponderosa pine matures to the size favored by the owl for nesting.

Conclusion

Forest Plan elements being met by the project for the flammulated owl include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have No impact on the owl. Alternative 2 *may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species of the flammulated owl*.

Bats: Fringed Myotis, Long-eared Myotis, and Long-legged Myotis

Three bat species associated with forest habitats in the analysis area are listed as sensitive species. In wildland settings, these mammals typically roost in snags, rock crevices, and caves. The long-legged myotis is more closely associated with coniferous forest habitat than either the long-eared myotis (second in association) or the fringed myotis. All three species are known to be multiple habitat bats in regard to roosts, hibernacula, and foraging habitats. Long-legged and long-eared myotis are known to forage

together. Long-legged myotis and long-eared myotis are associated with old growth forest conditions in the Northern Region (Warren 1990).

All three bat species are known to utilize caves, mines, buildings, cliff faces, bridges, exfoliating tree bark, snags, and crevices in rocks as roost and hibernacula sites. There are no caves, mines, or old buildings in the analysis area that would be suitable hibernacula sites. Large trees with protective bark and large snags are the primary roosting habitat components available in the analysis area.

Habitat information suggests that the fringed myotis is more closely associated with forest conditions found on drier breaklands than mesic uplands. This bat is often found in dry habitats where open areas are interspersed with mature forest, creating a complex mosaic with ample edges and abundant snags (Keinath et al 2004). Fire suppression has reduced bat roosting habitats: replacing ponderosa pine, white pine and western larch, with species less fire tolerant, smaller size, and younger age classes that are more susceptible to insects and disease before reaching maturity (Wisdom et al. 2000). These conditions have limited suitable habitat for fringed myotis in the project area prior to the fire event.

Long-eared myotis are habitat generalists in their selection of roost structures among various landscape conditions (Arnett and Hayes 2009). Long-eared myotis roost under exfoliating tree bark, and in hollow trees, caves, mines, cliff crevices, sinkholes, and rocky outcrops on the ground. They also sometimes roost in buildings and under bridges (Western Bat Working Group 2005). Landscape snag densities influence the use of different types of roosts. The species has been found roosting in the snags and stumps of Douglas-fir, western hemlock (Barclay and Kurta 2007), western red cedar (Arnett and Hayes 2009), and pine (Vonhof and Barclay 1997). Arnett and Hayes (2009) found the frequency of snag use by long-eared myotis increased with density of snags and was nearly twice as high in landscapes with high snag densities (>2.2 snags/ac) as in those with low snag densities (<1 snag/ac).

Arnett and Hayes (2009) indicated that the odds of snags and trees being used as roosts by female bats increased with greater diameters. Large trees in the study tended to be in more open areas or extend above the canopy, thereby increasing detection and access for bats, as well as increasing exposure to solar radiation which contributes to cavity warming and more desirable roost microclimate. Also, the thermal and insulated qualities of wood and bark increase with diameter, resulting in more stable roost temperatures. Increased warmth of roosts reduces energetic demands and facilitates development and growth of fetuses and juveniles. Bats also may use large snags and trees because they are of sufficient age and size to have developed numerous cavities and more exfoliating bark area suitable for roosting.

The bats have been detected on both forests, but no records were found of these species in the project area.

Population Trends: The fringed myotis has a global rank of G4/G5 (apparently secure widespread, and abundant) and an Idaho State rank of S2 (imperiled). The present population status of fringed myotis is unknown and is one of the least common detected species during surveys in north Idaho (Romin and Bosworth 2010). This information is consistent with the pattern of limited and patchy distribution that was the basis for including the fringed myotis on Idaho's list of species of greatest conservation need (IDFG 2005).

Long-legged and Long-eared myotis have a global rank of G5 (secure) and an Idaho State rank of S3 (vulnerable). The Western Bat Working Group (1998) ranked long-eared myotis and long-legged myotis as moderate conservation concerns.

Alternative 1

No hibernacula sites are known in the project area. All three species forage where winged invertebrates are available: riparian areas, tree canopies and clearings. Bat presence on the forest occurs during spring and summer seasons. Habitat estimates for potential bat occurrence are based on habitat elements each species prefers for roosting, according to literature pertinent to roosting habitat needs of each species.

Moderate to high severity fires in the Woodrat fire perimeter would have reduced bat habitat: damaging roosting and foraging habitat.

Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed. Bat habitat would likely remain stable in areas unaffected by the fire or areas of low burn severity. The fire produced a large pulse of snags in the Project area. The prey base for bats would increase during the post-fire season, as many winged invertebrates would arrive to feed on the dead and dying wood. As vegetation recovers, shrubs and other plants would offer nectar sources for lepidopterans and other insects that bats feed on. The natural fire event should be beneficial to the bat species.

Alternative 2

The proposed salvage harvest would reduce snags in areas burned at moderate to high severities. Since these fire severities have already damaged potential roosting or foraging habitat, the salvage harvest would not impact bat habitat. Unit prescriptions would leave a minimum of 14 trees on average per acre; which would be dead or dying trees in the more severely burned areas. Disturbance from project activities (noise and movement of man and machine) may disturb bats, and bats roosting in snags may be harmed if the trees are felled.

About 536 acres of trees would be planted in the units after harvest and site preparations are completed. Ponderosa pine, a preferred tree species for the analyzed bats, would be the most common species planted in treated units. In about 80 to 100 years, these trees would provide structure and potential habitat for the owl. Future prescribed burns would reduce fuels and promote more open areas with greater spacing between the larger trees.

Cumulative Effects

The cumulative effects area for bat species is the CNF, which includes the 2015 Woodrat fire. The time frame for cumulative effects is 80-100 years: the time it takes to develop large snags and trees used for nesting habitat.

Past projects of roadwork, decommissioning and culvert replacements did not impact bat habitat. Salvage and timber harvests removed some snags that may have provided roosting habitat.

Past, ongoing, or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA), a IDL salvage harvest, tree planting, the Road, Administrative, and Recreation Site Maintenance project, and other fire salvages planned on Clearwater National Forest. The Woodrat BAER project would not impact myotis habitat.

The Interface Fuels project created more open habitats with retention of large trees, such as Ponderosa pine and some Douglas-fir, and subsequently potential habitat for the bats; especially the dry site habitats preferred by the fringed myotis. The IDL salvage sale (2,616 acres) would remove snags and some large trees that provide potential roosting habitat for the bats. The IDL would retain other large trees as seed trees or structure that may provide foraging opportunities for the Myotis species. IDL would plant trees for future forest products. In 5-20 years, the plantations would provide foraging habitat for the bats,

especially in or near any areas where large trees are retained. Nesting habitat would develop in 80 to 100 years after the fire.

Foreseeable projects include salvage projects in other 2015 fire perimeters and the Road, Administrative, and Recreation Site Maintenance project. The latter project would reduce about 58 acres (2.8%) of potential bat habitat in areas where large snags are cut down. Bats in or near the proposed units may be disturbed or harmed by the salvage operations. However, tree planting is proposed and snag retention in units would occur in the Woodrat Salvage project. Firewood gathering and fire suppression would continue.

Alternative 1

No activities are planned, therefore no effects would occur. Natural succession would recover forest habitats to potential bat habitats in about 80 years providing no other disturbances occur. The State salvage would reduce fringed myotis habitat by 39%, and long-eared/long-legged habitat by 32%.

Alternative 2

In the Woodrat Salvage project some large snags would be removed. Conversely, unit prescriptions would maintain on average, at least 14 trees per acre of live and/or dead species. The size of the retained trees offer potential roost habitat for bat species. Individual bats within or adjacent to the harvest units may be disturbed or harmed by project activities. Management of tree plantations (PCT and commercial thinning) would produce potential bat roosting habitat in about 80 years. The Woodrat salvage harvest would occur only in areas burned at moderate to high severities, where bat habitat has been lost. This alternative would not impact habitat for the analyzed myotis species.

The Road, Administrative, and Recreation Site Maintenance project would affect about 58 acres (11%) of fringed myotis habitat by dropping and leaving hazard trees/snags on site. About 30 acres (2.8%) of long-eared or legged myotis habitat would be impacted by the Road, Administrative, and Recreation Site Maintenance Project.

Combined impacts to bat habitat would be a reduction of 50% of post-fire habitat for the fringed myotis and 35% decline of post fire habitat for the long-eared and long-legged myotis within the Woodrat Fire perimeter.

Cumulatively across the CNF, past activities and potential bat habitat to be impacted by all salvage proposed or ongoing operations (Woodrat, Boulder CE, other potential salvage projects, and the Road, Administrative, and Recreation Site Maintenance project) would affect/reduce 3% of the 82,200 acres that burned in the past 6 years. This would leave about 97% of snag habitat left in burned areas on the Clearwater National Forest. This potential habitat is above the 40% threshold of the Forest Plan recommendation for cavity dependent species.

Conclusion

Forest Plan elements being met by the project for the three bat species include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have No impact on the bat species. Alternative 2 *may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species of the fringed, long-eared or long-legged myotis species.*

2. Management Indicator Species (MIS)

Management Indicator Species (MIS) are identified in the planning process and used to monitor effects of planned management activities on populations of wildlife and fish. The National Forest Management Act (NFMA), requires the Forest Service to manage fish and wildlife habitat in order to maintain viable populations of existing native and desired non-native vertebrate species in the planning area (36 CFR

219.19). The NFMA regulations suggested categories for forests to consider when selecting MIS species (1982 rule provision 219.19 (a)(1)) including consideration of species that are effective indicators of the effects of management activities, and/or species of special concern or managed game species. The Clearwater Forest Plan identifies 10 potential wildlife MIS. Four MIS are discussed below; the remaining 6 species (bald eagle, belted kingfisher, gray wolf, grizzly bear, Shiras moose and white tail deer) have no habitat present or would not be affected by proposed activities (Table 23).

American Marten

The American marten was identified as a CNF management indicator species for mid to high elevation, mature forest. The marten has a close association with late succession, mesic-dominated forests, especially those with uneven age structure and gaps in the canopy (Buskirk and Ruggiero 1994). Marten need dense overstory (>30%) and sufficient understory cover for hiding and denning (Snyder and Bissonette 1987). However, it is possible that marten may be more associated with complex vertical and horizontal woody structure, as opposed to forests of a particular age, species, or overstory requirement (Chapin et al. 1997). American marten are found at higher elevations and on mid-slopes during winter, and use riparian areas more intensively in summer (Buskirk and Ruggiero1994). Marten habitats are similar in tree structure to those used by fishers, but unlike fishers, they can hunt efficiently both in the subnivean layer (under snow) and on the surface of deep snowpacks (Aubry and Lewis 2003). Non-forest habitats are occasionally explored during summer, and martens may hunt in open meadows bordering dense forests if hiding cover is present (Hargis et al. 1999, Buskirk and Powell 1994).

Marten in north-central Idaho use a variety of forest types in winter, but activity was highest in Engelmann spruce/subalpine fir stands with mesic habitat types, >30% canopy cover, and overstory age >100 years (Koehler et al. 1975, Koehler and Hornocker 1977). Mature lodgepole pine is also suitable in moist habitat types, and in areas of high precipitation, dense cedar-grand fir forests at lower elevations provide habitat for the marten as well (Koehler et al. 1975).

Resting and denning sites are important habitat components, as they provide marten protection from predators, inclement weather, and thermal stress (Bull and Heater 2000). In the central Rocky Mountains, large logs (>16” diameter), large snags (>16” dbh), and live spruce and fir trees >8”dbh were important characteristics for marten den sites; while rock crevices, red squirrel middens, logs and snags were used during foraging activities (Ruggiero et al. 1998). Pine marten prey on voles, snowshoe hares, red squirrels, ground squirrels, berries, birds, and eggs (Ruggiero et al. 1998).

Population Trends: Considered as G5 (secure) global status, and S5 (secure) status in Idaho (NatureServe 2014). Total population size is unknown but probably is at least several hundred thousand (NatureServe 2014). Samson (2006b) indicates 17,297 acres of suitable habitat is needed to maintain a viable population of marten in Region 1. Bush and Lundberg (2008) show over one million suitable habitat acres are on the forest. American marten are managed as furbearers that can be legally trapped in Idaho.

Alternative 1

Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed. Post-fire recovery of vegetation would offer increasing habitat for small mammals and birds the marten preys on.

Alternative 2

Areas burned at moderate to high severities would have lost most of the structure that marten would use for denning or resting habitats. Alternative 2 salvage harvest would occur in 46 acres of former marten habitat that was lost in the fire. The removal of dead or dying trees would not impact marten habitat. Disturbance from project activities (noise and movement of man and machine) may disturb an individual marten that is adjacent to a salvage unit.

Snags would be reduced by harvest operations. However, unit prescriptions would leave a minimum of 14 live or dead trees per acre on average. Retained snags would decay and fall to the ground in time, offering potential foraging habitat to the marten.

This alternative proposes to plant 536 acres of trees, which would offer some foraging potential for marten in about 20 years. These 'plantations' would be managed for large tree production by future actions to reduce tree densities and competition. The planted units in the more northern and higher elevations of the project area would offer denning and resting habitat for the marten in about 80-100 years.

Cumulative Effects

The cumulative effects area for the American marten is the 2015 Woodrat fire perimeter. The time frame for cumulative effects is 80-plus years: the time it takes to develop mature tree structure that would provide denning and resting habitat for the marten.

Past projects of roadwork, decommissioning and culvert replacements did not impact marten habitat. Salvage harvests removed some snags that may have provided denning habitat.

Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA), IDL salvage harvest, Woodrat BAER project; the Road, Administrative, and Recreation Site Maintenance project; tree planting, and other potential salvage projects.

The Interface Fuels project created more open habitats with retention of large trees, such as Ponderosa pine and some Douglas-fir. Currently, these areas are open and offer little habitat for the marten. As vegetation recovers, small mammals would return to forage on the plants and use the downed snags and woody debris as hiding cover, nests or dens. This development would provide a prey base for a marten to hunt in.

The IDL salvage harvest would reduce marten habitat in the Woodrat fire perimeter by 23%. The State would plant trees in all harvest units; offering potential foraging habitat for the marten in about 20 years.

The Road, Administrative, and Recreation Site Maintenance project would not impact any marten habitat. The Woodrat BAER project (road repair, culvert replacement, and decrease in sedimentation to streams at road crossings) would not affect marten habitat. The IDL and the Forest Service would plant trees for future forest products; which would provide foraging habitat for martens in areas of higher elevation.

Alternative 1

No federal activities are planned, therefore there would be no effects. Fallen snags would create habitat for small animals that the marten may hunt. Natural succession without further disturbances would provide marten habitat at elevations above 4,000' in about 80-100 years.

Other area salvage projects, such as the IDL salvage, would also reduce some large snags, and project activities may disturb an individual marten in or adjacent to the areas of operations. The IDL salvage harvest would reduce marten habitat in 136 acres (23%). Tree planting is proposed and snag retentions in units would occur in some of the projects. Firewood gathering and fire suppression would continue: reducing snag habitat in the affected areas.

Fire creates and maintains openings where abundant fruits, insects, ground squirrels, and voles provide food items for the marten during the summer (Koehler and Hornocker 1977). Unburnt areas and those burned at low severity likely have retained a large percentage of the canopy cover and prey base that was present prior to the fire. These areas would continue to offer habitat for the American marten. More

severely burned areas would take 80 or more years to recover the structure associated with marten use for denning or resting habitat.

Alternative 2

This alternative would not reduce marten habitat, as the salvage harvest would occur in areas that have lost marten habitat due to moderate or high burn severities. Snags would be retained in unburned areas, and in burned areas not proposed for salvage harvest; providing recruitment denning habitat. A minimum of 14 snags or live trees would be retained on average per acre; which would offer some foraging habitat for the mammal. Individual marten within or adjacent to the harvest units may be disturbed by project activities. No harvest would occur in riparian areas or old growth.

The Road, Administrative, and Recreation Site Maintenance project would not occur in any potential marten habitat. Only the State salvage action would impact about 29% of post-fire marten habitat. Both the State and USFS would re-plant trees in the areas harvested. Twenty years after planting, the new trees would provide hiding cover and forage to marten and its prey. In 80+ years, the trees would provide a forest structure that marten can use for resting and some denning habitat.

Conclusion

Forest Plan elements being met by the project for the marten species include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have No impact on the marten. Under Alternative 2 *some impacts may occur to individuals or their habitat, but is not expected to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing of the American marten.*

Northern Goshawk

The northern goshawk was identified as a National Forest management indicator species for old growth habitat. Current condition of nesting habitat was analyzed, as it is the most limiting factor for goshawks. Nesting habitat is represented by a much narrower range of vegetation structure and composition than the post-fledgling areas and forage area.

Goshawks use large landscapes, integrating a diversity of vegetation types over several spatial scales to meet their life-cycle needs (Squires and Kennedy 2006). In “The Northern Goshawk Status Review,” the USFWS found that the goshawk typically uses mature forest or larger trees for nesting habitat; however, it is considered a forest habitat generalist at larger spatial scales (USFWS 1998). The FWS found no evidence that the goshawk is dependent on large, unbroken tracts of “old growth” or mature forest (63 FR 35183 June 29, 1998).

Nest areas are usually mature forest with large trees, relatively closed canopies (60-90%) and open understories (Squires and Kennedy 2006). In central Idaho, goshawks nest in a variety of forest stands that are comprised of mature trees with relatively high canopy cover and open understories (Moser 2007). In northcentral Idaho, nest trees had a mean dbh of greater than 20”, with the nest area on moderate slopes and canopy cover of 75-85% (Hayward and Escano 1989). Favored habitats typically are located in forest stands having only 1 or 2 canopy levels with an open or mixed-density understory (Moser 2007). Goshawks have been found to use the same nesting area for decades, and goshawk territories typically contain a number of alternate nests (Moser 2007). Goshawks appear to range over large areas and use a variety of habitats outside of the nesting area. Home ranges vary from 1,200 to 9,800 acres in size (Kennedy 2003).

Goshawks require habitats for prey that contain snags, downed logs, woody debris, large trees, herbaceous and shrubby understories, and a mixture of stand structural stages (Wisdom et al. 2000). Goshawks prey on a variety of medium-sized forest birds and small mammals (e.g. snowshoe hare, squirrels, grouse, and other forest birds) in early seral to mature forests and forest openings. Foraging

habitat may be as closely tied to prey availability as to particular habitat composition or structure (Beier and Drennan 1997). The raptor may also hunt along forest edges and in small openings. Large diameter snags and stumps are often used as plucking posts where goshawks consume their prey.

Population Trends: The goshawk is rated secure across its range (global rank G5) and S3 (vulnerable, at moderate risk) in the State of Idaho (IDFG 2005). Other studies show no evidence that the northern goshawk is declining in number in the western United States (Kennedy 1997, FR(63) 124 1998, Kennedy 2003, Andersen et al 2005, Squires and Kennedy 2006). Samson (2006a) concluded no scientific evidence exists that the northern goshawk is decreasing in number in the Forest Service Northern Region. Samson (2006b) concluded that to maintain a minimum viable population of the northern goshawk across Region One, there would need to be a minimum of 30,147 acres of post-fledging habitat. Bush and Lundgren (2008) show over 62,000 acres of post-fledgling habitat on the CNF, twice the area needed to maintain viable populations region-wide.

Alternative 1

Potential goshawk nesting habitat was modelled as all tree species greater than or equal to a size of 20” dbh and a canopy cover greater than 40%. Post fire nesting habitat is approximately 2,166 acres in the project area. No activities are planned, therefore there would be no effects.

Alternative 2

Under this alternative no loss of nesting habitat would happen with the proposed CNF salvage harvest in the Project area. The proposed salvage harvest would occur in areas burned at moderate to high severities; which have lost the structure and canopy cover preferred for the raptor’s nesting habitat. Additionally, the lack of cover in these fire-affected areas would reduce some prey sources for the raptor as well. In all proposed units, snag and live tree retention would leave a minimum of 8-14 trees/snags per acre. Therefore, some tree structure would remain for the hawk to perch and hunt prey from. The raptor may prey on the small avian and mammal species that are attracted to the burned areas.

Disturbance from project activities (noise and movement of man and machine) may disturb an individual goshawk that is adjacent to a salvage unit.

Tree planting by the IDL and USFS (536 acres) would create potential foraging habitat for the goshawk in about 5-20 years. Nesting habitat would become available in about 80 to 120 years.

Cumulative Effects

The cumulative effects area for the northern goshawk is the 2015 Woodrat fire perimeter. Home ranges vary from 1,400 to 8,650 acres, depending on the sex of the bird and habitat conditions (Hargis et al. 1999, Reynolds et al. 1992). Moser (2007) found home ranges to be a mean of 13,400 acres for females and 9,500 acres for males in northern Idaho. Researchers found that home ranges of adjacent goshawk pairs may overlap (Squires and Kennedy 2006,). The size of the Woodrat Salvage project area would support at least one pair, and/or provide habitat for a few overlapping pairs.

The time frame for cumulative effects is 100-plus years: the time it takes to develop large mature tree structure that would provide nesting habitat for the raptor.

Past projects of roadwork, decommissioning and culvert replacements did not impact goshawk habitat. Salvage harvests removed some snags that may have provided forage for avian or small mammal species the raptor would hunt.

Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA); the Road, Administrative, and Recreation Site Maintenance project; tree planting, and the IDL salvage harvest. The Woodrat BAER project began implementation during summer of 2016, and would not impact northern goshawk habitat, although some activities may disturb an individual nearby.

The Interface Fuels project created more open habitats with retention of large trees, such as Ponderosa pine and some Douglas-fir. The project managed vegetation for retention of large fire-resilient tree species with light loads of understory fuels between them. A goshawk may use the area, but would prefer adjacent habitats with more tree canopy. The IDL salvage sale would conduct operations similar to the previous project, therefore, leaving a more open habitat with some big trees. The IDL and Forest Service would plant trees for future forest products; which would provide foraging habitat for a goshawk in about 5 years.

The Road, Administrative, and Recreation Site Maintenance project would drop some large dead trees, which is unlikely to affect goshawk nesting habitat. Traffic using the roads would be a persistent disturbance during the nesting period and firewood gathering would be another intrusion that may displace goshawks from their nesting activities in proximity to an open road.

Tree planting would occur on IDL lands and at least 536 acres of CNF lands. In 5-10 years after planting, the trees would be of size to provide forage and some nesting or denning habitat for small mammals and birds. This development would provide foraging habitat for goshawks.

Alternative 1

No federal activities are planned, therefore there would be no effects. Fallen snags and new vegetation growth would create habitat in 5-10 years for small animals that the raptor may hunt.

Alternative 2

This alternative would not impact reduce goshawk nesting habitat as salvage activities would be in burnt areas that have lost the amount of canopy cover preferred by the raptor. Some tree structure would available in units: a minimum of 14 live/dead trees per acre would be retained. Vegetation recovery, either by tree planting (536 acres within the Woodrat Salvage project area) or natural regeneration would begin to provide potential prey for the raptor in 5-20 years.

An individual or pair of goshawks within or adjacent to the harvest units may be disturbed by project activities. About 100+ years after the event, the tree structure would begin to offer potential nesting habitat for the bird.

Cumulatively, the IDL sale would reduce nesting habitat by 33%. The Road, Administrative, and Recreation Site Maintenance project would not reduce goshawk nesting habitat in the Woodrat Salvage project area. Tree planting on IDL lands and on the CNF would recover to a forest condition quicker than areas left to natural plant succession. As vegetation recovers, small mammals and birds would return to forage on the plants and use the downed snags and woody debris as hiding cover, nests or dens. Goshawk forage opportunities would increase. Large live trees retained in units would provide potential nesting habitat for the raptor, as the regenerating forest matures.

Conclusion

Forest Plan elements being met by the project for the northern goshawk include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have No impact on the goshawk. Under Alternative 2 *some impacts may occur to individuals or their habitat, but is not expected to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing of the northern goshawk..*

Pileated Woodpecker

The pileated woodpecker is a management indicator species for old growth forest and large snag habitat. Pileated woodpeckers are large, cavity-nesting birds associated with late successional stage forests, but also may use younger forests that have scattered, large, dead trees (Bull and Jackson 1995). The woodpecker appears to seek out microhabitats with a higher diversity of tree species and densities of decadent trees and snags than are available across a landscape (Savignac et al. 2000, Aubry and Raley 2002). Through their selection of large dead and damaged trees, the bird may serve as a good indicator of ecological function rather than just the age of a stand or forest (Bonar 2001).

Similar to the northern goshawk, the current condition of nesting habitat is considered the most limiting factor for pileated woodpeckers. The woodpecker's nesting habitat is a more specialized range of vegetation structure and composition than the stand age and structure for foraging habitat. The nest tree is the most important variable to estimate breeding habitat use by the pileated woodpecker (Kirk and Naylor 1996, Giese and Cuthbert 2003).

Nest trees are typically dead, and nest cavities possess a good insulative value. Most nest trees in northeast Oregon were in ponderosa pine, but larch and grand fir were also used (Bull and Jackson 1995). The mean dbh of nest trees was 33 inches, trees averaged about 90 feet high, and the mean height of the nest cavity was about 50 feet. In Montana, pileateds nested in a variety of tree species, including larch, ponderosa pine, grand fir, and Douglas-fir (McClelland and McClelland 1999). Nest trees averaged 28 inches dbh and 95 feet high, and stands typically had >50% canopy closure (McClelland and McClelland 1999).

Pileated woodpeckers roost in hollow trees or vacated nest cavities at night and during inclement weather. Roost trees are similar to nest trees but typically have more entrances. In northeast Oregon, pileateds roosted in unlogged stands of old growth grand fir with canopies >60%. Roost cavities were in live or dead grand fir, larch, or ponderosa pine trees, and 95% had a hollow interior created by decay rather than excavation (Bull and Jackson 1995). Bull and Jackson (1995) suggest that by excavating only the entrance hole to gain access to the hollow interior of a tree, pileateds conserve energy by not having to excavate the entire cavity. In Montana, pileateds roost in western larch, black cottonwood, and ponderosa pine (McClelland and McClelland 1999).

Feeding habitat for pileateds is highly dependent on the availability of carpenter ants which make up the majority of their food supply (McClelland and McClelland 1999). Cover types selected by the woodpecker include mixed conifer, ponderosa pine/Douglas-fir, western larch, grand fir, and decadent lodgepole pine stands. Preferred feeding habitats have high densities of snags and logs, dense canopies, and tall ground cover, with more than 10% of the ground area covered by logs. Pileateds seem to forage on large, decayed trees, and preferentially forage at low heights on tree boles; down material may need to be in excess of eight inches diameter and stumps between four to six feet high before pileateds will use these structures for foraging (Flemming et al. 1999).

Territories of nesting pairs cover 500-1000 acres in Montana, 1000-1300 acres in western Oregon, and 320-600 acres in northeastern Oregon (McClelland and McClelland 1999). Not every stand within a bird's home range is used as feeding habitat. The range of a nesting pair is partly determined by the amount of suitable feeding habitat in proximity to the nest site.

Pileated woodpecker cavities are an important resource for a variety of cavity-using wildlife, especially those animals or birds that are too large to utilize cavities created by smaller woodpeckers (McClelland and McClelland 1999, Bonar 2001). In addition, the woodpecker provides foraging opportunities for other species and accelerates the decay processes and nutrient cycling (Aubry and Raley 2002).

Bull and Meslow (1977) concluded that to maintain a pileated woodpecker population in northeast Oregon, 0.14 snags per acre at 20 inches dbh or greater were needed. Bull and Holthausen (1993) later recommend maintaining a minimum of 0.65 snags per acre greater than 20 inches dbh. Retention of large, seral tree species is an important component for maintaining habitat for this species in managed forests.

Population Trends: The pileated woodpecker is rated secure across its range (global rank G5) and apparently secure (State rank S4) in the State of Idaho (ICWCS 2015). Samson (2006b) concluded that no scientific evidence exists that the pileated woodpecker is decreasing in numbers in the Northern Region. He indicates 90,441 acres are required to maintain a viable pileated woodpecker population in the Forest Service Northern Region. Bush and Lundberg (2008) show 268,718 acres of nesting habitat and 338,680 acres of foraging habitat on CNF. Based on Bush and Lundberg's (2008) estimate, the Forest contains twice the nesting habitat than is needed to provide viability at the Regional level. Please see the section under Species Viability for more information on how authors developed their models for species viability.

Alternative 1

Snags larger than 10" dbh would provide potential foraging habitat for the pileated woodpecker. Other species of woodpeckers will move in the season after the fire (2015) to begin feeding on the beetles and other insects that are attacking the dead and dying trees. These birds include the black-backed woodpecker, three-toed woodpecker, northern flicker and downy and hairy woodpecker. The pileated woodpecker will forage on beetles (Bull and Jackson 1995). However, preference prey is the carpenter ant. These and other ants will become more common in the break-down of decaying wood, from 3 to 10 years after the post-fire event. Snag densities and the availability of food sources would likely be very favorable for the pileated woodpecker during the next 15 years in the project area.

Nesting habitat was modelled using tree species (ponderosa pine, Douglas-fir, grand fir, cedar and hemlock) tree size greater than 20" dbh, and canopy cover greater than 60%. Post-fire analyses showed about 195 acres of potential nesting habitat survived the fire. Of the remaining potential habitat, about 38 acres were on the CNF portion of the fire.

Forage habitat was modelled for all tree species with a dbh greater than 10", and canopy cover greater than 25%. Post fire habitat in unburnt or low burn severity showed 3,509 acres in the project area.

Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed. The mixed severity fire has produced a supply of snags and insects that pileated woodpeckers would forage on for 10-15 years after the fire event. Snags of large diameter (≥20" dbh) would offer potential nesting habitat.

Alternative 2

Under Alternative 2, no nesting habitat would be affected. The 38 acres of potential nesting habitat on the CNF portion of the project area (prior to the fire) were burned at moderate to high severity, and likely lost the structure and canopy cover the woodpecker prefers. Post-fire pileated potential foraging habitat was about 3,509 acres. Salvage harvest of foraging habitat proposed with this alternative would impact about 366 acres of this or about 10%. All units would retain on a minimum of 14 live and/or dead trees per acre. The remnant structure would provide potential foraging habitat in the units.

No harvest would occur in unburned old growth or riparian areas (burned or unburned). Additionally, no harvest would occur in landslide prone areas, with those snags being left for snag dependent species. Disturbance from project activities (noise and movement of man and machine) may disturb an individual woodpecker that is adjacent to or in a salvage unit.

Cumulative Effects

The cumulative effects area for the pileated woodpecker is the CNF. The time frame for cumulative effects is 100-plus years: the time it takes to develop large mature tree structure that would provide nesting habitat for the bird.

Past projects of roadwork, decommissioning and culvert replacements did not impact nesting or foraging habitat for the woodpecker. Timber and salvage harvests removed some snags that may have provided foraging habitat.

Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA), the IDL salvage harvest, the Road, Administrative, and Recreation Site Maintenance project; tree planting, the Woodrat BAER project and other fire salvages planned on Clearwater National Forest.

The Interface Fuels projectcreated more open habitats with retention of large trees, such as Ponderosa Pine and some Douglas-fir. The project managed vegetation for retention of large fire-resilient tree species with light loads of understory fuels between them. The woodpecker may use the area, but would prefer adjacent habitats with more apparent tree decay. The State salvage sale would conduct operations similar to the previous project, therefore, leaving a more open habitat with some big trees.

The Woodrat BAER project would not impact woodpecker habitat, though the activities may disturb an individual bird in proximity to the restoration efforts.

The Road, Administrative, and Recreation Site Maintenance project may remove some large dead trees that would offer woodpecker habitat. Firewood gathering would continue, with snag loss occurring near roads open to public motorized access.

Alternative 1

Alternative 1 would not create any direct or indirect affects, as no federal activities are proposed. Thousands of burned and diseased trees would offer both forage and nesting opportunities for the woodpecker.

Alternative 2

Alternative 2 would remove snags, but none of the salvage units are in pileated nesting habitat. About 10% of potential foraging habitat would be salvage harvested with this alternative. All salvage units in Alternative 2 would leave on a minimum of 14 trees per acre. The retained trees would provide some forage habitat for the woodpecker. Pileated woodpeckers within or adjacent to the harvest units may be disturbed by project activities.

The Road, Administrative, and Recreation Site Maintenance project would impact about one 1 mile of road in the USFS portion of the Woodrat project area, or about 15 acres (8%) of nesting habitat. The project would reduce pileated foraging habitat by 120 acres or 3%. Some large hazard trees would be dropped and left. The latter action would provide foraging habitat for the woodpecker, as beetles and ants would move in to feed on the decaying wood on the ground.

The combined reduction of foraging habitat proposed by the Woodrat salvage project, the IDL salvage harvest and the Road, Administrative, and Recreation Site Maintenance project would be about 46%. Downed trees and woody debris left on site by the salvage and road projects would provide potential woodpecker foraging habitat on beetles and ants that move in to feed on the decaying wood. Combined reduction of the woodpecker’s nesting habitat in the PA would be about 62%.

Tree planting and natural recovery of the forest would offer nesting habitat for the woodpecker in about 100+ years after the event.

Cumulatively across the CNF, past activities and potential pileated woodpecker habitat to be impacted by all salvage proposed or ongoing operations (Woodrat, Boulder CE, other potential salvage projects and the Road, Administrative, and Recreation Site Maintenance project) would affect/reduce 3% of the 82,200 acres that burned in the past 6 years. This would leave about 97% of snag habitat left in burned areas on the Clearwater National Forest. This potential habitat is above the 40% threshold of the Forest Plan recommendation for cavity dependent species.

Conclusion

Forest Plan elements being met by the project for the pileated woodpecker include Forest Goal 5a (PageII-2) and Standards 5c, on Page II-23. Alternative 1 would have No impact on the woodpecker. Under Alternative 2 *some impacts may occur to individuals or their habitat, but is not expected to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing of the pileated woodpecker*.

Rocky Mountain Elk

Elk is a MIS for commonly hunted big game species on the CNF, and an indicator for general forest seral species easily affected by management activities. Elk are habitat generalists that use a diversity of forest types and structures which provide forage and hiding cover. They use meadows and early seral communities for foraging in spring through early summer. From late summer through fall, elk forage more frequently under the forest canopy. During winter, they rely upon low elevation, warm aspect, and snow free or snow limited areas for foraging. Adult bulls often winter at much higher elevations than cows and immature elk. Elk also require forest cover for security and thermal regulation (Thomas et al. 1979). Calving areas can be traditional, and preferred sites are generally large meadows, shrub fields and early seral forest openings in close proximity to water. A mosaic of diverse forest, shrub field, and meadow conditions with available water, productive winter range, and adequate security characterizes good elk habitat.

Population Trends: Elk populations in the analysis area were relatively insignificant until major fire events occurred in the early 1900s that increased forage availability and population levels. Populations in the north and central areas of Idaho probably peaked in the 1960s (IDFG 2014). The size and frequency of fires that have been suppressed in the past were not producing forage for elk and big game at a level that might/would sustain increasing populations. Since the 1990s, elk populations in north and central Idaho have declined in forested areas due to weather events, predation by bears and lions, and more recently from wolf expansion. Active predator management is currently pursued by IDFG, and the Statewide population as of 2013 is estimated at approximately 107,000 animals.

The Woodrat Salvage project area lies in Game Management Unit 10A of the Dworshak Zone (EMZ). The following information was obtained from the Idaho Elk Management Plan (2014). The most recent (2011) elk population survey in MU 10A showed that the total elk numbers are up from a previous survey conducted in 2007. Cow elk numbers were higher in 2011 and met the State's population objective (Table 25).

Table 25. Elk winter population status and objectives for MU10A based on the most recent survey (IDFG 2011).

Survey Year	Status			Total	Population Objectives	
	Cows	Bulls	Calves		Cows	Bulls
2007	3,236	477	848	4,561	2900-4300	350-500
2011	4,280	315	850	5,445		

State ratios of bull and calf to cows were analyzed (IDFG 2014). Bull to Cow ratios were 15/100 in 2007; while 2011's ratio was 7/100. The recruitment average of 26 calves/100 cows occurred during 2007. For 2011, the average declined to 20 calves per 100 cows. The calf/cow ratio is an important indicator of population recruitment and long-term herd viability. A ratio of at least 25 calves to 100 cows is needed to offset natural mortality. Reasons for the decline in ratios are unclear but may be related to reductions in forage quality (poor condition of cows and low calf weights), high predation rates, less security area, and greater human disturbance and/or hunting pressure.

Elk Analysis: In the 1987 Forest Plan, the CNF established Management Areas (MAs) for different management goals, resource potential and limitations. For example, the northeastern portion of the wildfire occurred in MA E1. The forest standards for this MA is primarily for timber production, with a minimum of 25% elk potential habitat effectiveness.

The Woodrat fire burned in a mostly winter range (MA C4) and a minor portion of an Elk Analysis Area (EAA) located in MA E1. Winter range is primarily below 4,500 feet in elevation on southerly aspects and includes grasslands, brushfields, and timbered lands. Generally, winter range receives less snow and is located at lower elevations than summer range. During winter, cow elk seem to prefer shrub habitats, while bull elk favor more open timber types (Unsworth et al. 1998). Older bulls also tend to use higher elevation benches or ridges with heavier snowfall compared to habitat used by younger bulls and cows (Unsworth et al. 1998).

Quality forage is an important component of elk winter range. Elk forage on grasses, forbs, and the tips of twigs from some woody vegetation. Shrub fields and conifer forests provide a higher proportion of winter forage than grassland sites. Species such as redstem ceanothus, serviceberry, mountain maple, choke and bitter cherry, and syringa provide much of the winter forage available to elk.

The EAA is an area considered to be the average size of an elk home range, which is a minimum of 3,800 acres. About 278 acres burned at mixed severities in the Yakus EAA. The EAA lies in MA E1 (timber production is the goal), and is considered in elk summer range. Summer range may overlap with wintering areas, as animals tend to move to higher elevations as the snow melts and additional forage becomes available. Important habitat components on spring, summer, and fall range include foraging sites, hiding cover, calving areas, rutting and security areas. Within the burned areas of the project boundary, tree densities and forage were reduced from the effect of the fire. Due to the loss of trees and shrubs, hiding cover was also reduced.

"Interagency Guidelines for Managing elk habitats and populations on U.S. Forest Service lands in Central Idaho" (Servheen et al. 1997) was used to evaluate summer elk range and considers road open road and motorized trail density, livestock grazing, cover and security areas. The disturbance to elk from roads and motorized trails is based on the amount of traffic, the season and type of traffic, and the amount of buffer available to separate the disturbance from elk (Leege 1984). Presence of cattle may compete with elk for forage availability. Elk Security areas are places where wildlife can retreat for safety when affected by disturbance. In general, security areas are over 250 acres in size and >0.5 miles from an open road or trail. Cover is vegetation screening that provides hiding cover to an elk from human detection at 200 feet or less, while thermal cover provides tree canopies that intercept snow and reduce wind effects during the winter season. Forage is found in openings that produce grass, herbs and/or shrubs for elk consumption.

Elk habitat effectiveness (EHE) was analyzed to find the status of the EAA: effects of roads and trails, cattle presence, openings, cover and security areas. The existing condition (post-fire) in the EAA shows that the EHE is at 44%; which is above the standard threshold of meeting at least 25% in this concerned EAA.

Alternative 1

The no action alternative would not create any effects, as no activities are planned. The fire burned approximately 2,200 acres at moderate to high severity in the fire perimeter. Most trees would have been killed, shrubs and other vegetative understory would have been burned. Hiding and thermal cover for elk have been temporarily reduced in these areas. The recovering understory of shrubs and other plants would take 3-15 years to recover as forage for elk. This disturbance applies to both summer and winter ranges.

Alternative 2

The proposed action alternative would harvest 378 acres in areas burned at moderate to high severities. This alternative would not be reducing elk habitat, as the fire was the factor that burned forage and cover habitats.

Project activities would disturb (noise and activities from man or machine) elk in or adjacent to the salvage units. Tree planting would provide hiding cover for elk approximately 15 years after the action. Forage would recover as mentioned in Alternative 1.

Cumulative Effects

Analysis of IDL salvage harvest activities on elk has been conducted by the State. The cumulative effects area for elk is the winter range that encompasses the main CNF portion of the Woodrat Salvage project, and the Yakus EAA (elk analysis area). The EAA lies north and adjacent to the winter range. The time frame for cumulative effects is 3-15 years for forage habitat, and 15+ years for hiding cover to develop, and 60+ years for thermal cover to occur.

Past projects of roadwork, decommissioning, and culvert replacements did not impact elk habitat. Past timber and salvage harvests would have reduced cover, but created forage for the mammal. Most of these past harvest units are producing trees of the height and density to offer hiding cover for elk. Additionally, as the trees grow and shade out the understory of grass, shrubs and herbs, forage is decreasing.

Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage project include the Interface Fuels II project (2009 EA), IDL salvage harvest, Road, Administrative, and Recreation Site Maintenance project, Woodrat BAER project, and tree planting.

The Interface Fuels project created more open habitats with retention of large trees, such as ponderosa pine and some Douglas-fir. This project managed vegetation for retention of large fire-resilient tree species with light loads of understory fuels between them. Understory fuels have been reduced from prescribed burns planned in this project. These resultant open areas provide needed forage opportunities in all seasonal habitats for elk. The IDL salvage sale would remove large acreages of burned trees. Some units affected by low severity fires were commercially thinned. The ladder fuels were reduced, leaving a cohort of trees that would be commercially viable in the future. This thinning procedure produces a more open tree canopy which allows light and precipitation to reach the ground. Understory plants would increase, as would the forage opportunities for elk. Due to the severity of fires and salvage operations, hiding cover for elk has been noticeably reduced.

Both the State and Forest Service tree planting projects would provide hiding cover in about 15 years. The mentioned projects may disturb an elk in or adjacent to a salvage unit. Unburnt or areas burned at a low severity would continue to provide forage and/or hiding cover to elk. The Road, Administrative, and Recreation Site Maintenance project would remove a minor component of trees that may be providing some hiding cover for elk.

The Woodrat BAER project would not affect elk habitat. Similar to other mentioned projects, this one may disturb elk that are near project activities during implementation.

Alternative 1

No activities are planned, therefore there would be no effects. As the burned areas recover, forage would become available to elk in 3-15 years, depending on the burn severity that affected the area. Hiding cover in plantations would be apparent in 15 years after tree planting, while untreated areas would require more time. Fire suppression would continue: retaining more hiding cover and reducing forage expansion that would occur under an unmanaged wildfire. Public access to motorized routes would not change, and activities such as firewood gathering, mushroom picking and hunting would continue as present.

Alternative 2

This alternative would not impact elk habitat, as the 378 acres of salvage harvest would be in burned areas that are not providing forage or cover to elk. Though some trees would be retained, slash burning would reduce fuels and open areas for understory vegetation to recover. Forage for elk and other big game would become available in 3-15 years after the harvest. Planted trees would compete with the elk forage, and shade out the understory in about 15 years. The growing trees would provide hiding cover in about 15 years. Not all areas burned by the fire would be harvested. This would create a mosaic of forage and hiding cover in all the seasonal habitats for elk in the project area in about 15 years after the project is completed. Project activities would disturb elk that are near of adjacent to salvage units during the time of operations.

The Road, Administrative, and Recreation Site Maintenance project would reduce hazard trees along roads for about 180 acres in the CNF portion of the fire. About 12 of these acres would occur in the Yakus EAA. This project would reduce some hiding cover for elk.

In summary, the fire event reduced the tree canopy and increased the potential for big-game forage for the next decade. Implementation of salvage activities would disturb elk during summer months and early autumn. No harvest would occur in old growth, riparian or landslide prone areas. All temporary roads would be decommissioned, and the road access for motorized traffic would not change from the status prior to the fire.

The Yakus EAA would be immeasurably affected by the salvage activities. The elk habitat effectiveness (EHE) would remain at 44% (both during and after the harvest); meeting the Forest Plan standard of at least 25%. Elk security in the EAA would be at 15%, forage at 11%, and hiding cover about 89%.

Conclusion

Forest Plan elements being met by the project for the pileated woodpecker include Forest Goal 5 a-c (PageII-2) and Standards 5a and b on Page II-23. Alternative 1 does not propose any activities, and would have No impact on elk. Under Alternative 2 of the Woodrat Fire Salvage Project *some impacts may occur to individuals, but is not expected to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing of elk.*

3. Neotropical Migratory Birds

Under the National Forest Management Act (NFMA), the Forest Service is directed to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives” (P.L. 94-588, Sec 6 (g) (3) (B)). The January 2000 USDA Forest Service (FS) Landbird Conservation Strategic Plan, followed by the US Shorebird Conservation Plan and Executive Order 13186 in 2001, and the January 2004 PIF North American

Landbird Conservation Plan all reference goals and objectives for integrating bird conservation into forest management and planning.

The 2008 MOU between the USDA Forest Service and the US Fish and Wildlife Service enhanced collaboration and cooperation between the Forest Service and the Fish and Wildlife Service as well as other federal, State, tribal and local governments. The Forest Service recognizes the scales and diversity of habitat conditions for neotropical migratory birds and addresses such when planning for land management activities.

Neotropical migratory birds are species that breed and rear their young in the United States or Canada, then migrate south to winter in Mexico, the Caribbean Islands, and Central and South America. The status of neotropical birds is of special concern to State and federal agencies and conservation groups. Many of these birds are experiencing serious declines in population. Some migratory birds are covered by the Endangered Species Act, while others are managed by State hunting regulations. Most of the migratory birds on the forest are protected as non-game status by the Idaho Department of Fish and Game.

Affected Environment

The 2015 Woodrat mixed severity fire reduced habitat for migrant birds that require or prefer undisturbed forested habitats. On the other hand, the fire increased habitat for migrant species that prefer post-burn conditions or more open forested stands.

Areas affected by moderate to high fire severity would lack an understory, while the overstory would consist of larger diameter trees: many dead or dying, with some surviving the event. Low severity areas may retain most of the tree structure and patches of understory. Generally, the canopy cover has been reduced throughout the burned areas. Hutto (1995) found 87 avian species in burned areas from 33 fires in Montana. Point counts were conducted in these areas during first or second year after the fire events. 77% were considered as migrants that winter to the south (Hutto 1995). The author does not elaborate if these birds are neotropical migrants, and most of these species have been seen in unburned forests as well. The species found in fire-affected areas represent most bird families with the exception of waterfowl and shorebirds. In general the mixed severity fire created a recovering forest with reduced canopy, large numbers of dead and dying trees and more numerous open areas.

Alternative 1

The no action alternative would not create any impacts on migrant birds. Understory vegetation (grass, herbs, shrubs) would recover in 3-15 years, depending on the burn severity that affected the areas. Trees would be present, but competing with the understory for light and nutrients. About 15-25 years after the fire, tree densities would create a canopy that would begin to shade out the understory vegetation. Without further disturbance, the forest would continue to progress and the understory would decline. After 25 years trees would grow and become the dominant structure in the forest. At 80-120 years, the forest would be considered a mature forest, and by 150 years the tree stands would be potential old growth. Each of these successional stages would be favorable for the guild of migrant birds that prefer a certain forest structure.

Alternative 2

The proposed activities would affect about 378 of the moderate to high severity burned areas within National Forest System lands of the Woodrat fire perimeter. Species that prefer dense forest canopies would seek compatible habitats outside the burned area to nest, forage and fledge their young. Migrants that prefer burned or more open forest canopies would find favorable habitats in the mixed severity burns within the fire perimeters.

Salvage harvest activities would reduce habitat for those migrants that choose to nest or forage in the units. Unit prescriptions would retain on a minimum of 14 trees per acre. The leave trees could be dead, dying or live trees of various species. Therefore, on the Forest portion of the project area, some tree structure would be maintained. During project implementation disturbances of noise and machine or human activities may displace migrants in or adjacent to the harvest units.

Trees would be planted in the units, which would allow a quicker recovery of forested habitat than those areas under natural succession. In unplanted areas, forest succession would take longer. During the stages of forest succession, habitats would become more diverse, offering a mosaic of habitats to forest-dwelling migrant birds.

Cumulative Effects

The boundary of cumulative effects for Neotropical migratory birds is the CNF boundary. Those birds that prefer open habitat or fire-affected areas would find the Woodrat Fire Perimeter as potential habitat as a stop-over point, or spend the season to forage, mate and raise young. Consequently, migrant birds that require a more enclosed forest habitat would fly on to unburned areas within or adjacent to or beyond the fire perimeter.

Past projects of roadwork, decommissioning, and culvert replacements may have impacted migrant birds nesting or foraging in adjacent habitats. Some habitat may have been removed during the implementation of the above projects, and some disturbance from human and machine activities and noise would have occurred.

Past salvage harvests reduced habitat for snag-dependent birds. Some birds may have been harmed during the removal of snags, and the same disturbance factors as mentioned above would have been evident during harvest operations.

Ongoing or foreseeable projects in or adjacent to the Woodrat Salvage EA include the Interface Fuels II project (2009 EA); the Road, Administrative, and Recreation Site Maintenance project; tree planting, and a State salvage harvest.

The Interface Fuels project created more open habitats with retention of large trees, such as Ponderosa pine and some Douglas-fir. This project managed vegetation for retention of large fire-resilient tree species with light loads of understory fuels between them. These more open areas would provide habitat favorable to those bird species that thrive in such. The IDL salvage sale would conduct operations similar to the previous project, therefore, leaving a more open habitat for birds associated to such, and displacing those migrants that prefer more closed tree canopies. Tree planting would produce successional stages of tree growth that would provide habitat for different guilds of migrant bird species over time. The Road, Administrative, and Recreation Site Maintenance project would reduce snags and some habitat for cavity dwellers, but create open areas favorable for bird species that prefer such habitats. The project would occur along 12 miles of road in the Woodrat Salvage project area, which could affect up to 180 acres.

Alternative 1

The no-action alternative create no impacts to Neotropical migratory birds or their habitat as no federal actions are proposed. The natural fire event would create habitat for bird species that prefer post-fire or open areas, and reduce forest habitat preferred by bird species that favor tree canopy cover.

Alternative 2

The action alternative would remove dead and dying trees across 378 acres of burned areas. Salvaged units would recover from native seed sources in the soil and planted trees. During the first 15 years after the harvests, growing shrubs and trees would offer favorable opportunities for nesting songbirds. A

greater quantity and diversity of invertebrates would be available during this period, which would benefit bird insectivores.

The ongoing IDL salvage would affect about 2,600 acres of burned forest. About 180 acres of hazard trees along roads would be dropped and left by the foreseeable Road, Administrative, and Recreation Site Maintenance project. This would reduce some habitat for cavity-dwelling species.

Of the 6,503 acre Woodrat fire perimeter, about 3,174 acres (49%) would affected by salvage or road maintenance activities. No harvest would occur in old growth, riparian or landslide prone areas. All temporary roads would be decommissioned. In time, vegetation would fill in the bare ground. Shrubs and trees would provide a vertical structure for nests and foraging.

Cumulative effects of past, present and foreseeable projects would retain about 95% of snag habitat across the Clearwater National Forest in areas that have been affected by wildfires in the past 6 years. The CNF contains about 1.8 million acres, most of which is forested habitat.

The short-term effects have been listed above in the direct and indirect effects, and cumulative effects in Alternative 1. Long-term effects up to 150 years would be the recovery period for fire and timber affected areas to produce old growth or mature forested stands. Tree growth (if unaffected by disturbance) would increase the vegetative horizontal and vertical representation in the area, offering increased canopy cover and more diverse structure to the forest. This would benefit many forest-preferring migratory birds. The reduction of road densities would also discourage predation or parasitism of neotropical migrants from species that prefer edge effect habitats: cowbirds, starlings, ravens, and others.

Conclusion

The proposed project would not impact migrants that prefer dense forest conditions. No harvest would occur of live trees, or in functional old growth stands or riparian areas. The project may impact those species that select habitat in the areas to be affected by salvage harvest. Such species would experience a reduction of habitat and/or disturbance from the proposed activities in the units. The determination of effects for Alternative 2 is *some impacts may occur to individuals or their habitat, but is not expected to result in a loss of species viability in the Planning Area, nor cause a trend toward federal listing.*

C. Regulatory Framework

1. Endangered Species Act

This Act directs that actions authorized, funded, or carried out by federal agencies do not jeopardize the continued existence of any threatened or endangered species, or result in the adverse modification of habitat critical to these species. It is also the responsibility of the Forest Service to design activities that contribute to the recovery of listed species in accordance with recovery plans developed as directed by the ESA (50 CFR part 402). Section 9 of the ESA of 1973, as amended, requires threatened and endangered species be protected from “harm” and “harassment” wherever they occur, regardless of recovery boundaries.

Two species that may occur on the forest are the Canada lynx and North American wolverine. The lynx was listed as “threatened” in April 2000, and was on the latest list of threatened and endangered species (12/17/2015). The Woodrat Fire did not burn in a Lynx Analysis Area (LAU) or in any potential lynx habitat. The project would have “No Effect” to the Canada lynx. The Action Alternative is consistent with the Northern Rockies Lynx Management Direction (USDA Forest Service 2007) and isin compliance with

the ESA and FSM 2670. Informal coordination with the USFWS on this Project was initiated on January 26, 2016.

In May 2016, the USFWS listed the North American wolverine as a proposed species under the ESA. The mammal prefers habitat in high elevation alpine and boreal forests that are cold and receive enough winter precipitation to maintain deep persistent snow late into the warm season Copeland et al. 2010. Wolverine forage in all forested habitats but particularly those where carrion can be found. On June 15, 2016 the U.S. Fish and Wildlife Service confirmed that their previous May 2014 concurrence letter on the programmatic biological assessment remains valid. This assessment regards the effects of routine National Forest Service projects on the proposed North American wolverine and its habitat. The analysis in the programmatic biological assessment applies to wolverine only under its status as a proposed species.

There have been no sightings or records of wolverine in the project area. Regional model shows no primary habitat found in the area; none of the proposed activities are considered a threat to the distinct population segment (DPS), and the project's cumulative effects would not result in barriers to dispersing individuals. The project would "*Not likely Jeopardize*" the continued existence of the DPS of the North American wolverine.

2. National Forest Management Act

This Act requires the Forest Service to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives [16 USC 1604(g)(3)(B)]. The Agency's focus for meeting the requirement of NFMA and implementing its regulations is based on assessing habitat to provide for diversity of species. All alternatives would be consistent with NFMA direction for diversity of animal communities. Although the proposed action analyzed in the project may impact individual animals, Alternative 2 would not affect the viability of any species across its range.

3. Migratory Bird Treaty Act

The original act contained a statute that makes in unlawful without a waiver to pursue, hunt, take, capture, kill or sell birds listed in the Act. The statute does not discriminate between live or dead birds and also grants full protection to any bird parts including feathers, eggs and nests. Over 800 species are currently on the list. The January 2000 USDA Forest Service (FS) Landbird Conservation Strategic Plan, followed by the US Shorebird Conservation Plan and Executive Order 13186 in 2001, and the January 2004 PIF North American Landbird Conservation Plan all reference goals and objectives for integrating bird conservation into forest management and planning.

In late 2008, a Memorandum of Understanding between the USDA Forest Service and the US Fish and Wildlife Service to Promote the Conservation of Migratory Birds was signed. The intent of the MOU is to strengthen migratory bird conservation through enhanced collaboration and cooperation between the Forest Service and the Fish and Wildlife Service as well as other federal, State, tribal and local governments. Within the National Forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for land management activities.

D. Forest Plan Consistency

1. Clearwater Forest Plan

The 1987 Forest Plan documents goals, objectives, standards, and guidelines for managing Forest wildlife species and habitats. Goals (pages II 1-2) described in the Plan include: Provide habitat for viable populations of wildlife, maintain or improve big-game habitat and contribute to the recovery of ESA listed species. The Forest Plan objectives (page II-5) are more specific to acres managed for elk. Forest Plan Standard (pages II-23 to II-24) provide more specific direction for management of habitats for specific wildlife species and identification of indicator species for the forest.

Forest Plan Standard 5c (page II-23) would be met by the design criteria created for snag-dependent species. Snag habitat guideline recommendations are based on mean average of territory size, tree size, tree height and tree density. The objective is to provide habitat for 40% of potential populations of cavity dependent species.

1. Preferably manage snags in clumps. However, do not exclude consideration of single, scattered snags or replacement snags where needed within the harvest unit.

2. Average clump size is 5 acres. (Generally consisting of 20 soft snags and 80 hard snags per 5 acres or 20 trees per acre.

3. Manage for one premium 5 acres patch per 500 acres. (It is anticipated that designated old-growth stands and some riparian areas will provide approximately one-half of the snag habitat requirements.)

Project design features state that snags would be maintained in accordance with Forest Plans Standards, and silvicultural prescriptions would leave on a minimum of 14 snags or recruitment snags per acre.

The proposed salvage harvests in the fires of 2015 would occur on less than 1,200 acres on National Forest System lands and about 2,616 acres by the Idaho Department of Lands. The Road, Administrative, and Recreation Site Maintenance project within the Woodrat fire, proposes to drop hazard trees along 12 miles of road within the Woodrat Salvage project area. Total snag reduction on the CNF would occur on about 2,566 acres, or about 3% of the potential snag habitat on the national forest. Therefore, the remaining habitat (97%) for snag-dependent species exists is well above the objective of 40% recommended by the Forest Plan.

3.9 Recreation

A. Affected Environment

1. Geographic Scope

This section identifies and analyzes potential impacts to recreation and trails opportunities associated with Woodrat Salvage project. The analysis area for direct, indirect, and cumulative effects encompasses approximately 2,505 acres (Woodrat fire perimeter), all of which are National Forest System Lands. Recreational opportunities are defined in the analysis section below.

3. Methodology

Analysis for the recreation resource included developing an understanding of current use types and use patterns in the project area. Evidence of existing recreation use identifies that visitors are engaging in a number of different activities such as motorized and non-motorized recreation, camping, winter recreation and other recreation (berry picking, hunting, firewood gathering). To address the effects of each alternative, we looked at the following issue indicators:

1. Motorized and non-motorized Recreation:
    a. Degree of impact on roads due to location of vegetation management activities
    b. Degree of impact on roads due to identified haul routes
2. Camping:
    a. Degree of impact on roads due to location of vegetation management activities
    b. Degree of impact on roads due to identified haul routes
3. Winter recreation:
    a. Degree of impact on groomed snowmobile trails due to timing of vegetation management activities
    b. Likelihood of winter logging/haul
4. Other recreation:
    a. Total acres of vegetation management activity, by alternative

3. Existing Condition

The Woodrat project area, located on the western edge of the Lochsa Ranger District, receives relatively high recreation use and pressure. This is due to a number of factors including relatively easy access with well-maintained native surface roads; the relative proximity of National Forest System (NFS) Lands to local communities; and dispersed camping opportunities in the area.

Most visitors gain access to the project area via U.S. Highway 12, near the community of Syringa. Users then access National Forest Service (NFS) Road 101 (Smith Creek Road) or 5503 (Swan Creek) heading north; numerous additional NFS Roads branch off of these providing additional access and opportunity for exploration.

Recreation use occurs throughout the year; however, summer and fall receives the most use, especially around holiday weekends. During these weekends, virtually all available camp spots are occupied and traffic along existing roads is busy, both with full size vehicles and OHVs.

The majority of the recreation use occurs on or directly adjacent to the existing road system, with a variety of activities occurring during the summer, including driving for pleasure, OHV use, berry picking, hiking and firewood gathering, and OHV recreation or hunting during the fall.

Both motorized and non-motorized winter recreation opportunities are available in the project area; however, the predominant winter use is snowmobile activity. While there are no groomed snowmobile trails in the project area, NFS Road 101 is an ungroomed route that is used by recreationists.

B. Environmental Impacts

1. Direct and Indirect Effects

Alternative 1 - No Action

There would be no change from the existing condition for motorized and non-motorized recreation, camping, and winter recreation. Opportunities for berry picking and firewood gathering would remain the same. Firewood gathering will not be significantly impacted in the long-term (10+ years) as trees near roads would remain available for firewood. In the short-term (1-2 years), hunting opportunities would remain the same. However, in the mid-to-long-term (3-10 years +), continued increase in canopy cover has the potential to decrease the availability of browse for big game species, and potentially hinder population growth of some animals that are desirable species for hunting. Some reduction in access can be expected due to dead trees falling down and blocking roads.

Alternative 2 - Proposed Action

The proposed activities would result in a moderate degree of impact to recreation within the project area as a result of access loss during harvest activities. The main roads in the project area (including NFS Roads 101, 5502, 5503, 5504) will be used as haul routes; this may result in temporary closures or limited public access during harvest activities.

There would be moderate impacts to dispersed camping. The biggest impact will be short-term (1-2 years) with the expected dust and noise due to log truck activity. Additionally, the potential for temporary road closures and/or limited public access during harvest would create a moderate impact to campers.

The timing of material removal along Forest Service Roads will determine the potential effects to winter recreation. However, if winter haul occurs, it could impact multiple roads, including NFS Road 101, which is an un-groomed snowmobile route. Close coordination between recreation and timber resources would occur if winter haul is used. This would ensure public awareness so that they may be directed to other winter recreation opportunities in the general area.

Proposed vegetation management could result in moderate impacts, both positive and negative, to berry picking and firewood gathering. Activities could increase availability of huckleberry crops, thereby providing a benefit to recreationists. Berry bushes have the propensity to thrive in newly opened landscapes and would potentially do so in treated units. Firewood gathering could be moderately impacted. Many local residents utilize wood for home heating. The project would remove a portion of fuel wood available to the users. The project area is close to communities and adjacent to main Forest Service roads which makes for easy accessibility. Due to the scarred/burnt condition of these trees, it is unclear how many users would remove this firewood source; some use is expected.

Alternative 2 may result in a negative short-term (1-2 years) impact on hunting due to big game disturbance and possible avoidance of the area associated with increased harvest activities, including truck traffic on area roads. In the mid-to-long-term, activities have the potential to benefit hunting through a potential increase in browse material, thereby possibly increasing populations of some desirable game species.

2. Cumulative Effects

The cumulative effects boundary for recreation encompasses the Woodrat project area (approximately 2,500 acres). This is a logical geographic boundary to utilize due to the location of recreation and trails resources in and surrounding the project area. The time frame for the evaluation of cumulative effects is 10 years following implementation of the project as it would likely allow public to adjust to post-project conditions.

A variety of management activities have occuured in the area throughout the past century and continue to this day. Timber removal by both the Forest Service and Idaho Department of Lands has been part of the landscape for many years. Additionally, road decommissioning and culvert replacement projects have occurredin more recent times.

Roads are a significant part of the landscape in this project area. The road system was largely developed in the 1950s/1960s, and primarily established to facilitate management of timber resources.

Grazing and recreational use including dispersed camping, berry picking, hunting, and firewood gathering evolved as a result of access associated with the road construction.

These activities are expected to occur into the future, with some degree of varying use depending on a variety of factors, including the availability of various resources (big game, timber, forage for grazing, etc.).

When considering Alternatives 1 and 2, along with the reasonably foreseeable management actions described above, a moderate impact to various recreation activities would be expected. Cumulative effects from Alternative 1are expected to be minimal to none and while impacts to recreationists from the implementation of Alternative 2 are expected, they would likely be short-term in length (1-2 years).

C. Regulatory Framework

No regulatory requirements pertaining to recreation is pertinent to this project.

D. Forest Plan Consistency

The Forest Plan documents goals, standards and guidelines for recreation opportunities. Managing the area for “roaded natural” recreation is the Forest Plan standard for recreation opportunities and would be met. The proposed action is in compliance with the Clearwater National Forest Plan.

3.10 Wild and Scenic River

This section evaluates the proposed action in relation to the Wild and Scenic River Outstanding Remarkable Values of the Middle Fork Clearwater River and its immediate environment.

A. Affected Environment

No salvage harvest, temporary road construction, or reforestation activities (including site preparation) would occur within the designated boundary of the Middle Fork Clearwater Wild and Scenic River Corridor as only 6 acres of the Woodrat fire burned within the Corridor on National Forest System lands.

Evaluation of project implementation methods and desired outcomes indicate the project is consistent with the Forest Plan direction for Management Area A7, the River Plan: Middle Fork Clearwater including the Lochsa and Selway, the Management Guides: Middle Fork Clearwater including the Lochsa and Selway, and the Wild and Scenic Rivers Act as proposed.

The identified Outstanding Remarkable Values (ORVs) for the Middle Fork Clearwater Wild and Scenic River are:

- Scenery
- Recreation
- Fish
- Wildlife
- Historic and Cultural
- Water Quality
- Vegetation/Botany

B. Environmental Impacts

The Woodrat Salvage project area is directly north of the Middle Fork Clearwater Wild and Scenic River. No salvage harvest, temporary road construction, or reforestation activities (including site preparation) would occur within the designated boundary of the Middle Fork Clearwater Wild and Scenic River Corridor; therefore the proposed project activities do not invade the Middle Fork Clearwater Wild and Scenic River Corridor.

No project activity that will directly alter within-channel conditions or existing hydrologic or biologic processes is proposed within the Wild and Scenic River corridor (Chapter 2, Aquatics Specialist report and Hydrology Specialist report). There are no treatments proposed that will alter riparian or floodplain areas of the Middle Fork Clearwater Wild and Scenic River as described in the proposed action and Project Design Features in Chapter 2 and Hydrology Specialist report.

No treatments are proposed that will directly alter upland conditions of the designated Wild and Scenic River. Activities outside of the active channel, riparian areas, and floodplains may either occur where alterations of upland conditions have already occurred (such as dispersed campsites) or where effects would be minimal and temporary as associated with felling and removing fire killed or damaged and hazardous trees. All trees that will be removed are dead or dying as a result of the 2015 Woodrat fire as determined using the Nez Perce-Clearwater Hazard Tree and Mortality Guidelines. Any observable effects on upland vegetation, soil, and hydrologic properties stemming from salvage treatments would be minor and passively reversible (Forest Vegetation, Botany, Soils, and Hydrology specialist reports). Project design features will be implemented to greatly reduce impacts associated with implementation of the decision. No effects on archeological resources are expected. All eligible sites found during cultural surveys will be avoided during implementation or mitigated as to not adversely affect the site (project

design features). State Historic Preservation Office (SHPO) concurrence on the cultural resource report for the project will occur prior to any ground disturbing activities (Cultural Resources report).

As no felling treatments are proposed within the Middle Fork Clearwater Wild and Scenic River corridor, the magnitude and spatial extent of potential off-site changes are limited to none. No felling activity is proposed nor would any occur within the designated corridor of the Wild and Scenic River. Project file documentation, provides the information to substantiate that no invasion of the Middle Fork Clearwater Wild and Scenic River will occur and no diminishment to the scenic, recreational, fish, or wildlife values will occur as a result of treatments (EA Chapter 2 and 3, Hydrology, Aquatics, Wildlife, Visual resources, Cultural resources and Recreation reports).

Approximately 2 miles of existing road within the river corridor will be treated to provide for safe haul routes that are up to standard. This includes watering, blading and graveling (reconstructing in place) the first 0.6 miles of the Swan Creek Road (Road 5503) adjacent to Highway 12, and watering and blading (maintenance) 1.6 miles of the Smith Creek Road (Road 101) road. These minor activities to stabilize existing road segments to provide for safe haul routes will have no adverse effects on the ORVs. Project design features have been developed to minimize effects to hydrologic functions and aquatics (Wildlife, Hydrology, Aquatics, Visual resources, Cultural resources, Recreation, and Forest Vegetation reports). This road stabilization activity will provide better access on the roads into the Woodrat fire area in the future for recreationalists.

The Environmental Impacts associated with the proposed activities on the individual Middle Fork Clearwater River Wild and Scenic Outstandingly Remarkable Values is contained within the resource reports for those specific resources. Table 26 describes compliance as related to the proposed actions and effects on ORVs.

Table 26. Effects to Middle Fork Clearwater Wild and Scenic River ORVs

Oustanding Remarkable Value (ORV)	Effects
Scenery	The proposed action would create openings of varying sizes and shapes in areas that are highly visible, but were affected by the Woodrat fire. Design features would be implemented so that openings created through harvest would emulate the natural openings created by previous fire events in the river corridor. These openings will be visible, but will appear very similar to the openings in the river corridor that were created by natural fire processes in the past. Most of the areas affected by the fire will appear as openings eventually, whether they are harvested by man or not. Over time the natural regeneration process will introduce coniferous vegetation back to the canyon, but this process can take decades. This revegetation process would be accelerated in areas of harvest that are then replanted after harvest was completed. Although none of the proposed harvest areas are within the designated Wild and Scenic River corridor boundary, areas adjacent to the boundary that have the VQO of Partial Retention are proposed for harvesting. Since only dead and dying vegetation would be removed in this proposal, the Woodrat Salvage project would meet the Management Guidelines for the Middle Fork of the Clearwater Wild and Scenic River for scenery. Areas of

	the project which area visible in the foreground from the wild and scenic river must meet wild and scenic river guidelines (Scenic Quality specialist report).
Recreation	The action alternative is consistent with the Wild and Scenic Rivers Act as it would have negligible effects recreating on the Middle Fork Clearwater River. Recreation attractions and activities occurring on lands adjacent to the corridor would be protected through design features and BMP implementation; thus protecting and enhancing the outstandingly remarkable value of recreation (Recreation specialist report).
Fish	The proposed action is consistent with the Wild and Scenic Rivers Act as it would have little to no effect on, and also protects the outstanding remarkable fisheries and water quality values in project area streams and in the Middle Fork Clearwater River as discussed in the aquatics specialist report in the project record.
Water Quality	The Wild and Scenic Rivers Act has found that the water quality of the Middle Fork Clearwater is exceptional and provides a variety of beneficial uses. There are no dams in the Middle Fork Clearwater and all water is free flowing. The Middle Fork Clearwater River provides exceptionally clear and clean water, where the primary impacts to Water Quality are sedimentation resulting from natural events such as landslides and fire. No project activities that will directly alter within-channel conditions or existing hydrologic or biologic processes are proposed within the Wild and Scenic River corridor. There are no treatments proposed that will alter riparian or floodplain areas of the Middle Fork Clearwater River Wild and Scenic River. Both the location of proposed project activities and the design of implementation will limit sedimentation into Project Area streams and the low levels of sedimentation will not degrade water quality at the site-scale. Sedimentation into headwater tributaries at the site scale, will not impact water quality of the Middle Fork Clearwater River (Hydrology specialist report).
Wildlife	The Woodrat Salvage project would comply with the criteria for the Wildlife ORV because there is no harvest activities that would occur within the corridor and those activities adjacent to the corridor would either improve forage opportunities for elk, mountain lion, and black bear; or would not affect habitat for the duck, salamander, or otter (Wildlife specialist report).
Historic and Cultural	There are no known prehistoric or historic sites located within in proposed harvest units associated with the proposed action. Project design features would protect any that are found during project implementation. Although there is ethnographic, historic, and archaeological documentation about the historic Nez Perce tribe and their prehistoric lifeways associated with this river corridor, the

	Nez Perce tribe has provided no subsequent information about their traditional uses or use sites along the Middle Fork Clearwater River in relation the Woodrat Salvage project area. The outstanding remarkable values (ORV) for prehistory, history, and traditional use, cultural will be protected (Cultural resources specialist report)
Vegetation/Botany	The proposed alternative is consistent with the Vegetation/Botany ORV of the Middle Fork of the Clearwater including the Lochsa & Selway Comprehensive River Management Plan (CRMP). Regarding vegetation, the ORV for the river corridor is related to the “many rare and uncommon plants that occupy unique coastal disjunct communities in the corridor” (Middle Fork Clearwater River Resource Assessment, 2002). Under the coordinating requirements of the CRMP, commercial harvest is confined to areas outside the boundaries of the river area and therefore the plants of concern would remain unaffected within the river corridor by this project. The vegetation/botany outstanding remarkable values would be protected through avoidance of harvest within the river corridor. A complete analysis of effects to rare plants and forest vegetation is included in the Botany an Forest Vegetation specialist report.

C. Regulatory Framework

Evaluation of project design and desired outcomes indicate the project is consistent with the Clearwater Forest Plan direction for Management Area A7, the River Plan: Middle Fork Clearwater including the Lochsa and Selway, the Management Guides: Middle Fork Clearwater including the Lochsa and Selway (1973), and the Wild and Scenic Rivers Act.

Woodrat Salvage project Environmental Assessment and resource reports in the Woodrat Salvage project record evaluate the effects of the project activity on the ORVs identified above and documents that no felling activities will take place in the Middle Fork Clearwater River Wild and Scenic Corridor. These reports conclude that with the project design features identified, Forest Plan standards will be met and no adverse effects will occur that would diminish the identified ORVs. The Woodrat Salvage project will have no adverse effect on the conditions of free-flow or on the ORVs in the Middle Fork Clearwater Wild and Scenic River.

The Woodrat project area includes no proposed eligible wild and scenic rivers.

3.11 Scenic Quality

This section describes the visual impacts of proposed management activities and indicates whether the activities would meet forest plan standards for scenic quality. Visual simulation techniques are used to analyze these visual impacts. Numerous viewpoints were reviewed to determine the short and long term impacts to scenery within the resource area.

A. Affected Environment

The landscape encompassing the Woodrat Salvage project area is located approximately 15 miles east of Kooskia, Idaho, and just north of Syringa, Idaho. It is bounded on the west by the Forest boundary and to north and east by Forest Roads (FRs) 514 and 454. To the south is U.S. Highway 12 and the community of Syringa. The project is located within the Woodrat fire area. Of greatest concern for scenic quality are the views from U.S. Highway 12, which is an All American Road Scenic Byway and the Middle Fork Clearwater Wild and Scenic River. There are no fully developed camping or picnicking areas, but there are private residences that are adjacent to the project area. The Woodrat Salvage project proposes management activities to protect the health and safety of the public, workers, and private citizens; maintain existing and develop future wildlife habitat; maintain watersheds and reduce runoff from erosion; and reforest suitable portions of the landscape deforested by the Woodrat fire.

Planned activities would be visible in foreground, middleground and background views from the U.S. Highway 12, Middle Fork Clearwater Wild and Scenic River, and Forest Roads 653, 514, 454, 101, 418, and 455. Most of the forest roads within the project area do have some recreation use, but are not considered sensitive travel corridors. U.S Highway 12 and the Middle Fork Clearwater Wild and Scenic River have a “high” concern level. The VQOs for the middleground viewing zone would be *Partial Retention*. Forest road 653 is located across the Middle Fork Clearwater canyon to the south of the project area and has a “moderate” concern level. The project area is within the background viewing zone so the VQO from this roadway would be *Maximum Modification*.

Table 27. Listing of key viewpoints, their sensitivity level and visual quality objectives found within the Woodrat Salvage Project area. Viewpoints or viewing corridors come from the 1987 Clearwater National Forest plan.

View Point or Viewing Corridor	Sensitivity Level	Foreground 0 – ¼ mi.	Middleground ¼ mi. – 3 mi.	Background 3 mi. – 5+ mi.
U.S. Highway 12	1	Retention	Partial Retention	Modification
Middle Fork Clearwater Wild and Scenic River	1	Retention	Partial Retention	Modification
West Lodge Road #653	2	Partial Retention	Modification	Maximum Modification

1. Geographic Scope

The geographic scope of the scenery analysis areas visible from key locations both within and outside the area of interest. The spatial context for this project takes in the area within the Woodrat Salvage area of interest and the viewshed from the community of Syringa, US Highway 12, and the adjacent section of the Middle Fork Clearwater Wild and Scenic River. For example, the Middle Fork Clearwater Wild and Scenic River is located to the south of the project area, with views of several of the proposed activities in the middle and background viewing zones. Table 27 shows all key viewpoints or viewing corridors and their sensitivity levels identified in the 1987 Clearwater National Forest Plan that are relevant to the

project scenic quality analysis. Direct and indirect effects analysis focuses on the viewshed and viewpoints from which the proposed activities can be seen, and the extent proposed treatment units affect the visual quality objectives assigned to that piece of ground. The cumulative effects area is similar to that for the direct and indirect effects but extends upriver to other areas that have been effected by current and past fire activities, including the Johnson Bar fire of 2014. The temporal scope of the analysis is limited to the 35 to 40 years following harvest activities. This time period is considered the length of time openings created by salvage harvest are likely to be evident given the growing conditions of the area.

2. Methodology

Although the Visual Management System (PF Doc. VIS-R02) has been replaced by the Scenery Management System (PF Doc. VIS-R01), this analysis uses terminology used in the forest plan which was developed and written under the former. A crosswalk between the two systems is found in Agricultural Handbook 701, Appendix A (PF Doc. VIS-R01). Visual quality objectives (VQOs) are based on the area seen from sensitive viewpoints such as travel corridors, urban areas where the forest background scenery is important and other features where there may be a high visual sensitivity level. These visually sensitive viewpoints are outlined in the 1987 Clearwater National Forest Plan. A variety of tools were used in the visual resource analysis including analyzing VQO maps, field visits and visibility modeling. Harvest units were overlaid on the Forest VQO layer using GIS to determine scenic variety class, distance zones and sensitivity levels, and visual quality objectives across the area of interest.

Treatment units and their associated VQOs were evaluated in relation to visually sensitive viewpoints identified in the forest plan to determine the extent to which proposed activities would be seen, and the likelihood that those activities would adversely affect VQOs. VQO maps prepared under the forest plan are very general in nature. Scenic class and sensitivity level can provide a general understanding; however, the maps can’t always illustrate how visible specific treatments would be from locations of concern, or the extent to which treatments are likely to stand out or blend with existing scenic features.

Initial field reconnaissance was done to further assess the visibility of potential treatments in the context of the current landscape. Points on VQO maps with direct line of site to treatment units were identified. Units were observed from these locations. Proposed harvest activities are found in middleground and background viewing zones when viewed from key viewpoints. To assist in determining unit visibility, the analysis used Google Earth and its associated 2016 imagery to drape treatment units over the landscape. Units were then viewed from ground level or “street view” at a variety of representative sensitive locations, including: U.S. Highway 12, Middle Fork Clearwater Wild and Scenic River, Forest Roads 653, 514, 454, 101, 418, and 455. This 3-D modeling gives a different perspective on how visible a given area is from a specific geographic location; however, near view screening from adjacent trees cannot be taken into consideration. In other words, the imaging cannot place you down amongst the trees, where your view might be obscured by trees and other vegetation in the foreground. As a result of this limitation, these areas were field verified to determine the final effect on the visual resource. Proposed activities were then assessed as to the likelihood they would modify the landscape to the extent that visual quality objectives could not be met.

Issue Indicators

VQOs provide measurable standards for scenery management in conjunction with demands for goods and services from the forest. Visual resource management is integral to all management areas and implied in all management goals. The forest plan standard relevant to the project area for the Woodrat Salvage project area visual resources are:

1. Meet adopted VQOs. Exceptions occur in unusual situations: these are identified through the project planning process involving an interdisciplinary team. Mitigation measures should be developed for areas when VQOs are not met.

2. The visual resource has been evaluated based on visual sensitivity levels assigned to travel routes, use areas and water bodies in and adjacent to the Nez Perce - Clearwater National Forests. Adjustments in the VQO boundaries based on project level analysis would conform to principles in FSM 2380.

Scenery is listed as one of the Outstanding and Remarkable Values (ORVs) for the Middle Fork Clearwater River. Areas of the project which area visible in the foreground from the wild and scenic river must meet wild and scenic river guidelines.

The analysis considers the character and appearance of the surrounding natural landscape and the VQOs of areas proposed for treatments as assigned under the current forest plan (Figure 6). Visual quality objectives are a desired level of scenic quality and diversity of natural features based on physiological and sociological characteristics of an area, and refers to the degree of acceptable alterations of the landscape. Management activities such as commercial timber harvest and road construction can alter the scenic character of the landscape.

Effects to the visual resource are discussed in general terms; however, the indicator used to measure effects is whether or not VQOs are achieved. Visual quality objectives for the Woodrat Salvage project are listed in Table 27. Below is a brief description of each objective level.

- ***Preservation***: In general, human activities are not detectable to the visitor.
- ***Retention***: Human activities are not evident to the casual Forest visitor.
- ***Partial Retention***: Human activities may be evident, but must remain subordinate to the character of the landscape.
- ***Modification***: Human activities may dominate the characteristic of the landscape but must, at the same time, utilize naturally established form, line, color, and texture.
- ***Maximum Modification***: Human activity may dominate the characteristic landscape, but should appear as natural occurrences when viewed as background.

3. Existing Condition

The Woodrat Salvage area of interest is located approximately 15 miles east of the community of Kooskia, Idaho and immediately adjacent to the community of Syringa. It part of the Bitterroot Mountain range and has numerous moderately sized rivers including Swan Creek, Little Smith Creek, Big Smith Creek, and Pete King Creek that are tributaries of the Middle Fork Clearwater River. There are also numerous smaller tributaries within the project area. The landscape is moderately steep, south facing canyon walls covered with a mixture of deciduous and coniferous

Figure 3. View of the project area from U.S Highway 12 looking west towards the community of Syringa.

vegetation. While there are few distinctive landscape features within the project area, it does act as a scenic backdrop for visitors on U.S. Highway 12 and the Middle Fork Clearwater Wild and Scenic River (Figure 3).

The canyon breaklands are visible to the viewer traveling U.S. Highway 12 and reflect a landscape character that is commonly found along the western section of the Lochsa River and the eastern section of the Middle Fork Clearwater River. The river corridor has a mix of coniferous vegetation including grand fir, Douglas fir, ponderosa pine and western red cedar. South facing the hillsides often have thin soils with little coniferous vegetation but abundant deciduous shrubs and grasses.

Recreation users visiting the project area participate in a variety of recreation pursuits including: berry-picking, hiking, firewood gathering, dispersed camping, winter and summer motorized trail use, and driving for pleasure. ATV trail use occurs on several older roads that have been converted to trail use. Most visitors that view the area are traveling on U.S. Highway 12, a major east west link between Idaho and Montana. Recreation along the river corridor includes rafting and kayaking the large rivers of the area, day use along the river, overnight camping in both developed and dispersed campsites and wildlife viewing.

There is evidence of past harvest activities within the project boundary with openings in various stages of revegetation (Figure 4). Some of these past harvest activities are still visible, but have vegetated to the point that they don't appear as distinctive openings (Figure 5). Other openings are still evident and tend to dominate the existing landscape character. These openings are in various stages of regeneration but most would take at least 20 to 30 years to appear as natural timber stands without man-made openings.

Figure 4. View of Woodrat area showing roads and past harvest area. Recreation occurs throughout the area. Effects of the 2015 fire are obvious throughout the area

Extensive harvesting has occurred above the community of Syringa, with most units concentrated along the Swan Creek and Border roads. Much of this was thinning, removing only a portion of the timber stand.

During the summer of 2015 a large portion of this area was affected by wildfire. This area was hard hit with numerous fires throughout the areas. In all approximately 2,505 acres of forest within the project area were burned.

Figure 5. Views of the ridgeline in the central portion of the area. Several past harvest units can be seen, but are nearly revegetated

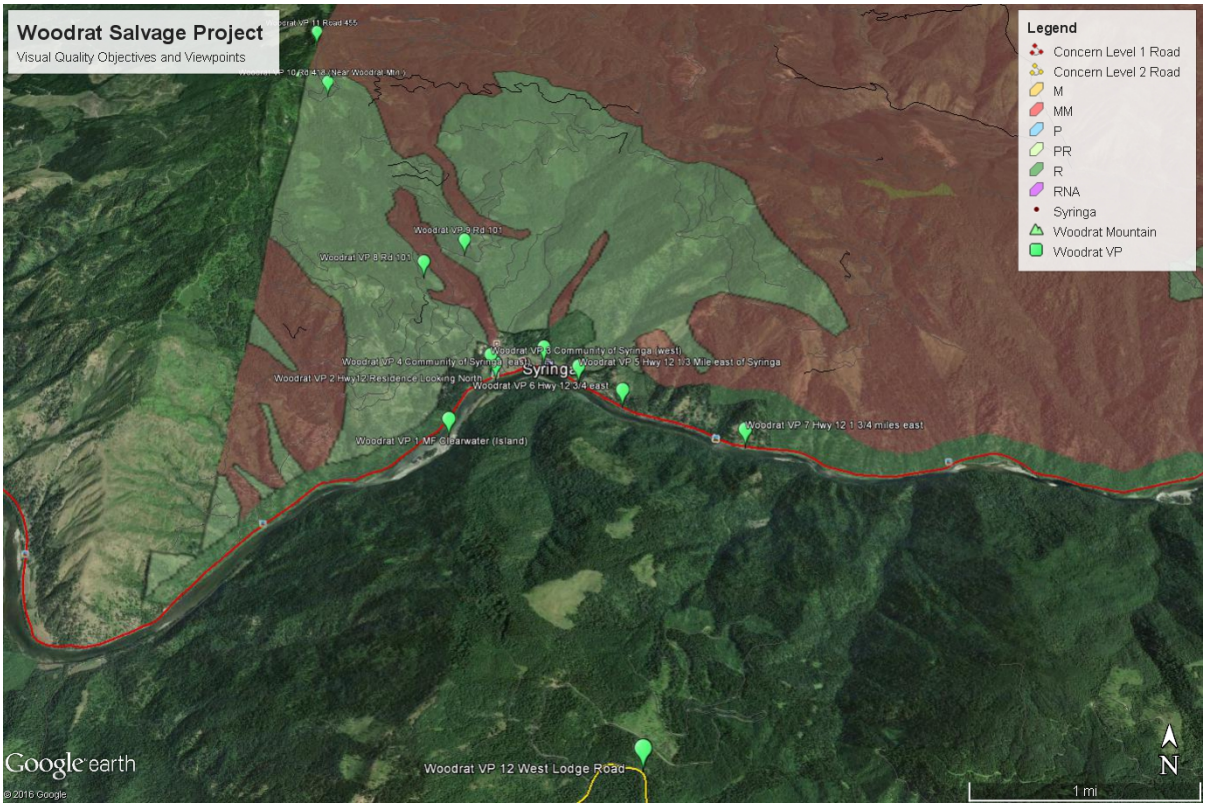

Figure 6. Visual Quality Objectives for Woodrat Salvage. Dark green is Retention, light green is Partial Retention, tan is Modification, and dark pink is Maximum Modification. Red is used to designate travel routes with a high concern for scenery (Level 1).

B. Environmental Impacts

1. Direct Effects and Indirect Effects

Alternative 1 – No Action

Direct and Indirect Effects

There would be no direct or short-term effects to the scenic condition of the area under the No Action alternative as no activities would occur. The openings in forest cover that are visible as a result of past forest management would continue to recover tree growth, and over time would fill in unnatural appearing openings. More recent man-made openings would remain visible for another 20 to 30 years. Processes affecting forest dynamics would continue, including continuing insect and disease. Dead and dying trees would be found throughout the area as a result of the 2015 fire. Eventually these trees will fall over and large openings would be obvious in areas where the fire what more severe. This may increase further risk of wildfire as the amount of dead and dying vegetation increases. Most openings would eventually revegetate, although some severly burned areas may not revegetate with coniferous species. While for some, this may have a negative impact on the scenic quality of the area, these activities are considered natural processes, and the resource area would continue to meet assigned VQOs. There are many examples of past fires in the river corridor which have revegetated with brush fields instead of coniferous overstory.

Alternative 2 – Proposed Action

Transportation System – The project would include 35.5 miles of haul road improvements, including brush removal, clearing culvert inlets, road grading for water flow control, and removing closure barriers as needed. Additional haul routes would include county roads and U.S. and State highways. These activities would present minor evidence of disturbance in the short term, but would have no negative visual impacts in the long term.

The proposed action would include 3.7 miles of temporary road construction. The temporary roads would be visible from roads within the area, but would be naturalized after the project is complete and would therefore have no long term effect on the scenic quality of the area.

Site Preparation and Reforestation (post fire tree planting) – All of the proposed harvest areas, as well as some burned but not harvested areas would be replanted with appropriate coniferous species. These activities would have a positive long term effect on the area because it accelerates the process of revegetation.

Direct and Indirect Effects

This analysis focuses on the landscape that can be observed from viewpoints U.S. Highway 12, the Middle Fork Clearwater Wild and Scenic River, and Forest road 653 (West Lodge Creek) as identified in the Forest Plan (Table 27 and Figure 6). Proposed activities that are blocked from these viewpoints by terrain are considered to be in compliance with VQOs.

The project area is located within the middleground and background viewsheds of U.S. Highway 12 and the Middle Fork Clearwater Wild and Scenic River, both of which have high concern levels for scenery. The project area can also be seen from the community of Syringa. The VQO for the middleground viewing zones for these areas is *Partial Retention*. There are also dispersed recreation sites, roads, and trails within the area, but no highly developed recreation facilities. All of the proposed units would be visible from one or more of the viewpoints from interior roads and trails, but all have a low concern level and would therefore have a VQO of *Maximum Modification* in the foreground and middleground viewing zones.

The most prominent views of the proposed harvest activities are from viewpoints along U.S. Highway 12 (west bound) and from the Middle Fork Clearwater River looking downriver. There are broad views of units 4, 5 and 22 from these viewing corridors. Unit 4 is the most visible unit in the middleground viewing zone, and is visible from most viewpoints, especially close to the community of Syringa. Design features used to meet VQOs of *Partial Rention* would include feathering unit edges so that they blend with existing vegetation, designing openings so that geometric patterns and straight lines are not evident, and the use of skyline harvest methods that minimize visual impacts. When completed, the area will appear more open than it currently is, but the size and shape of the openings and the appearance of the harvest would emulate the effects seen after a fire. Past harvest activities are still evident in the area so additional openings would need to emulate natural openings to the greatest extent possible to meet the VQO of Partial Retention for this area.

Units 21 and 22, would be visible from several critical viewpoints, but are far enough from the critical viewing corridors they would be within the background viewshed. Some of the openings in these units are screened by topography so the visual impacts would be reduced. The size and shape of the openings would also emulate natural openings found in the area. The units would not be as apparent which would reduce the visual impact of these openings. Design features as previously described, would meet the VQO of *Partial Retention* and *Maximum Modification* for this area.

Units 9, 10, 11, and 12 are located along a canyon break land that faces north, mostly screening the units from the river or highway viewpoints. These units are small and are mostly viewed from within the interior of the project area. All have low concern level for scenery. These units would meet the VQO of *Partial Retention* in the middle and background viewing zones as a result of design feature implementation.

Units 1 and 2 would be slightly visible from the river, but most of the extent of the units would be blocked from view by topography. These units would be visible from interior roads and trail within the project area, but the size and shape of these units are in keeping with natural openings in the area. They would meet the VQOs of *Partial Retention* and *Maximum Modification*.

All units would meet the VQO of *Partial Retention* in the middleground from critical viewpoints and *Maximum Modification* in the foreground, middleground and background from viewpoints with low concern level because of design feature implementation. The appearance of the area would continue to change, especially within the extent of the fire, but harvest areas would be designed to emulate the natural openings created by fire. While the harvest activities would be visible, the man-made openings would remain subordinate to the character of the landscape.

Cumulative Effects

Only past, present and future timer harvest and reforestation projects are considered for cumulative effects as they would have an effect on the visual resource. Road and trail maintenance and construction, weed reduction, and low impact cattle grazing do not have a long term effect on the scenic resource from the middle and background viewing zones and were not considered.

Alternative 1

There would be no shor term cumulative man-made change in the scenic quality as a result of the No Action alternative. Existing openings would continue to re-vegetate and would no longer appear as distinct openings within 20 to 30 years. The existing landscape character of the project area would change over time as a result of the Woodrat fire. High and moderate severity burned areas could eventually become openings due to tree mortality. Tree planting in burned portions of the project area where harvest was not proposed would continue. Other projects (see cumulative effects for Alternative 2 below) would continue. Harvest associated with the Road, Administrative, and Recreation Site Maintenance project would continue within the project area. Johnson Bar Fire Salvage and Lowell WUI would also continue but lie outside the immediate viewshed of the Woodrat project area. All Forest Service projects would be designed to meet the Forest Plan VQOs for the area.

Harvest on IDL lands and activities would continue and would be visible from U.S. Highway 12 and the Middle Fork Clearwater Wild and Scenic River.

The No Action alternative would result in no cumulative effects to the visual resource since there are no activities proposed that would modify the fire modified landscape.

Alternative 2

Past harvest activities are visible throughout the area and are viewed from all roads and trails in the project area. Projects that created openings include Upper Big Smith, Bridge Creek, Smith Saddle Salvage, East Bridge, Molly Mud Salvage, Yakus Vegetation Project, Interface Fuels 1 and 2, Big Smith Creek, Bridge Creek Salvage, and Powerline Salvage. These projects were designed to meet the VQOs for the area. Some openings created in the 1980s have not revegetated with trees, however, fire mortality may modify the boundaries so that the units may become less apparent as man-made openings.

Present projects include six Idaho Department of Lands' (IDL) harvest areas totaling 2,826 acres that were burned in the Woodrat fire. The majority of the IDL harvest areas are screened by topography and vegetation from the Syringa, Highway 12, and Middle Fork Clearwater Wild and Scenic River viewing areas. Two units are visible from U.S. Highway 12 and the Middle Fork Clearwater River looking downriver. These units are found along the ridgeline above the community of Syringa. Additional IDL harvesting is visible looking upriver from the Sutler Creek area outside of the Nez Perce – Clearwater National Forest boundary. The harvest is also visible from low concern level roads and trails within the project area. IDL harvest units would minimally impact the overall scenic quality for the area as they are mostly screened by topography from critical viewing corridors and viewpoints. The openings would not dominate the landscape character as viewed from the Middle Fork Clearwater River and U.S. Highway 12

Ongoing or proposed Forest Service projects also related to the 2014 and 2015 fire activity include the Road, Administrative, and Recreation Site Maintenance project and the Johnson Bar Fire Salvage project. Only the Roadside, Administrative, and Recreation Site Maintenance project would be visible within the foreground and middleground viewing zone of the Woodrat Salvage project. Roadside hazard tree removal would occur along several roads within the project area and would only remove dead and dying trees. These activities would be visible from critical viewing corridors. This roadside hazard tree removal would be visible but would not dominate the existing landscape character of the area. Design measure implementation would maintain the existing landscape character and would therefore meet the VQO of *Partial Retention* within the project area. Only dead and dying vegetation would be removed so the management guidelines for scenery of the Wild and Scenic River would be met as well.

Johnson Bar salvage is located just upriver from the Woodrat project area and would have similar harvest activities viewed from critical viewsheds. Some alternatives in the Johnson Bar Salvage project would harvest fire affected areas that are within view of the community of Syringa, but the harvest would be designed to emulate natural fire activities and would be in the background viewshed. While the harvest proposed in these areas would be apparent, design features outlined for these harvest units would create openings that would meet the Forest Plan VQOs for the area. The overall landscape would become more open due to the fire and harvest activities, but the openings created by harvest would not appear different than the openings caused by fire in the middle and background viewing zones.

The Lowell WUI project is proposed for the Lowell area. While this area is not visible from the Woodrat project area, the landscape is similar and the proposed area for treatment is also viewed from U.S. Highway 12 and the Middle Fork Clearwater Wild and Scenic River. This proposal would remove coniferous vegetation from the lands to the east of the community of Lowell to reduce the fire hazard adjacent to the community. Planned harvest would be designed to emulate the natural openings that currently exist within the Lowell WUI project area. The harvest would be apparent, but would not dominate the landscape character. Design features to mimic natural openings found at the site would be used to meet the VQO of *Retention* and *Partial Retention* for this area. There are also two private scenic easement parcels where the landowner is proposing to remove vegetation that is considered hazardous. These proposals have not been completed and would be evaluated for compliance with Wild and Scenic River guidelines when they are complete.

Most proposed units within the Woodrat Salvage project would be visible to some extent from the low scenery concern level roads, trails, and recreation sites within the area of interest. Openings from these areas would be visible but would reflect the size and shape of natural fire activity as viewed in the middle and background viewing zones and would meet the VQOs for *Modification* and *Maximum Modification.*

Overall the areas affected by wildfires in 2014 and 2015 will be evident throughout the Middle Fork Clearwater River corridor. Given design features developed for all Forest Service actions, the openings created by harvest would emulate the natural openings that are the result of natural forest process after a

severe fire event. The openings created by proposed harvest and planting, when combined with unharvested burned areas, topographic screening, natural regrowth of vegetation, and design feature implementation would appear as an area that has experienced a natural process rather than the man-made geometric openings of the past harvest in the area. The area would appear different that it did prior to the fire, but man-made activities would not dominate the landscape. Areas that are harvested and then replanted with seedlings would revegetate more quickly with coniferous species, shortening the time that it takes to develop the vegetative cover of the recent past. The openings created by this proposal would no long appear as openings within 30 to 35 years.

C. Regulatory Framework

General direction for scenery management is provided in Forest Service Manual 2380 (Landscape Management). Specific visual resource management direction is provided by the 1987 Clearwater National Forest Plan and is described in terms of visual quality objectives (VQO).

D. Forest Plan Consistency

The Woodrat Salvage project area currently meets the 1987 forest plan visual quality objectives of *Partial Retention* and *Maximum Modification* in the middleground and background viewing zones from all critical viewpoints and viewing corridors. There are several viewpoints found along the roads and trails within the project area, but none were identified as sensitive travel corridors in the Forest Plan. The proposed activities would meet the VQO of *Maximum Modification* in the foreground viewing area at thse sites and therefore would meet the Forest Plan. Openings created by natural processes such as fire would be considered a dynamic part of the forest environment and would meet the Forest Plan requirements.

Harvest activities proposed for this project would be visible from several viewpoints (Figure 6, Figure 4, and Figure 5) but would be designed to emulate the openings created by natural processes within the area when viewed in the middle and background viewing zones. Openings would be designed to appear natural with feathered edges and some retention of stand structure. Long term, the openings would improve the health and resilience of the forest. While the openings would be apparent they would be designed to emulate natural fire openings and would be in keeping with the existing landscape character of the area especially in the foreground an middleground viewing zones. The proposed action would meet the overall VQOs of *Partial Retention* and *Maximum Modification*. Given the design features outlined for all visible units, Alternative 2 would meet the Forest Plan visual quality objectives.

Since only dead and dying vegetation would be removed and the forest plan Visual Quality Objectives would be met, the Woodrat Salvage project would also meet the Management Guidelines for the Middle Fork Clearwater Wild and Scenic River for Outstanding and Remarkable Values for scenery.

3.12 Cultural Resources

A. Affected Environment

1. Geographic Scope

The scope of the analysis for direct, indirect, and cumulative effects to cultural resources includes the proposed harvest units as well as proposed temporary roads. The analysis considers the effects of all proposed activities for their potential effects to cultural resources.

2. Methodology

The data presented are a result of reviewing existing cultural resource information available for the proposed project area located on Forest Service managed lands. Documents reviewed include previously completed cultural resource inventory reports, historic site records, historical forest maps, and related internal historic documents. County records and historic newspapers cite and reference some historic settlements near the project area. Additionally, in accordance with National Historic Preservation Act of 1966, as amended, a cultural resource inventory of the proposed Woodrat Salvage project area will be completed in 2016. The findings of the inventory will be submitted to the Idaho State Historic preservation Officer (SHPO) for review and concurrence.

Indicator: The indicator used for cultural resources are the number of sites affected by proposed project activities.

3. Existing Condition

The project area has experienced changes in its vegetative ecology based on past and present land use patterns of people, fire events, and the introduction of plant diseases. Specifically, Native American populations, followed by Euro-American miners and settlers and their related vegetative management activities have influenced and defined the present condition of the forested landscape. When reviewing historic properties associated with past land use practices community, home site occupancy, mining, and USFS fire prevention and blister rust eradication activities, all of which occurred within the general area. Other historic properties assessed include recreational and/or subsistence activities associated with the general public.

There have been numerous cultural resource surveys conducted within the Woodrat fire project area. There are NRHP historic properties located within the burn boundary of the Woodrat project area; however, the sites not within the area of potential effects (APE) (harvest units or temporary roads locations). Sites listed as unevaluated are treated as eligible for the National Register of Historic Places (NRHP).

B. Environmental Impacts

1. Direct, Indirect, and Cumulative Effects

Alternative 1 – No Action

Under Alternative 1 there would be no effect to historic properties. Historic properties would continue to degrade naturally (remain in current condition). There would be no change in effects from the current condition.

Alternative 2 – Proposed Action

There is one historic property located within the area of potential effects (APE). It is not eligible for the National Register of Historic Places (NRHP) and mitigation is not necessary. As a result there would be no adverse effect to known NRHP historic properties. No NRHP cultural resource sites are located within the APE. If cultural resource sites are located, mitigation measures would be developed in consultation with the Idaho SHPO in order to achieve a no adverse effect determination for the project as outlined in project design features.

The cultural resource surveys have been completed for the Woodrat Salvage project area and the report will be submitted to the Idaho State Historic Preservation Office (SHPO) for concurrence prior to project implementation (Memorandum of Agreement (MOA) between the United States Forest Service and the Idaho State Historic Preservation Office; February 9, 2016.

Because all project activities would be conducted consistent with the National Historic Preservation Act and the Clearwater National Forest Plan the implementation of these activities would result in “no adverse effect” to cultural resources.

2. Cumulative Effects

With no direct or indirect effects to cultural resources under both Alternative 1 and Alternative 2, no cumulative effects are expected.

C. Regulatory Framework

The USDA Forest Service is mandated to comply with the National Historic Preservation Act of 1966 [Public Law 89-665] and its amendments. Section 106 of the National Historic Preservation Act requires that Federal agencies with direct or indirect jurisdiction over Federal, federally assisted, or federally licensed undertakings afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity for comment on such undertakings that affect properties included in or eligible for inclusion in the National Register of Historic Places. Historic properties are identified by a cultural resource inventory and are determined to be either eligible or not eligible by the cultural resource specialist in consultation with the State Historic Preservation Office (SHPO). Sites that are determined to be eligible are then either protected in-place or adverse impacts must be mitigated.

Each cultural property is evaluated against four strict standards in a process to determine that properties historical significance for possible inclusion in the National Register of Historic Places. These criteria address specific elements that may be contained within that specific property. These criteria are found in the Code of Federal Regulations, 36 Part 60.

- **Criteria A:** The quality of significance is associated with events that have made a significant contribution to the broad patterns of our history; or
- **Criteria B:** That are associated with the lives of persons significant in our past; or
- **Criteria C:** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- **Criteria D:** That have yielded, or may be likely to yield, information important in prehistory or history.

Due to the nature of the project, National Historic Preservation Act (NHPA) compliance was achieved through the use of phased consultation (36 CFR 800.4(b)(2)). As cultural resource surveys have been completed within the Woodrat Salvage project activity areas, this process will allow the agency to defer final identification and evaluation efforts of historic properties if provided for in a memorandum of agreement (MOA). The report will be submitted to the Idaho State Historic Preservation Office (SHPO) for concurrence prior to project implementation. Per Appendix A(b) of the 36 CFR 800 regulations the Advisory Council on Historic Preservation in Washington, D.C. declined the opportunity to participate in the development of the MOA. The MOA therefore became a two-party agreement between the United States Forest Service and the Idaho State Historic Preservation Office. That agreement was signed on February 9, 2016. Additionally, the Nez Perce Tribe and both Idaho and Clearwater Counties were each invited to be consulting parties for purposes of NHPA compliance (36 CFR 800.2(c)). Only Idaho County formally accepted the invitation, however, the Nez Perce Tribe will be considered a consulting party by default (36 CFR 800.2(c)(2)(ii)).

D. Forest Plan Consistency

The alternatives comply with the Clearwater National Forest Land and Resource Management Plan relevant to Cultural Resources. The following Forest-wide management direction or standards, from those listed on page II-22 and 23 of the Clearwater National Forest Plan, apply to this project and will be met as follows:

Table 28. Clearwater Forest Plan standards applicable to the Woodrat Fire Salvage project

Standard	Compliance Achieved By
Identify and evaluate appropriate sites for nomination to the National Register of Historic Places, primarily in conjunction with surveys of potential impact project areas, but also backlog areas on a priority basis.	Sites within the APE associated with this project will be identified and evaluated for nomination to the National Register of Historic Places.
Ensure that Forest actions are not detrimental to the protection and preservation of Indian Tribes religious and cultural sites and practices and treaty rights.	Native American religious and cultural sites located within the project area will be protected from any potential impacts by proposed project activities.

3.13 Economics

A. Affected Environment

Many towns and communities within Idaho County rely on the forest products industry for employment and revenue associated with timber harvest activities. These communities would experience economic effects as a result of the proposed timber sale.

Timber harvest and processing requires the employment of loggers, equipment operators, mill workers, and a variety of workers in preparation and support roles, such as foresters and accountants. Approximately 11,740 workers, earning over $429 million, were employed in the forest products industry (FPI) in Idaho in 2014, which represents 1.7 percent of all wages and salaries in the state. Of every 10 existing jobs in the FPI, seven jobs in other industries are supported through spending and other means. In addition, FPI jobs provide a higher income and socio-economic status to the average worker in Idaho than many other professions. The average salary of an FPI worker is $52,000 per job, which is about 37% higher than the Idaho average of $36,000 for all non-agricultural jobs. (Simmons et al. 2014).

The ten Idaho counties located north of the Salmon River (Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone,) rely more heavily on the forest products industry than the rest of the counties in the state. This area includes the Nez Perce-Clearwater National Forests, which are located in Idaho and Clearwater counties. In a report released by the Rocky Mountain Research station in 2014, the authors found that less than 20 percent of the state's economic activity is in northern Idaho; however, $420 million out of $743 million in statewide forest industry labor income, (which amounts to 57 percent,) is in these northern Idaho counties (Simmons, et al. 43). Typically 80 percent of all timber harvested from both public and privately-owned timberlands within the ten-county area is also processed at facilities within this area, indicating that the majority of jobs and revenue associated with timber harvest have local impacts in communities in Idaho.

1. Geographic Scope

The geographic scope for direct, indirect, and cumulative effects analysis will focus on economic impacts in Idaho, Clearwater, Lewis, and Nez Perce Counties. These are the four counties most likely to be impacted by the proposed timber sale due to their geographic proximity to the project. Processing facilities such as sawmills, pulp mills, post and pole plants, and cedar products manufacturers exist within these counties and would likely purchase and/or process some amount of the wood products harvested from this sale. In addition, these counties contain many towns and communities where FPI workers live, work, and spend money, which would contribute to the economic effects of the sale. The project comprises recreation trails and opportunities associated with Woodrat Salvage project. The analysis area for direct, indirect, and cumulative effects encompasses approximately 2,505 acres (Woodrat fire perimeter), all of which are National Forest System Lands. Recreational opportunities are defined in the analysis section below.

2. Methodology

Economic effects and economic feasibility were analyzed for each alternative. Economic effects were measured in terms of changes to jobs, income, and revenue to local economies. Economic feasibility was measured by calculating estimated sale value, implementation costs, and present net value of the sale.

The Clearwater National Forest Plan places value on "nonpriced benefits" such as dispersed recreation, cultural resources, wildlife habitat, visual quality, and anadromous fisheries (Clearwater National Forest Plan, Environmental Impact Statement Vol II, Appendices Part A and B, pages B41-44). This economic analysis would not revisit the nonpriced resource values presented in the Forest Plan and would focus

only on those costs and revenues associated with implementing the proposed timber harvest activities within the project area.

Timber Harvest Related Jobs and Income

Annual economic outlook reports for the forest products industry in Idaho and Montana are produced by the University of Idaho and the University of Montana's Bureau of Business and Economic Research. These reports use economic data from the Forest Industries Data Collection System and the IMPLAN model to quantify growth, trends, and changes in the forest products industry. The findings from these reports were used in this analysis to calculate the expected economic effects of the proposed activities within the four-county analysis area.

The expected economic effects of timber harvest are quantified by the amount of employment or revenue that results from every 1 million board feet of timber harvested (Table 29).

Table 29. Economic result per MMBF of timber harvested

FPI Jobs Sustained	18 jobs per 1.0 MMBF
Revenue to Communities Through Wages and Salaries	$528,000 per 1.0 MMBF
Revenue to Communities Through Sales of Goods and Services	$3,200,000 per 1.0 MMBF

Source: Cook, et al. "Idaho's Forest Products Industry Current Conditions and 2015 Forecast."

Sale Feasibility

The USFS Region One Sale Feasibility Spreadsheet was used to calculate appraised value, sale feasibility, and present net value of the proposed project. Appraised value is calculated by first estimating the cubic and board foot volume of the sale. Volume is determined by stand composition, tree species and size, and burn severity within the project area. A variety of methods were used to estimate sale volume for this project, including field visits and reviews by USFS foresters, field data collected and shared by USFS roadside salvage crews, the USFS stand exam database, and information from 2015 Burned Area Emergency Response (BAER) reports.

After an estimate of sale volume was determined cost estimates were made for activities associated with harvesting and hauling the timber, such as logging systems costs, haul distance, slash disposal, and road maintenance costs. These estimates were derived from USFS cost guides and recent similar sales in the vicinity. The monetary value of the timber is used to implement these activities, so the activity costs are subtracted from the sale value. The R1 Sale Feasibility Spreadsheet uses local delivered log prices, stump to mill costs, and recent transactional evidence from local timber sales to arrive at the appraised sale value. A predicted high bid is also calculated. This is what the USFS expects to receive from bidders above and beyond the appraised value. This is based on recent bidding history with similar sales and the competitiveness of local timber markets.

After the appraised sale value is determined, sale feasibility is a simple decision: if the value of the timber and the predicted high bid can support the activity costs associated with harvesting and hauling the timber, the sale is feasible. If the activity costs outweigh the value of the timber or if the local markets do not support this type or location of sale, the sale is infeasible.

Present net value is determined by subtracting the costs that the Forest Service incurs for implementing the timber sale from the appraised sale value. These costs include sale preparation and layout, cruising and marking, engineering package preparation, and sale administration.

Information provided by these economic models is used as a tool to understand the relative monetary differences between alternatives rather than to predict actual values for each alternative. Market variables may change between now and the time the timber is sold.

3. Existing Condition

The forest products industry in Idaho experienced a downturn as result of the 2008 economic recession and associated decline in home building. Total timber harvest in Idaho prior to the recession in 2006 was estimated at 1.6 billion board feet. In 2009 following the recession, timber harvest in Idaho was less than 750 million board feet, a decline of nearly 47% (Simmons et al. 5). Since that time the Idaho FPI has been showing signs of growth and recovery. Total sales of forest products manufactured in Idaho in 2014 were an estimated 1.0 billion board feet, a near return to pre-recession harvest levels (Cook et al. 2015).

The majority of Idaho's timber industry is sustained by harvest from private and state lands. In 2014, private lands provided 60 percent of Idaho's timber harvest volume, state lands provided 29 percent and 11 percent came from National Forest System lands (Cook et al. 3). Clearwater County lead the state in timber harvest with 222 MMBF harvested in 2014, out of a total of 1,066 MMBF statewide. This amounts to 21 percent of Idaho's total harvest. By comparison, Idaho County produced 88 MMBF in 2014, or approximately 8 percent. Idaho County is the largest county in the state, with approximately 82% of the total county land base managed by the Forest Service. With so much of its land base falling within federal ownership, Idaho County relies on the timber industry and federally-managed timber for economic stability.

The recent closure of the Blue North Mill in Kamiah, ID, has the potential to negatively impact the forest products industry in Idaho County. An estimated 65 jobs at the mill were lost, with the potential for secondary and indirect jobs lost in much larger numbers. With a haul distance of 30 miles on average, Blue North was the nearest mill to the Woodrat Salvage project area and would have been the appraised mill during timber sale package preparation. The next nearest mill is Idaho Forest Group, in Grangeville, ID, with a haul distance of 50 miles and an added cost to any potential purchaser. The Tripro mill in Orofino also closed in 2016. The closure of these two mills could reduce competition for the timber, which may result in reduced stumpage prices for National Forest timber.

B. Environmental Impacts

1. Direct and Indirect Effects of Alternative 1 and Alternative 2

Jobs and income generated from the proposed project would contribute to community stability, sustain forest products industry jobs, and generate harvest-related revenue to local communities.

Employment and income are effects that can be attributed to the harvesting and processing of timber. The number of FPI jobs sustained can be considered a direct effect of timber harvest. Revenue available to communities as a result of timber harvest can be considered an indirect effect. Using the findings from Cook et al., these economic effects can be predicted based on the estimated volume of the proposed timber sale and recent economic trends in Idaho forest products markets. Potential economic effects of Alternative 1 (No Action) and Alternative 2 (Proposed Action) are listed in Table 30. This does not take into account jobs and revenue from non-federal timber harvest in the area.

Table 30. Forest Products Industry (FPI) jobs sustained and community revenue by alternative

Alternative	VOLUME (MMBF)	FPI Jobs Sustained	Revenue to Communities Through Wages and Salaries	Revenue to Communities Through Sales of Goods and Services
1	0	0	$0	$0
2	7.6	137	$4,012,800	$24,320,000

Source: Cook, et al. "Idaho's Forest Products Industry Current Conditions and 2015 Forecast."

The present net value of a timber sale can also be considered an indirect economic effect. This value provides returns to the United States Treasury from the sale of timber. Table 31 lists the appraised value, forest service implementation costs, and estimated present net value of Alternative 1 and Alternative 2.

Table 31. Appraised value and present net value by alternative

Alternative	Volume (MMBF)	Appraised Total Value[1]	Implementation Costs[a]	Present Net Value
1	0	$0	$0	$0
2	7.6	$1,325,117	$96,187	$1,228,929

Appraised value includes logging system costs, haul distance, BD treatment of activity fuels, skid trail decompaction, erosion control, and road maintenance costs associated with the harvest. Predicted high bid is included. Source: USFS R1 Sale Feasibility Spreadsheet.

[a] Implementation costs include presale layout and cruise design, marking and cruising, and sale administration costs. NEPA analysis costs, which total about $98,712, are not included in this total.

Alternative 1 would not harvest any trees and would not generate any direct effects or benefits in the form of employment or revenue. Alternative 1 would not have any costs associated with implementing the project, so its PNV would be zero. A No Action alternative would not offset the $118,560 cost to the government of completing the NEPA analysis. With this alternative the trees would continue to deteriorate from post fire effects and within 2-5 years most trees would no longer be considered merchantable.

Alternative 2 would create or sustain 137 FPI jobs and provide benefits to local economies in the form of wages, salaries and revenue. Alternative 2 would generate enough value to cover the costs associated with implementing the sale and might provide enough of a bid premium to offset the cost of restoration activities such as reforestation. At present, the proposed action would be considered economically feasible if it can be implemented in a timely manner before the timber continues to deteriorate from post fire effects.

2. Cumulative Effects

The economic effects of timber harvest activities are shown in the previous section. These are described as direct and indirect effects and can also be considered cumulative impacts due to the ongoing jobs, taxes, and income they will provide throughout the analysis area while the project is being implemented.

Due to the high prevalence of wildfires that occurred in the analysis area during the summer of 2015, timber salvage has been widespread and ongoing on both state and privately-owned timberlands since the fires were contained in the fall of 2015. This is in addition to regular green timber sales already planned or in progress in the area. The majority of private salvage was implemented and completed in the fall of 2015. Salvage on state lands is currently being implemented. This includes 52.3 MMBF of fire-salvaged timber harvested by the Idaho Department of Lands in the Woodrat area. All of these state and private sales will contribute to cumulative effects in the form of additional jobs, taxes, and income throughout the analysis area.

The Nez Perce-Clearwater National Forests plan to harvest an estimated 30 MMBF of salvaged timber from the 2015 fires. To date, salvage harvest on federal lands has not yet been implemented, but many fire salvage projects are currently being planned Forest Service lands. Within the Woodrat area approximately 3.3 MMBF of roadside hazard trees will be commercially removed in addition to the 7.6 MMBF proposed in this project. Across the Nez Perce-Clearwater National Forests for 2016, the Snowy Summit/Lost Hat salvage proposes to harvest 1.5 MMBF, the Boulder salvage proposes to harvest 1.0 MMBF, the Deadwood Salvage proposes to harvest 3.0 MMBF, and the rest of the roadside hazard tree project proposes to harvest approximately 13.0 MMBF. This is in addition to regular green timber sales and past-year's salvage sales already planned or in progress across the forest. All of these Forest Service sales will contribute to cumulative effects in the form of additional jobs, taxes, and income throughout the analysis area.

Sawmill representatives in the area have indicated that their facilities are prepared for the influx of salvaged timber from all ownership categories and that the economic feasibility of each sale is only limited by time. If planning and implementation of salvage projects on Forest Service lands can occur in a timely and efficient manner the market will be able to absorb the salvage and facilities will be able to afford to process the logs. If delays occur, the monetary value of salvaged logs will decrease and sale feasibility could be jeopardized. There is a need to harvest burned timber in a timely manner before it loses value due to fire effects such as charring and checking, and post-fire effects such as beetle activity and decay. These fire effects increase as time passes after the fire and reduce the value of logs being delivered to sawmills. The value of moderately burned timber within 6 months after a fire isn't greatly impacted compared the value of green timber, but as time passes after the fire and logs continue to experience post-fire effects, sawmills will pay less for fire-damaged logs.

C. Regulatory Framework

The proposed action has been reviewed and is determined to be in compliance with the management framework applicable to this resource. The laws, regulations, policies and Forest Plan direction applicable to this project and this resource are as follows:

1. National Forest Management Act

The NFMA requires that a sale "consider the economic stability of communities whose economies are dependent on such national forest materials, or achieve such other objectives as the Secretary deems necessary" (NFMA Section 14, e,1,c). The NFMA also requires that "the harvesting system to be used is not selected primarily because it would give the greatest dollar return or the greatest unit output of timber" (NFMA, Section 6, g,3,E,iv). The proposed project would meet the requirements of the NFMA by considering economic community stability through this analysis. The harvest systems selected for the implementation of this project would be based on field-verified silvicultural practices designed to achieve desired long-term forest and ecological considerations rather than on achieving the highest dollar return.

2. Forest Service Manual

The Forest Service Manual directs that economic feasibility be considered in project design, during the early planning stages of project development, and during NEPA documentation (FSM 1900 Chapter 1970). A sale feasibility analysis was completed at Gate 1, which led to consideration of economic adjustments in order to reflect ways in which to lower costs.

3. Executive Order 12898

Although not a direct economic requirement, Executive Order 12898 requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs,

policies, and activities on minority populations and low-income populations in the United States and its territories. The proposed project analysis did not reveal any disproportionately high or adverse effects to minority and low-income populations.

D. Forest Plan Consistency

The proposed action is consistent with the following Forest Plan goals and objectives.

- Clearwater National Forest Plan Goal 9a, page II-2: “Provide a sustained yield of timber and other outputs at a level that is cost-efficient and that will help support the economic structure of local communities and will provide regional and national needs”.

- Clearwater National Forest Plan Objective 8b, Page II-6: “Maintain a mix of sale offerings including various logging systems needed to implement the Forest Plan and support local and regional logging system capabilities”; and, Objective 8d: “Conduct salvage sales as necessary, from unsuitable lands when appropriate.

3.14 Climate change

A. Affected Environment

1. Existing Condition

Forests are in continual flux, emitting carbon into the atmosphere, removing carbon from the atmosphere, and storing carbon as biomass (sequestration). Over the long-term, through one or more cycles of disturbance and regrowth (assuming the forest regenerates after the disturbance), net carbon storage is often zero because re-growth of trees recovers the carbon lost in the disturbance and decomposition of vegetation killed by the disturbance (McKinley, et al. 2011; Ryan, et al. 2010; Kashian, et al. 2006).

Proposed treatment units were burned by wildfire in 2015. Prior to the fire, forests were composed of mixed conifers at a variety of composition, densities, and structures dominated by mid to late seral age classes. At this stage of their development, these stands would have been estimated to be net carbon sinks. That is, they likely sequestered carbon faster than they were releasing it to the atmosphere. The strength of that sink, however, has likely been reversed to a source, or at least weakened as a sink, due to recent fire activity which caused variable levels of tree mortality. Over time these areas may shift back into a sink stage in their carbon cycle, assuming natural regeneration occurs. Carbon flux rates have not yet been calculated for the Nez Perce-Clearwater National Forests as a whole.

B. Environmental Impacts

1. Direct, Indirect, and Cumulative Effects

Alternative 1 – No Action

There would be no direct human-induced emissions of carbon into the atmosphere under the No Action alternative. Generally, due to fire mortality, the analysis area is and would continue to function as a carbon source in the short term, with dead trees releasing carbon into the atmosphere as they decompose. This state would continue for up to a decade or more until the rate of forest re-growth, assuming trees regenerate, meets and exceeds the rate of decomposition of the killed trees. As stands continue to develop, the strength of the carbon sink would increase (typically peaking at an intermediate age and then gradually declining, but remaining positive) (Pregitzer and Euskirchen 2004). Carbon stocks would continue to accumulate, although at a declining rate, until again impacted by subsequent disturbance.

Climate change threatens to amplify risks to forest carbon stocks by increasing the frequency, size, and severity of drought stress, forest fires, insect outbreaks, and other disturbances (Dale, et al. 2001; Barton 2002; Breashears and Allen 2002; Westerling and Bryant 2008; Running 2006; Littell, et al. 2009; Boisvenue and Running 2010). Recent research indicates that these risks may be particularly acute for forests of the Northern Rockies (Boisvenue and Running 2010). Increases in the severity of disturbances, combined with projected climatic changes, may limit post-disturbance forest regeneration, shift forests to non-forested vegetation, and possibly convert large areas from an existing carbon sink to a carbon source (Barton 2002; Savage and Mast 2005; Allen 2007; Strom and Fulé 2007; Kurz, et al. 2008a; Kurz, et al. 2008b; Galik and Jackson 2009). Providing for prompt reforestation after disturbance ensures that forests become sinks again in the future and can speed carbon recovery.

Alternative 2 – Proposed Action

In the short term, the proposed action would remove and release some carbon currently stored within treatment area biomass through harvest of dead trees and other fuel reduction activities, including prescribed burning. A portion of the carbon removed would remain stored for a period of time in wood

products (US EPA 2013; Depro, et al. 2008). Additionally, motorized equipment used during any of the proposed activities would emit greenhouse gasses. For at least the short term, on site carbon stocks would be lower under the action alternative than under No Action.

Removal of dead and dying trees would reduce onsite carbon stores. The portion removed as timber products may partially delay carbon release relative to onsite decay rates. These stands would continue to emit more carbon than they absorb and would remain net carbon sources until trees that sequester additional carbon are well established. The proposed reforestation activities would help ensure these forest stands return to a carbon sink function as quickly as possible. As the stands continue to develop, the strength of the carbon sink would increase then gradually decline, but remain positive (Pregitzer and Euskirchen 2004). Carbon stocks would continue to accumulate, although at a declining rate, until impacted by future disturbances.

2. Cumulative Effects

Neither the No Action alternative nor the Proposed Action would have a discernable impact on atmospheric concentrations of greenhouse gases or global warming, considering the limited changes in both rate and timing of carbon flux predicted within these few affected forest acres and the global scale of the atmospheric greenhouse gas pool and the multitude of natural events and human activities globally contributing to that pool.

Although not a statutorily defined purpose of National Forest System management, forests do provide a valuable ecosystem service by removing carbon from the atmosphere and storing it in biomass (Galik and Jackson 2009). U.S. forests are a strong net carbon sink, absorbing more carbon than they emit (Houghton 2003; US EPA 2013; Heath, et al. 2011). For the period 2000 to 2008, U.S. forests sequestered (removed from the atmosphere, net) approximately 481.1 teragrams of carbon dioxide per year, with harvested wood products sequestering an additional 101 teragrams per year. Our National Forests accounted for approximately 30 percent of that net annual sequestration. National Forests contribute approximately 3 Tg carbon dioxide to the total stored in harvested wood products compared to about 92 Tg from harvest on private lands (Heath, et al. 2011).

The total carbon stored on the Nez Perce-Clearwater National Forests is approximately 306 Tg, or about sixty eight one hundredths of one percent (0.0068) of approximately 44,931 Tg of carbon stored in forests of the coterminous U.S. (Heath, et al. 2011). The Woodrat Salvage project would affect only a tiny percentage of the forest carbon stock of the Nez Perce-Clearwater National Forests, and an infinitesimal amount of the total forest carbon stock of the United States.

Within the U.S., land use conversions from forest to other uses (primarily for land development or agriculture) are identified as the primary human activities exerting negative pressure on the carbon sink that currently exists in this country’s forests (McKinley, et al. 2011; Ryan, et al. 2010; Conant, et al. 2007). The affected forest lands in this proposal would remain forests, not converted to other land uses, and long-term forest services and benefits would be maintained.

C. Regulatory Framework

There are no applicable legal or regulatory requirements or established thresholds concerning management of forest carbon or greenhouse gas emissions.

NEPA requires that agencies consider significant effects of proposed actions on the human environment in our decisions. The purpose of an environmental assessment is, in part, to determine whether there may be significant effects that warrant the preparation of an environmental impact statement (40 CFR 1508.9).

1. Guidance on Consideration of Climate Change in Project Related NEPA

Council on Environmental Quality

On August 1, 2016, the Council on Environmental Quality (CEQ) issued final guidance for "Consideration of the Greenhouse Emissions and the Effects of Climate Change in NEPA Reviews". This guidance was considered and applied in assessing the issue for the Woodrat project.

Forest Service

The Forest Service has prepared agency guidance on "Climate Change Considerations in Project Level NEPA Analysis" (http://www.fs.fed.us/emc/nepa/climate_change/index.htm). In general, that guidance recognizes that while some actions may warrant qualitative or even quantitative analysis of the effects of an action on climate change, some actions are at such a minor scale that the effects would be meaningless to a reasoned decision. The 9th Circuit Court of Appeals recently agreed with that reasoning, finding that a project of similar scope as that proposed here did not warrant detailed analysis of the projects potential impacts on climate change (Hapner v. Tidwell, No. 09-35896 (9th Cir. 2010)).

Other Contextual Considerations

Other factors also indicate that, in this case, further analysis is not necessary or warranted.

The top three anthropogenic (human-caused) contributors to greenhouse gas emissions (from 1970-2004) are: fossil fuel combustion, deforestation, and agriculture (IPCC 2007, p. 36). Land use change, primarily the conversion of forests to other land uses (deforestation) is the second leading source of human-caused greenhouse gas emissions globally (Denman, et al. 2007, pg. 512). Loss of tropical forests of South America, Africa, and Southeast Asia is the largest source of land-use change emissions (Denman, et al. 2007, pg. 518; Houghton 2005).

Unlike other forest regions that are a net source of carbon to the atmosphere, U.S. forests are a strong net carbon sink, absorbing more carbon than they emit (Houghton 2003; US EPA 2013; Heath, et al. 2011). For the period 2000 to 2008, U.S. forests sequestered (removed from the atmosphere, net) approximately 481.1 teragrams (Tg) of carbon dioxide per year, with harvested wood products sequestering an additional 101 Tg per year (Heath et al 2011)[1]. Our National Forests accounted for approximately 30 percent of that net annual sequestration. National Forests contribute approximately 3 Tg carbon dioxide to the total stored in harvested wood products compared to about 92 Tg from harvest on private lands (Heath et al 2011). Within the U.S., land use conversion from forest to other uses (primarily for development or agriculture) are identified as the primary human activities exerting negative pressure on the carbon sink that currently exists in this country's forests (McKinley, et al. 2011; Ryan, et al. 2010; Conant, et al. 2007).

This proposal does not fall within, and is distinguishable from, any of these primary contributors of global greenhouse gas emissions nor is it similar to the primary human activities exerting negative pressure on the carbon sink that currently exists in U.S. forests, namely land use conversion. The affected forests will remain forests, not converted to other land uses, and long-term forest services and benefits will be maintained.

[1] 1 teragram (Tg) = approximately 2.2 billion pounds

Chapter 4. Other required Disclosures

This is not a major federal action, it will have limited context and intensity (40 CFR 1508.27), individually or cumulatively, to the biological, physical, social or economic components of the human environment. It will have no adverse effect upon public health or safety, consumers, civil rights, minority groups and women, prime farm land, rangeland and forestland, roadless areas, or to areas still verified as old growth forest.

4.1 Effects of Alternatives on Prime Farm Land, Rangeland, and Forest Land

All alternatives are in keeping with the Secretary of Agriculture memorandum, 1827 for prime land. The project area does not contain any prime farm lands or rangelands. “Prime” forest land does not apply to lands within the National Forest system. With both alternatives, National Forest lands would be managed with sensitivity to the effects on adjacent lands.

4.2 Energy Requirements of Alternatives

There are no unusual energy requirements for implementing any alterative. With relation to national and global petroleum reserves, the energy consumption associated with the individual alternatives, as well as the differences between alternatives, is inconsequential.

4.3 Effects of Alternatives on Civil Rights, Minorities, and Women

Effects on civil rights, including those of minorities and women, would be minimal. Activities associated with the proposed action would be governed by Forest Service contracts, which are awarded to qualified purchasers regardless of race, color, sex, religion, etc. Such contracts also contain nondiscrimination requirements. While the proposed activities would create jobs and timber harvest would provide consumer goods, no quantitative output, lack of output, or timing of output associated with these projects would affect the civil rights, privileges, or status quo of consumers, minority groups, or women.

4.4 Environmental Justice

In regard to Environmental Justice Order 12898, the health and environmental effects of the proposed activities would not disproportionately impact minority and low-income populations. There would be no effect from the proposed activities on the treaty rights of the Nez Perce Tribe and local communities. The project economic analysis did not reveal any disproportionately high and adverse impacts to minority populations and low-income populations. Although, if the no action alterantive is selected, it would affect jobs in the community.

4.5 Agencies and Persons Consulted

The Forest Service consulted the following individuals, organizations, Federal, State, tribal, and local agencies during the development of this environmental assessment:

A. Federal, State, and Local Agencies

- National Marine Fisheries Service (NOAA Fisheries)
- US Fish and Wildlife Service
- Idaho Department of Fish and Game
- Idaho County Commissioners
- Clearwater County Commissioners

- Idaho State Historic Preservation Office
- Department of Environmental Quality
- City of Orofino

B. Tribes

- Nez Perce Tribe

C. Others

- Clearwater Basin Collaborative
- Idaho Conservation League
- Friends of the Clearwater/Alliance for the Wild Rockies
- Lewis Clark ATV Club
- Blue North Forest Products
- Evergreen Forest Service
- Dennis Baird
- Penny J. Keck
- Dick Artley

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Appendix A. Project Activities

Table 32. Woodrat Salvage logging systems

Unit	Acres	Logging System
1	10	Cable/Skyline
2	15	Cable/Skyline
3	<1	Cable
4	7	Tractor
	69	Cable/Skyline
5	11	Tractor
	16	Cable/Skyline
6	2	Tractor
7	3	Cable/Skyline
9	9	Cable/Skyline
10	6	Cable/Skyline
11	5	Cable
12	13	Tractor
	29	Cable/Skyline
13	9	Cable/Skyline
17	2	Cable/Skyline
18	7	Cable/Skyline
19	21	Cable/Skyline
	8	Tractor
20	8	Cable/Skyline
21	26	Cable/Skyline
	6	Tractor
22	86	Cable/Skyline
23	5	Cable
24	2	Cable
25	2	Cable
28	1	Cable
TOTAL	**378**	

Table 33. Woodrat proposed road reconditioning for salvage unit hauling routes

Road Number	Road Name	Miles
101	Smith Creek	6.5
5502-A	Border A	0.6
5502-B	Border B	0.3
5502-C	Border C	0.4
5502-D	Border D	0.1
5502-F	Border F	0.8
5503-D	Swan Creek D	0.6
75093	High Ridge G	0.3
	TOTAL	**9.6**

Table 34. Woodrat Salvage project proposed road reconstruction for salvage unit hauling routes

Road Number	Road Name	Miles
418	Woodrat Mountain	5.9
5502	Border	5.9
5502-M	Border M	1.2
5503	Swan Creek	4.2
5503	Swan Creek	1.1
5503-C	Swan Creek C	0.7
5503-F	Swan Creek F	0.4
5504	High Ridge	1.9
5504-F	High Ridge F	0.4
5505	Upper Smith	4.2
	TOTAL	**25.9**

Table 35. Woodrat Salvage project proposed road stabilization to return haul route to pre-haul condition to meet road maintenance objective

Road Number	Road Name	Miles	Road stabilization comments
5502-A	Border A	1.2	Place road back in stable condition, including culvert removal, waterbar installation, road outsloping or recontouring and roadway decompaction as needed
	TOTAL	**1.6**	

Appendix B. Project Activity Maps

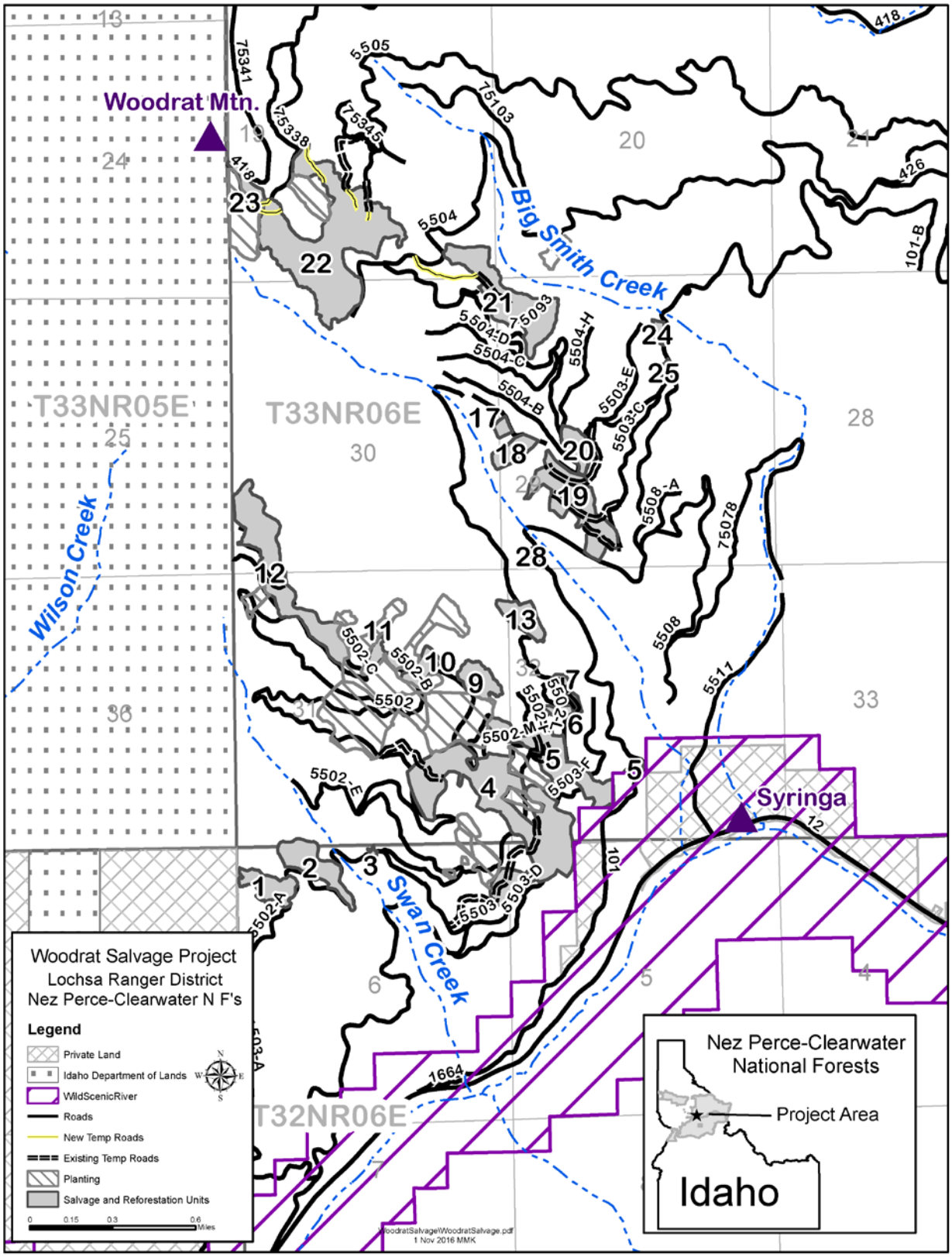

Figure 7. Woodrat Salvage project proposed salvage harvest and reforestation units

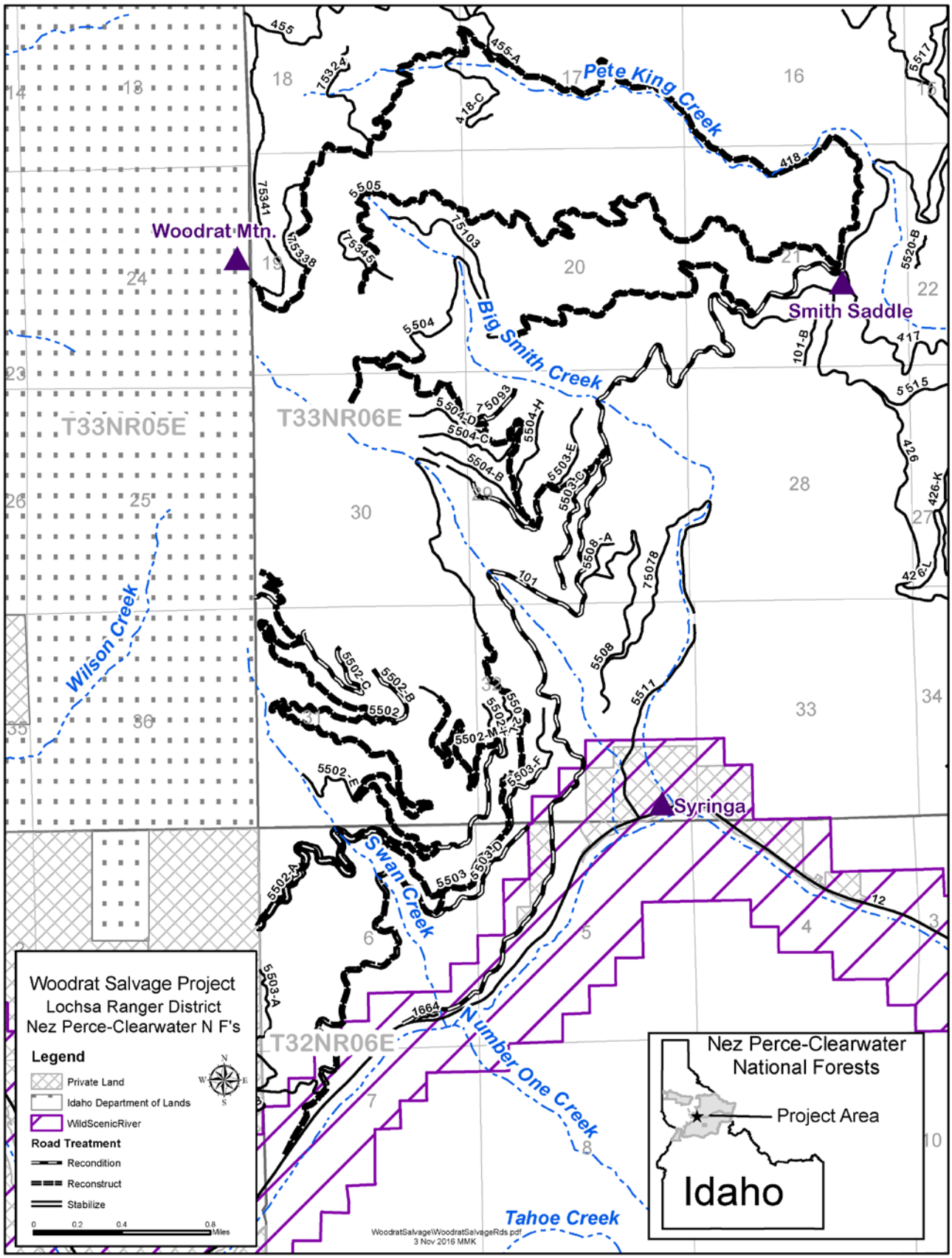

Figure 8. Woodrat Salvage project proposed road work

Appendix C. Projects that May Contribute to Cumulative Effects

Table 36. List of actions that were analyzed for cumulative effects (analysis of activities vary by resource)

Project Name	Type of Project & Miles/Acres	Timeframe
	Past Activities	
Upper Big Smith	90 acres harvest	1981
Bridge Creek	350 acres harvest	1988
Smith Saddle Salvage	105 acres salvage harvest	1993
Big Smith	234 acres harvest	1997
Bridge Creek Salvage	Salvage harvest	1998
Powerline Salvage	Salvage harvest	1998
East Bridge	785 acres regeneration harvest 1315 acres prescribed burning	1999
Molly Mud Salvage	Salvage harvest	2000
Smith Creek Road Decommissioning	6 miles system road decom 10 miles non-system road decom.	2001
Swan Creek Prescribed Fire Project	3 acres fuels reduction (prescribed burning)	2004
Big Smith and Little Smith Culvert Replacements	1 Culvert replacement	2014
Molly Creek	1 Culvert replacement	2014
	Current, Ongoing, and Reasonably Foreseeable Activities	
Firewood gathering		Annual
Interface Fuels	1,143 acres commercial thin 30 acres pre-commercial thin 50 acres commercial thin/pre-commercial thin along FR 101 212 acres salvage harvest 155 acres underburn and reforest	2010-present
Idaho Dept. of Lands Woodrat fire salvage harvest	2,616 acres salvage harvest	2015-2016
Woodrat BAER	See Woodrat BAER report	2016
Wildfire Tree Planting – Lochsa RD	352 acres early seral species planting	2016-2017
Woodrat fire Roadside, Administrative, and Recreation Site Maintenance Project	Roadside maintenance 12.01 miles	2016
Johnson Bar Fire Salvage	2,104 acres salvage harvest	2016
Pete King Culvert Replacement	Culvert replacement on Pete King Creek	2016
Lowell WUI	300 acres harvest and fuels reduction	2017

Appendix D. Response to Comments

Woodrat Salvage preliminary EA Response to Comments

A 30-day public comment period for the Woodrat Salvage preliminary Environmental Assessment (EA) began on September 2, 2016, with publication of a legal notice in the *Lewiston Morning Tribune* (the newspaper of record). The preliminary EA was made available on the Nez Perce-Clearwater National Forest website at http://www.fs.usda.gov/project/?project=48651. Letters summarizing the proposed action were sent to over 300 individuals, organizations, and agencies; including directions to the Forest's website for more information. One (1) comment letter was received on the Woodrat Salvage Project Preliminary EA before the 30-day comment period ended. Comments that were received for the Woodrat Salvage preliminary EA are summarized below followed by the interdisciplinary team's responses. Full text of the comment letter is on file at the Lochsa-Powell Ranger District office.

All comments were considered during the planning process for the Woodrat Salvage project. Although not a requirement for environmental assessments (EAs), the responses provided here are intended to discuss all major points of view. Statements may have been summarized or paraphrased to reduce paperwork.

Specific Written Comments

The following section contains specific written comments and their disposition in the final EA. To minimize duplication, comments addressing essentially the same topic or concern have been consolidated among the various letters. Each comment contains a citation to the comment letter(s) where contained. Specific written comments are defined by 36 CFR §218.2:

> Written comments are those submitted to the responsible official or designee during a designated opportunity for public participation (§218.5(a)) provided for a proposed project. Written comments can include submission of transcriptions or other notes from oral statements or presentation. For the purposes of this rule, specific written comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the responsible official to consider.

Comment Topics:

Comment Summary and Responses

1. All Resources

- *Road construction/reconstruction and logging will damage and slow the reestablishment of trees, damage soils, cause routing of water runoff, , reduce hiding cover for wildlife, reduce snags and downed trees needed by lynx and other forest carnivores for denning, reduce important attributes of old-growth forests, and reduce essential bird and beetle habitats.*

Response: All road reconstruction is being done to correct drainage issues on existing system roads. System roads are intended to serve a primary purpose of transportation access. Any new construction is in the form of temporary roads, which would be recontoured following use. Temporary roads would be built in areas found to not cause watershed impacts, which have been verified through Best Management Practices (BMP) audits.

The Woodrat Salvage EA analysis has shown that logging within the burned areas would have little impact on water quality and wildlife and bird habitats, because of the primary use of low impact skyline logging systems, snag retention design criteria and tree planting following the logging.

Road reconstruction would have no effect on tree reestablishment as all roads proposed for reconstruction are maintained in a treeless condition to provide for access. Routing and runoff of water from existing system roads is expected; however appropriate drainage will be in place to limit runoff and divert it away from streams (EA pages 15, 16, 74-76, and 78). Temporary road construction would remove trees, use the roads and then obliterate them (EA pages 15-17 and 62) which would delay tree reestablishment; however based on monitoring they are expected to be revegetated within 2 years. Runoff to streams from temporary roads is not expected due to a lack of stream crossings and their locations near ridgetops (EA, pages 62, 64, and 76). Monitoring would occur prior to log haul on all roads in order to assure appropriate design features have been implemented (EA, page 19).

Effects to wildlife from road construction and logging is addressed in the wildlife section (see comments under Wildlife/Vegetation and Wildlife below).

Cumulative effects were analyzed for each wildlife species where impacts from the past, ongoing and foreseeable projects or events were described. If roads were considered as an impact to the species, it was addressed in the analysis in the Wildlife section of Chapter 3 of the EA and Wildlife specialist report.

Canada lynx and the North American wolverine are not considered for more detailed analysis for the Woodrat Salvage project because preferred habitat does not exist in the project area (EA page 83 and Appendix E). Canada lynx preferred habitat is associated with relatively high-elevation, moist conifer forests (sub-alpine fir, Engelmann Spruce, Lodgepole Pine), that experience cold, snowy winters and provide a prey base of snowshoe hare. The Woodrat Salvage project is not within a Lynx Analysis Unit where potential habitat exists to support a female lynx and her litter. North American wolverine typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. Denning is shown to be strongly associated with persistent spring snow cover (Copeland et al. 2010). Wolverine forage in all forested habitats but particularly those where carrion can be found. The Woodrat Salvage project activities are not considered a threat to wolverine because to the project's small scale size & disturbance in relation to the wolverine's large home range size and the regional model shows no primary habitat found within the Woodrat Salvage project area.

- *Many of the EA's analyses are based upon the output of models. The reliability of all the data used as input for the models used for the analyses is not disclosed.*

Response: Analysis methodology is discussed under each resource area in Chapter 3. This includes (where applicable) information from field data, a brief description of models used in the resource analysis, methods used to analyzed direct, indirect and cumulative effects; data assumptions and limitations, and scientific citations supporting the validity and effectiveness of analysis methods used. The data used for the models comes from a variety of sources and is considered the most recent and reliable data available.

- *The validity of the models utilized in the EA's analyses have not been established for how the FS utilizes them. No studies are cited which establish their validity, and no independent expert peer review process of the models was cited.*

Response: The agency reviews and evaluates models for accuracy and availability, as mentioned under the Analysis Methodology sections for each resource in Chapter 3 of the EA.

2. Alternatives

- *The project proposal would include 35.5 miles of haul road improvements including road reconditioning (maintenance) and road reconstructions. This is an excessive amount of road work for 378 acres of logging. It also implicates the FS's inefficient economic approach to accomplishing NFSR road maintenance.*

Response: The 35.5 miles of haul roads consists of 18 different road segments. The majority of these segments are behind road closures, and are in a low maintenance need condition. Using a timber sale to do maintenance work to control water issues is a very cost effective economic approach where timber stumpage is used to pay for the work instead of tax dollars.

Road improvements are designed to place roads into good condition prior to log hauling operations for safety reasons, to protect the road infrastructure, and to limit sediment delivery to streams from the roads. As noted in the EA, page 76 the addition of cross drains where they currently do not exist would be beneficial to streams when compared to the existing condition. The stabilization of Road 5502-A after project activities would leave this road in a better condition than it currently exists. The road improvements conducted under the Woodrat Salvage project should also reduce the amount of maintenance required in the future.

3. Aquatics/Watershed

- *Therefore, the EA does not demonstrate consistency with the settlement agreement with the Sierra Club and the Wilderness Society et al. to proceed only with projects, which would result in "no measurable increase" in sediment production in drainages currently not meeting Forest Plan standards. The EA doesn't even state how the FS has even measured sediment in these streams.*

Response: The Forest collected cobble embeddedness in Big Smith Creek and Little Smith Creek in 2015 as noted in the FEA, pages 70-72 in order to determine whether Forest Plan desired conditions were being met. The FEA states "project design features and PACFISH buffers would eliminate the likelihood of sediment delivery to streams. Based on the implementation of project design features and adherence to Idaho Best Management Practices, the Woodrat Salvage project harvest activities would produce no measurable increase in any pollutants" and "For the proposed actions, modeled estimates indicate a very low to none potential for measurable sediment delivery to streams from these activities," and it would be difficult to detect the differences between the fire-related and project related sediment (FEA pages 64-65). No sediment delivery from harvest activities is expected based on recent monitoring on the Forest (FEA

page 74) which showed no evidence of sediment moving from harvested and burned units or temporary roads into streams. In addition, ECA does not increase above levels were increases in flow may cause stream channel adjustments and scouring (FEA page 63-64). The implementation of design features and BMPs has been shown to be 98%+ effective since 1990 based on Forest monitoring (FEA page 75). Based on this information, no measurable effects to sediment are expected.

- *The EA does not consider the vulnerability of roads and logged slopes to storm events such as rain-on-snow or other unusual but potential weather events.*

Response: The preliminary EA did not specifically address road vulnerability, however the proposed reconstruction of roads would lessen the potential effects of large storm events by providing improved drainage (compared to the existing condition) which would divert water away from the road surface and streams. The retention of wood material within all harvest units would provide mechanisms to minimize hillslope erosion during large events. Monitoring after the 1995/96 rain-on-snow event showed that 58% of the landslides were road related, 29% were natural, and only 12% were harvest related (McClelland et al, 1995). Road improvement activities are expected to reduce the risk of future road-related landslides and regrowth of vegetation in harvested units would contribute to hillslope stability through root strength. This should reduce the risk of landslides in the event of a large weather event.

Storm events such as rain-on-snow happen often at various location across the Forests. The question is the magnitude of the storm event in combination with existing road and landscape conditions. For example, a 25-year rain-on-snow storm event could have highly detrimental impacts on a denuded landscape or roads in poor condition, but the impacts of said storm would be much less severe on a vegetated landscape or a road in good condition. There is no way to predict which year of the foreseeable future the 25-year storm event will occur, or whether it will occur at all. Also, not knowing when the storm event occurs (if it occurs at all) makes it impossible to determine the condition of the landscape vegetation and roads at that particular moment in time. An analysis or discussion concerning unpredictable weather events combined with unknown vegetation and road conditions would therefore be speculative. The proposed action does not denude the landscape, as is discussed in the ECA analysis, and the existing road conditions will be improved overall.

4. Aquatics

- *"The survey data for all streams is dated (1997) but is still assumed to be adequate in describing baseline environmental conditions. This is due to the very low amount of timber harvest activities since the data was collected and the associated BMPs and design features that were implemented in order to minimize effects to streams" (EA page 69). The EA fails to disclose any monitoring that validates this assumption.*

Response: The FEA (pages 74-75) shows that the implementation and effectiveness of BMPs and design features has been 98% since 1990. BMP audits were conducted and recorded in the Clearwater National Forest Monitoring and Evaluation Plans from 1990 through 2009 (these can be found on the Forest website). Project design features have evolved and improved as a result of these audits. In addition to the BMP audits, monitoring of PACFISH buffers in 2014 showed no movement of sediment into streams buffers or streams from harvest units or temporary roads (FEA page 74). Cobble embeddedness in project area streams remains above desired conditions and may be associated with roads that remain hydrologically connected to streams (FEA pages 70-72).

- *The EA fails to provide an analysis that addresses how Little Smith Creek, Big Smith Creek, and Swan Creek will ever meet desired conditions for cobble embeddedness.*

Response: The Forest has been conducting projects that would help these streams meet their desired conditions over time. Road decommissioning, road improvement, and the retention of PACFISH buffers

are all designed to reduce or eliminate effects to streams from management activities and help streams meet their desired conditions. It should be noted that even streams in unmanaged areas (roadless, wilderness) often do not meet their desired future conditions (IDEQ Lochsa River Subbasin Assessment, 1999; various stream habitat surveys from the Clearwater NF) due to natural processes and the fact that streams systems are not static. It would be difficult to conduct an analysis due to the inability to know what type and level of storms may occur in the future that could affect sediment inputs into streams (both natural and management related sediment).

- *"PACFISH Riparian Management Objectives (RMOs) … were not met for pool frequency or stream temperature for Little Smith Creek, Big Smith Creek, and Swan Creek" (EA page 69-71). Again, the EA fails to provide an analysis that addresses how these RMOs will ever be met.*

Response: The retention of PACFISH buffers is expected to retain the trees necessary to provide for shade and for future large wood into streams. As noted in the FEA (page 74) the buffers are adequate in providing the shade necessary for maintaining natural stream temperature regimes. They would also provide all the wood necessary to create pool habitats as no trees are being harvested within them. FEMAT (1993) showed that 99% of the wood comes from within one site-potential tree height (150') of the stream. The buffers retain all potential wood that could fall into the streams and create pool habitat.

- *"Fish surveys indicated that low densities of inland redband and westslope cutthroat trout occur in (Big Smith Creek). This is due to the lack of quality spawning and winter rearing habitat" (EA page 70). The EA fails to directly state why habitat quality is so low, although it implies it is due to "continued road issues in the upper portion of the drainage where cross drains, and their associated sediment, have not been installed to hydrologically disconnect roads from streams. In addition, road decommissioning in the last few years may have contributed some sediment to these streams." What is the habitat trend for Big Smith Creek, given this failure of management?*

Response: Habitats are expected to improve over time as road work continues. Many riparian roads and roads on landslide prone hillslopes have been decommissioned; the Woodrat Salvage project would conduct road improvement on roads used for haul and future road improvement work is expected in Big Smith Creek in the future; and riparian areas would be protected through buffer retention (FEA pages 77-79). These would all contribute to improving habitat trends in Big Smith Creek. Improvement could take decades and is dependent on stream flushing flows, wind events, and other environmental factors. The Forest is attempting to affect those factors within our control (primarily roads).

- *"There are 39 road/stream crossings within Big Smith Creek of which 9 are on roads that could be used for hauling" (EA page 70). The EA does not disclose the impacts of project area road/stream crossings that would not be used for hauling or upgraded.*

Response: As noted in the FEA, page 71, the roads not used for haul likely remain hydrologically connected to streams although no surveys have been conducted. We will be pursuing improvement work on these roads in the future as we recognize roads as having the greatest potential to affect streams from a sediment perspective. The Woodrat Salvage project addresses almost 9 miles (58%) of the roads in Big Smith Creek. Of the remaining 6.5 miles, 1 graveled mile is open yearlong and the remainder have seasonal use and are closed to motorized vehicles during the wet seasons when erosion potential highest.

- *The EA does not insure there would be no adverse impacts to designated critical habitat for ESA listed bull trout, steelhead trout, and fall chinook salmon in the Middle Fork Clearwater River. Essential Fish Habitat (EFH) for spring chinook and coho salmon are also threatened by project activities. These include 84 acres of logging, road/stream crossings, and construction of 0.5 miles of temporary road.*

Response: The project is not expected to affect fish habitat in the Middle Fork Clearwater River based on monitoring conducted on the Forest in 2014 (FEA pages 74-75). It showed no sediment moving through PACFISH buffers to streams from timber harvest or temporary road construction. In addition the 4 streams feeding into the Middle Fork Clearwater River are very small (less than 6- 12" wide and 1" deep) and carry very small volumes of water. The amount of sediment they could carry would therefore also be small. Any sediment delivered to the river would be diluted to immeasurable amounts due to the large size of the river and the water volume it carries. The long distance between activities and the Middle Fork Clearwater River would also result in immeasurable effects to fish habitat (FEA pages 74-82).

- *The EA does not provide an analysis of population trends of native fish species.*

Response: The Forest has not collected trend data for fish population in Little Smith Creek and Big Smith Creek; however the Nez Perce Tribe has been collected spawning data for fall chinook on the Middle Fork Clearwater River (FEA page 73) and has documented a significant increase in spawning fish (Arnsberg, 2016). A total of 3 redds were observed in 2011 and 115 were observed in 2015.

5. Best Available Science

- *The EA is not clear on what the FS considers to be the best science on maintaining viability of vertebrate species.*

Response: The wildlife section in Chapter 3 of the Woodrat Salvage FEA addresses Species Viability on pages 89 and 90. For each species analyzed in the FEA, a paragraph or more are on "Population Trends" addresses research pertinent to some species and/or population trends of the species in the state. The exception would be for Migratory Birds, as population data and viability for individual species would extend beyond the borders of the United States.

- *We have provided the FS with input on what we consider best available science during our public participation (comments and objections) regarding the NPCNF's Clear Creek and Johnson Bar projects.*

Response: Comments and materials submitted during preliminary Woodrat Salvage EA comment period must meet the requirements in 36 CFR 218.25(A)(3)(iii) where "specific written comments as defined in §218.2 regarding the proposed project or activity, along with supporting reasons." Specific written comment are defined as "Written comments are those submitted to the responsible official or designee during a designated opportunity for public participation (§218.5(a)) provided for a proposed project. Written comments can include submission of transcriptions or other notes from oral statements or presentation. For the purposes of this rule, specific written comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the responsible official to consider (36 CFR 218.2). Comments received during the Clear Creek and Johnson Bar Salvage projects will not be considered for the Woodrat Salvage project as pursuant to 36 CFR 218.25(b)(1).

6. Climate Change

- *Road construction/reconstruction and logging will reduce on-site carbon storage by removing tree boles from the forest as logs. Indeed, research finds that tree boles, even in severely burned forests, account for less than 5% of the carbon released during fire, which consumes primarily needles and surface fuels (Meigs et al 2009, and Campbell et al 2007).*

Response: Road reconstruction and reconditioning would mostly remove the limbs on small trees or mow shrubs from road cuts and fills. Large trees and boles would generally not be affected. Temporary road construction would remove trees on about 15 acres, or 0.2% of the project area. This is unlikely to greatly affect carbon storage in the area. The timber harvest affects 6% of the area but also retains standing live

and dead trees within the units as well as all trees within PACFISH buffers. Retained trees would continue to store carbon in the project area.

- *The EA does not analyze or disclose the body of science that implicates logging activities as a contributor to reduced carbon stocks in forests and increases in greenhouse gas emissions. It also fails to provide any credible analysis as to how realistic and achievable its vegetation Desired Conditions are in the context of a rapidly changing climate, along an unpredictable but changing trajectory. The effects of climate change have already been significant, particularly in the region encompassing the CNF (Westerling, et al. 2006).*

Response: The "body of science" to which the commenter is referring that "implicates logging activities as a contributor to reduced carbon stocks in forests and increases in greenhouse gas emissions" has not been provided for the Forest Service to offer a specific response to the specific issues to which the commenter is referring. However, implicit within a host of literature is the assumption that harvest would occur and would benefit forests by making them more resilient in the face of a changing climate. Climate change analysis is included in the FEA beginning on page 142.

While perhaps not specifically mentioning how "realistic and achievable" vegetation desired conditions are in the context of a changing climate, the desired conditions were designed for managing within an unpredictable climate. Managing for a changing climate has been considered in the foundational reasoning for the desired conditions and is supported by scientific literature. As an example, this project proposes to increase the amount of western white pine on the landscape, and this is supported by numerous scientific resources. The Second Edition of "Forest Adaptation Resources: climate change tools and approaches for land managers" (Swanston et al 2016) recommends numerous strategies for dealing with climate uncertainty, which support the planting of western white pine. Two of these strategies which support this are: "Maintain and restore diversity of native species" and "Favor or restore native species that are expected to be adapted to future conditions" (Swanston et al 2016).

As can be seen in the analysis contained in the EA, western white pine was identified as being under-represented on the landscape and increasing amounts of western white pine would increase diversity of native species. Western white pine is also expected to be very well adapted to future conditions. The publication, "Return of the King: Western White Pine Conservation and Restoration in a Changing Climate" (Hines 2014), is replete with reasoning for increasing prevalence of western white pine on the landscape. Among some of the findings of Hines (2014) are:

- According to Marcus Warwell, PhD, as quoted by Hines (2014), "If you're planting for forest health over the next hundred years and you anticipate an area will undergo changes due to a shifting climate, western white pine has a huge advantage in terms of adaptive structure".
- "Climate projections for the Inland Northwest are very favorable to western white pine."
- According to Marcus Warwell, PhD, as quoted by Hines (2014), "A wealth of studies indicate that restoration of western white pine would help maintain forest resilience and ecosystem services in the face of uncertain climate change in Interior Northwest ecosystems".

- *Science can estimate the fossil fuel emissions created by motor vehicles. The EA fails to disclose the fossil fuel emissions that timber sales and associated activities would cause.*

Response: The log truck and equipment traffic is expected to be the majority of CO2 emissions: 362 metric tons of CO_2. Supporting information for this calculation is in the project record.

7. Cumulative Effects

- *The disclosure of other ongoing actions in the cumulative effects analysis area is passed off as analysis, when in fact it is not.*

Response: Effects of past, present, and reasonably foreseeable actions were analyzed under each resource in Chapter 3. The effects of the actions listed may or may not affect effect every resource or species, which is described under the Cumulative Effects section for each resource or species analyzed in Chapter 3 of the EA.

8. ESD

- *We appreciate that the FS has dropped its pursuit of an "emergency situation determination."*

Response: Thank you for your comment. In response to public comments as the project was being analyzed, the ESD request was withdrawn on July 15, 2016 to allow for the objection process and to allow interested parties to object .

9. Forest Plan

- *The EA fails to disclose that most monitoring as required by the Forest Plan has not occurred. This leads to inadequate experiential basis for professional judgment and conclusions made regarding project impacts.*

Response: Forest Plan monitoring was designed to address in part: 1) how well the Forest is meeting its goals and objectives, 2) if public issues regarding management are being addressed adequately, 3) how closely the Plan's standards being followed, and 4) if outputs and services are being provided as projected (FP, pg. IV-8, 9). These are forest-wide in nature and are generally not discussed specifically at the project level. All project analyses do, however, discuss project compliance with the Forest Plan.

The interdisciplinary team members use finer scale and more updated monitoring approaches and information than those provided in the Plan to develop professional judgments on potential project effects (FEA Chapter 3). These include field reviews of current and past projects, on-forest BMP monitoring, use of best available science, PIBO monitoring, Idaho Fish and Game periodic reports (wolf, elk, mule deer, etc), and satellite imagery among others. Effectiveness of the design features disclosed in the EA are mostly based on past monitoring on the forest and recent research. For example, tree mortality marking guidelines used recent science (Scott, et al) in combination with monitoring of past fire salvage (Wendover Fire Salvage) to validate the guidelines for the Woodrat Salvage project. This combination of information is considered critical in giving the Forests the ability to adjust proposed treatments and design features that better protect resources while providing for outputs and services.

10. Fuels

- *"Fire killed/fire-affected trees will fall over time, increasing surface fuel loadings which will trend upwards over time from the recommendations for this forest type thus, increasing future surface fire intensity" (EA page 27). The EA provides no scientific basis for this assumption.*

Response: Studies have shown that there is a strong positive relationship between initial fire severity and severity of a subsequent reburn (e.g. Holden et al. 2010; Thompson and Spies 2010; Van Wagtendonk et. al. 2012; Parks et al. 2014). The two principal mechanisms identified as being strongly tied to fire severity

in the initial fires and the reburn were snag basal area and shrub cover. Results suggest that high to moderate severity fire in an initial fire can lead to an increase in standing snags and shrub vegetation, which in combination with severe fire weather, can promote high severity fire in the subsequent reburn of an area. The window of low reburn potential can close relatively quickly (5 to 10 years) as regenerating vegetation and litter accumulates on the surface (Donato et al. 2013). These dead trees will have mostly fallen within fifteen years (Mitchell and Preisler 1998) which will greatly heighten 1000-hr fuel loading. This time also allows for enough smaller surface fuels and ladder fuels in the form of regeneration to accumulate to actively carry the next fire and become established in the heavier fuel loadings that are amassing as snags fall. This increase in large heavier fuel accumulations also hampers fire suppression as these areas are difficult to walk through and chainsaws are needed to remove layers of logs in order to dig fireline. Fireline production can be very slow which may limit the success of initial attack (FEA page 31).

11. General

- *The EA does not disclose our understanding that the Forest Service (FS) is planning to administer the project using the "Good Neighbor" authority granted under the Farm Bill. The EA fails to include any disclosures or analyses that considers having other agencies conduct what are normally FS duties. This should be validated with an EIS before simply assuming non-significance.*

Response: The Good Neighbor authority is a tool that allows the Idaho Department of Lands to implement projects on National Forest lands. It is not a NEPA decision for the Woodrat Salvage project, because whomever implements the project has to comply with the NEPA decision, including associated design criteria. If used on used on the Woodrat Salvage project, the actual sale layout and other field work would be done by Forest Service crews. The State would only handle the sale advertisement and administration. Although the timber sale contract administration will be completed by Idaho Department of Lands, contract provisions will still be those of the Forest Service.

- *This EA doesn't address all the issues we've previously raised in comments on this proposal. Specifically, our February 26, 2016 and May 11, 2016 letters.*

Response: The scoping comment received on February 26, 2016 were considered and are in Appendix D of the preliminary Woodrat Salvage EA. There were no specific comments pertaining to the Woodrat Salvage project in the May 12, 2016 letter. As the ESD was dropped, the preliminary Woodrat Salvage EA was posted available for comment on September 2, 2016.

- *The Nez Perce National Forest has yet to come up with a Fire Management Plan in consultation with the public and in compliance with NEPA, including addressing the issue of forest-wide cumulative effects of fire suppression.*

Response: The current 1987 Clearwater National Forest Plan is suppression oriented. The ongoing Nez Perce-Clearwater National Forest Plan revision is employing a full time Fire Ecologist position to analyze not only fire suppression, but also the ecology of fire, how it impacts and interacts on the landscape of our forest. The public has been given the opportunity to comment/consult in the NEPA process of the current forest plan revision.

Fire suppression for the Woodrat fire is included in the affected environment and cumulative effects analysis, varying by resource. The Clearwater Forest Plan incorporates fire suppression guidelines by Management Area. The Woodrat Salvage project area falls within an Idaho County Rural-WUI designation where fuel loadings are treated as a priority to protect values at risk, one of those being public and firefighter safety as categorized by the 2009 Idaho County Wildfire Protection Plan.

- *The EA does not demonstrate that the FS is managing the Forest or project area consistent with the Travel Management Rule Subpart A.*

Response: Subpart A requires the Forest to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. The Forest is in the process of completing travel management plans for both forests. The Nez Perce-Clearwater Draft Travel Analysis Process (TAP) Subpart A has been submitted to the Washington Office for review and comment and will be updated as needed when the review is complete. The completion of a Travel Analysis Process is not required before the project may be implemented.

12. Invasive Species

- *Road construction/reconstruction and logging will spread noxious weeds already present along roads in the area. The last thing you should do is put logging and road building machinery in the project area, spreading existing weeds across the landscape.*

Response: Ground disturbing activities would open soils along roads and on burned surfaces resulting in an increased weed risk at such sites. Weed response on the Forest is prioritized according to the greatest resource need and opportunities for success. The weed response in the project area would be addressed and prioritized in accordance with the Forest's weed program. Appropriate seed mixes would be applied to exposed areas to provide ground cover and lower the probability of weed establishment.

13. Old Growth

- *The EA is especially scientifically deficient where it fails to recognize the importance of old growth that has experienced fire of any severity. If old growth is defined by these ecological attributes, and these attributes are no longer present, these stands are no longer providing the biological diversity they would provide as "old growth." Since this benefit is no longer realized, avoiding salvage harvest in them for the sake of retaining old growth would not accomplish the Forest Service's objectives for retention of old growth.*

Response: The commenter's exact concern over salvage harvest occurring within the Woodrat area in previous "old growth" is unclear, since the commenters cite concerns given in a comment letter for a project on the Klamath National Forest. Franklin's comment letter, cited by the commenters, expressed concern over the harvest of about **18,000 acres** of harvest treatment in "late successional reserves" (LSRs). By contrast, the Nez Perce Clearwater is proposing to harvest about 200 acres (1% of the amount about which Franklin's letter was written) that were previously considered "old growth", but have been field verified to no longer meet old growth criteria, as set forth by Green et al, 2011. The commenters also concede that the land the Forest Service is proposing to harvest "may not occur within land allocations like the NWFP (Northwest Forest Plan) LSRs" (the concern over which Franklin's letter was written). "Late-Successional Reserves are identified with an objective to protect and enhance conditions of late successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest related species including the northern spotted owl" (Standards and Guidelines For Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl) and the Nez Perce-Clearwater National Forests do not have lands specifically designated to have this type of management emphasis. Thus, there are very notable differences in the project for which Franklin's letter was written and the project to which the commenters are applying his letter.

The commenter claims that the "FS is missing the whole point about burned old growth". However, this project is consistent with the Clearwater Forest Plan's intent for old growth. The Clearwater Forest direction given in the Clearwater Forest Plan requires that 10% of the Forest be "maintain[ed] in old growth habitat", rather than designating specific areas that were to be managed as "LSRs" as in the

NWFP. Since the fire of 2015 changed the character of these areas proposed for salvage such that they are no longer meeting "old growth" criteria, there is no violation of the Forest Plan.

However, in response to the general comments in Franklin's letter about the importance of downed wood and snags for wildlife, the Forest Service is giving consideration to how to provide these elements for wildlife. Best available science is being used to inform Project Design Features (FEA pages 17-19) and selection of leave trees and snags (FEA page 16).

- *The lack of similar over-arching conservation strategies in the CNF's forest plan makes it even more important to retain these important wildlife habitat features, not log them off as proposed. Furthermore, the old-growth inventories for the CNF are either inaccurate or questionable—and even more so because the 2015 fires on the CNF.*

Response: The first sentence of the above comment is addressed in the response above. The accuracy of the old growth inventories of the Clearwater National Forest is not relevant to the decision or analysis. The project does not propose harvest of forest currently meeting "old growth" criteria. All areas proposed for harvest have been field verified as not meeting "Old growth" criteria as set forth by Green et al (1992, errata corrected 2011).

15. Snags

- *"Project design features state that snags would be maintained in accordance with Forest Plans Standards, and silvicultural prescriptions would leave on a minimum of 14 snags or recruitment snags per acre." (EA page 115). As science indicates, size (diameter) matters. The EA doesn't consider this science in snag retention requirements.*

Response: The design features specifies that the largest trees would be left for recruitment snags (FEA pages 16 and 18).

16. Soils

- *The EA does not demonstrate consistency with the Forest Plan Standard: "Manage activities on lands with ash caps such that bulk densities on at least 85 percent of the area remain at or below 0.9 gram/cubic centimeters." There is no quantitative information on soil bulk density.*

Response: Region 1 soil quality standards require that at least 85 percent of an activity area must have soil that is in satisfactory condition. This overall percentage includes bulk densities (compaction) for ash-cap soils. Bulk density is not an additional or separate metric when describing overall soil conditions. Table 13 of the FEA (pages 52-53) shows that all proposed units, except for Unit 3, meet Region 1 standards for detrimental soil disturbance, including ash-cap soils, following project and design criteria implementation.

- *The EA provides little in the way of disclosure as to the accuracy of estimates of current and predicted DSD. The EA does not provide a statistically sound explanation of how accurate the values are, or what percentage error can be expected of its existing and estimated values for DSD. This renders the estimates and measures of DSD inadequate for demonstrating consistency with Forest Plan Soil Standards and R1 SQS, in violation of NFMA.*

Response: The Forest Soil Disturbance Monitoring Protocol (FSDMP), which is the commonly used protocol for assessing soil conditions, provides statistical accuracy and error percentage. This commonly used protocol requires field data collection for the soil assessment. The FSDMP was not used for the Woodrat Fire Salvage EA. Calculations of DSD based on experience and monitoring and approved by Region 1 staff were used and are in the project record. Calculations for predicted project soil disturbance

are included in the Soil Report, Appendix 1. Concerning these calculations, the Preliminary EA stated "Detailed formulas and assumptions used to calculate existing and predicted project soil disturbance is in the project record" (FEA page 47).

- *The EA does not look at soil conditions as affected by the fire in consideration of detrimentally disturbed soils.*

Response: Soil conditions as affected by fire were included in the formulas used to calculate existing soil conditions. "Detailed formulas and assumptions used to calculate existing and predicted project soil disturbance is in the project record" (FEA page 47).

- *The EA's analysis area for soil productivity is the individual treatment units and associated skid trails, landings, and temporary roads within the project area. This means there is no analysis area whatsoever for the no action alternative. There are no indirect effects of damaged soils, outside those specific locations. And therefore certainly no cumulative effects from previously damaged soils, outside those specific locations.*

Response: The No Action alternative analysis area is the same as the analysis area for Alternative 2, defined on page 47 in the FEA. The existing conditions as described in the FEA are also a description of the No Action alternative (FEA page 47-50). In order for there to be cumulative effects there must be temporal and special overlap. Because there will be no direct impacts from the proposed action to soils outside of the defined analysis area, there would be no spatial overlap and therefore no cumulative effects to soil resources outside of the defined analysis area.

- *Nothing in the EA's watershed analysis section specifically addresses the hydrological implications of the cumulative soil damage caused by past management added to timber sale-induced damage in project area watersheds. The EA fails to consider and use the best available science, in violation of NFMA and additionally, NEPA requires that the FS analyses demonstrate scientific integrity (36 C.F.R. 219.3; 40 C.F.R. 1502.24).*

Response: "Compaction can impede water infiltration" (FEA page 51), compaction, and by implication the associated water infiltration impedance, is further mentioned in the cumulative effects section on page 54. The Preliminary EA discussed hydrological impacts due to soil damage on page 50 (FEA page 51). Compaction, and by implication the associated water infiltration impedance, is further mentioned in the cumulative effects section on page 54 of the FEA. The proposed Woodrat salvage analysis utilized the best available information collected by professional resource staff utilizing agency-approved methods and professional judgement to maintain the highest levels of integrity of the information, analysis conducted, and conclusions drawn. Information need not be collected to withstand rigorous scientific scrutiny to provide an informed rational basis for the conclusions drawn. Given safety and time constraints, the information collected is sufficient to provide assurance that the best available information was utilized and maintains both professional and scientific integrity consistent with the regulations.

- *The nature of the boundaries of the activity area is arbitrary: The FS can draw boundaries to result in lower detrimental soil disturbance (DSD) percentages by including areas that exhibit less or zero DSD from past management, a type of administrative gerrymandering.*

Response: Unit boundaries, which are also the boundaries for site-specific soil disturbance, are determined on the basis of proposed vegetation treatments, not the level of existing or potential detrimental soil disturbance (DSD). Detrimental soil disturbance is not determined until *after* the unit boundaries, which also define the analysis area, are proposed. The FEA (and Soils report) includes the statement concerning Units 3 and 7, "These exceedances are due to the fire effects and the small area of

the units" (FEA page 47), showing that in some cases designated unit boundaries/analysis areas contribute to higher DSD percentages, not lower DSD percentages.

- *The FS doesn't explain how its cap on activity area DSD corresponds to maintaining soil productivity in any meaningful ecological way.*

Response: Detrimental soil disturbance (DSD) associated with timber harvest, and the attendant loss in productivity, is to be expected. The FEA states, "Equipment and techniques used for vegetation management will cause measurable increases in DSD" (FEA page 51). The Forest Service has decided that a detrimental soil disturbance maximum of 15% of an activity area is acceptable. Common sense then guides the reader to conclude that a minimum of 85% of an activity area will have soils that maintain structure and function and are ecologically productive.

- *The R1 SQS 15% areal extent limit being based on mere feasibility rather than concerns over soil productivity, and additionally we have the 15% bulk density increase limit based upon the limitations of detection of available soil compaction measurement methods—not detection of reductions in soil productivity itself. The EA's failure to disclose this is a violation of NEPA.*

Response: The Forest Service has decided that a detrimental soil disturbance maximum of 15% of an activity area, and its associated loss in productivity, is acceptable. The 15% allowable increase in bulk density (compaction) is a part of the overall 15% allowable areal disturbance and is not an additional or separate metric.

Region 1 soil quality standards require that at least 85 percent of an activity area must have soil that is in satisfactory condition. This overall percentage includes bulk densities (compaction) for ash-cap soils. Bulk density is not an additional or separate metric when describing overall soil conditions. Table 14 of the preliminary Woodrat Salvage EA (p.51-52) shows that all proposed units, except for Unit 3, meet Region 1 standards for detrimental soil disturbance, including ash-cap soils, following project and design criteria implementation (FEA pages 52-53 Table 13).

- *The mitigation and restoration actions represented as conforming project activities to the R1 SQS and/or Forest Plan cannot be demonstrated to truly be effective in reducing DSD and restoring soil productivity within a short time frame. The EA treads from using questionable methods of measuring and estimating DSD into even more hypothetical territory, only making vague and unquantified claims attributing DSD improvements to mitigation.*

Response: The effects of design features criteria such as reusing existing roads and skid trails, using cable systems rather than ground-based tractor logging, and avoiding saturated soils is on page 50 of the FEA; scientific citations are included. Although the EA states that there should be some improvement "over the course of five years" associated with early seral vegetation (FEA page 53), it does not at any time claim full restoration of soil productivity within a short time frame. The EA states, "Areas affected by DSD can take several decades to recover, depending on soil texture, depth of compaction, and loss of organic material" (FEA page 52).

17. Temp Roads/Skid Trails

- *After completion of the above actions, would the FS later be able to again call these "obliterated" roads "existing road templates"? Likewise, the "swing trails" aka "ridgetop skid trails."*

Response: Obliterated roads, swing trails, and skid trails that are recontoured would not have a template left; therefore, they would not be called existing templates in the future. However, at the next harvest entry, which could be 50 years or so, if similar logging systems are used in these same areas it may likely

be determined to be the best/least impactive place to put the temporary road or skid trail, regardless if there is a template there or not.

18. Vegetation

- *"Analysis for this project relative to vegetation is based upon the effect the proposed action would have on ecosystem health and resilience" (EA page 19). The EA fails to utilize any objectively measurable, scientifically defensible index of resilience.*

Response: Holling (2001) notes that diversity creates resilience. Thus, the EA uses distribution of forest cover types; which is objectively measurable- as a measure of resilience because it is a measure of diversity of plant communities.

- *"Past activities form the basis for the current conditions …within the analysis area and are therefore already considered in the analysis" (EA page 23). This does not constitute adequate cumulative effects analysis and disclosure under NEPA.*

Response: From The Council on Environmental Quality Guidance Memorandum on Consideration of Past Actions in Cumulative Effects Analysis dated June 24, 2005: "The analysis of cumulative effects begins with consideration of the direct and indirect effects on the environment that are expected or likely to result from the alternative proposals for agency action. Agencies then look for present effects of past actions that are, in the judgment of the agency, relevant and useful because they have a significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives."

For vegetation, past actions have created existing conditions for forest cover type and are therefore inherently considered in analysis and were thus considered by the Agency in analyzing effects of the alternatives. Complete cumulative effects analysis for vegetation can be found on pages 26 and 27 of the FEA.

19. Watershed

- *The EA does not provide estimates of sediment yield above natural due to previous management activities such as roads and logging. This is necessary for a "hard look" at cumulative effects. The EA also does not provide any detailed or quantitative data about instream sediment conditions either pre- or post-project. Nor does the EA disclose trends for such parameters pre-fire, post-fire, or post-project.*

Response: The most recent data for sediment yield above natural due to previous management activities is found in Jones and Murphy, Watershed Condition Clearwater National Forest, 1997, which was based on the WATBAL model. Other surveys by Isabella Wildlife Works were also done in 1997. The summary table for streams in the Woodrat project area, based on the Murphy and Jones 1997 information, is below.

Subwatershed	Primary Stream	Channel type	Water Quality Objective	Maximum Allowable Sediment Yield % Over Natural (ON) Conditions		
				Forest Plan Standard	Pre-fire Existing Condition*	Post-fire Condition (year 1)
Big Smith – Middle Clearwater	Little Smith Creek	B	High Fish	55% ON	30% ON	50% ON
	Big Smith Creek	B	High Fish	55% ON	81% ON	101%ON
	Middle Fork Clearwater	C	No Effect	35% ON	Na	Na

The 1997 data is almost 20 years old and based on an obsolete model which would create inconsistencies with more updated analysis tools such as WEPP. Natural sediment yield rates were modeled using WEPP Watershed Online to determine natural sediment yield, and sediment yield due to the fire. This constitutes pre-project sediment conditions and is discussed in detail in the FEA (page 60-61). The modeling is for comparison purposes only and to be consistent with other, more current, WEPP models. Pre-project instream sediment levels are noted in the 2015 cobble embeddedness surveys discussed in the Fisheries and Aquatic Fauna report. Regardless the sediment levels, the Idaho Department of Environmental Quality has found the streams in the Woodrat area to be Fully Supporting Beneficial Uses in their 2012 Integrated Report.

The Forest collected cobble embeddedness in Big and Little Smith Creeks in 2015 (pre-fire) (FEA pages 69-71) in order to determine whether Forest Plan desired conditions were being met. The FEA goes on to state that it would be difficult to detect the differences between the fire-related and project related sediment (pages 64-65). Post-project sediment yields are discussed in detail in the FEA, (pages 64-65), and summarized in Table 21 (page 64). Any measured (i.e. not modeled) data for post-project instream sediment would have to be collected after project implementation. No sediment delivery from harvest activities is expected based on recent monitoring on the Forest (FEA page 74) which showed no evidence of sediment moving from harvested and burned units or temporary roads into streams. In addition, ECA does not increase above levels were increases in flow may cause stream channel adjustments and scouring (FEA page 63). The implementation of design features and BMPs has been shown to be 98%+ effective since 1990 based on Forest monitoring (FEA page 75). Based on this information, no measurable effects to sediment are expected.

- *The EA concludes that "the Woodrat Salvage project harvest activities would produce no measurable increase in any pollutants and therefore would have no impacts to Big Smith—Middle Clearwater water quality and beneficial uses" (page 63). Again, the EA is relying upon modeling—not measurement—of sediment, and the validity and accuracy of the modeling is highly questionable.*

Response: No sediment delivery from harvest activities is expected based on recent monitoring on the Forest (FEA page 74) which showed no evidence of sediment moving from harvested and burned units or temporary roads into streams. The models were used to provide estimates for comparisons, not absolute values.

- *The EA fails to analyze the sediment yield from of all the log hauling and other traffic on the roads.*

Response: The WEPP:Road model was used to assess project affects from roads. Model inputs include climate, soil, gravel addition, topography, drain spacing, road design and surface condition, and ditch condition (http://forest.moscowfsl.wsu.edu/fswepp/docs/wepproaddoc.html). It cannot specifically model sediment generated from log haul. The use of roads for log haul are not expected to generate measurable amounts of sediment as a result of road reconstruction, reconditioning, and BMP implementation, particularly dust abatement (FEA page 77).

- *Table 23 includes CNF Forest Plan water standards, but the EA fails to contain enough analysis to demonstrate consistency.*

Response: The analysis that was completed shows that the proposed actions will not cause exceedances to Forest Plan Standards (see discussion in FEA page 64 and Table 21 on page 64). The FEA (page 75) shows that the implementation and effectiveness of BMPs and design features has been 98% since 1990. BMP audits were conducted and recorded in the Clearwater National Forest Monitoring and Evaluation Plans from 1990 through 2009. Water quality is expected to be protected as a result of design features and BMP implementation. Monitoring on the Forest in 2014 showed no evidence of sediment moving into buffers or streams (FEA page 74).

20. Wildlife/Vegetation

- *Trees in burned areas are absolutely essential to wildlife and ecosystem resilience. They are not in need of "salvage."*

Response: Burned areas are not essential or beneficial to all wildlife species. Species that prefer forest canopy cover would avoid open areas created by wildfires. In time, as the burned area recovers, the vegetation succession would offer new habitat for the different guilds of animals that prefer various or specific stages of plant succession.

Salvage of dead or dying trees would offer resources for the economic structure of local communities. Proposed salvage from the Woodrat Salvage project and all other fire salvage and post-fire projects on the Clearwater National Forest would affect or reduce snag habitat by 3%. That means about 97% of the burned areas in the past 8 years would not be treated, and would provide habitat for wildlife species that use or thrive in burned areas.

- *The FS should not attempt to reestablish trees and big game forage. The area is already in the process of doing so.*

Response: Big game forage would regenerate where seed sources were not destroyed by severe fires. Severe burns can damage soils by destroying duff layers and in some cases, altering the soil structure. In either case, the seed bank would be burnt, leaving no reservoir of seeds available to sprout and grow in these burned areas. Proposed tree plantings would initiate a root system in heavily burned areas, or accelerate tree growth and establishment in other burnt areas at a faster rate than natural regeneration. Burned areas on landslide prone slopes would benefit from tree planting, as the roots would establish themselves in the soil- assisting in retention soils, and potentially mitigating soil loss. Please also see the responses to comments on climate change and vegetation for a discussion on the increase in resilience from creating diversity through proposed planting.

21. Wildlife

- *The EA fails to explain why the FS expects that Canada lynx will never rely upon any habitat in the project area, merely stating no "preferred" habitat exists. This ignores requirements to maintain connected habitat for this ESA-listed species.*

Response: The federal listing of the Canada lynx as a threatened species required the definition and establishment of critical habitat in the various areas of the Distinct Population Segment. Lynx habitat occurs in mesic coniferous forest that experience cold, snowy winters and provide a prey base of snowshoe hare habitat (NRMLD, USDAFS 2007). There is not such habitat in the Woodrat Salvage project area. Without adequate habitat to survive, it is highly unlikely that the lynx would be present; therefore the determination is "no effect". Lynx analysis units (LAUs) were designated on the Clearwater National Forest in potential lynx habitat that is connected with adjacent forests and provide connectivity for lynx movements.

- *Stating that there is no "primary" habitat for the wolverine is not an analysis.*

Response: The Woodrat project area would not support wolverine primary habitat. Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. Denning is shown to be strongly associated with persistent spring snow cover (Copeland et al. 2010). Wolverine forage in all forested habitats but particularly those where carrion can be found (FEA pages 85 and Appendix E). These habitat elements are not present with in the Woodrat Salvage project area.

- *The EA claims that no "modeled" fisher habitat would be affected is not an analysis.*

Response: The Woodrat Salvage project area does not provide potential fisher habitat. Fisher habitat consists of mesic mature forest habitats (FEA pages 86 and Appendix E). The Woodrat Salvage project does not propose activities within in modelled habitat found. There have been no detections of fisher within the Woodrat Salvage project area.

- *"Project may have impacts on large snag habitat" (EA page 87). The EA illogically concludes "no impacts" on Townsend's big-eared bats.*

Response: Page 87 of the EA describes the rationale as to why the bat was not further analyzed. Appendix E fo the FEA mentions the strong correlation of this bat species for caves and mines. The IDFG has found concentrations of the big-eared bat in the lava flows in the southeastern part of the state.

- *Please disclose the FS's methodology for assuring viability of each of the TES species and MIS, because it's not apparent from the EA. The EA provides absolutely no analysis of the impacts of past management on populations or population trends.*

Response: Methodology for the analysis of management actions on all animals considered as TES, Sensitive Species or MIS is described on pages 81-88 and Appendix E of the FEA. Each species analyzed in detail in the wildlife section of Chapter 3 has a section beginning with Population Trend(s). One of more paragraphs follow; which discuss viability and or the population status of the species in Idaho. The exception is Migratory birds, whose viability status extends beyond the borders of the U.S.

- *"The Yakus EAA would be immeasurably affected by the salvage activities. The elk habitat effectiveness (EHE) would remain at 44% (both during and after the harvest); meeting the Forest Plan standard of at least 25%" (EA page 110). The EA does not explain how new roads and logging have no impact on EHE. Also, "Elk security in the EAA would be at 15%, forage at 11%, and hiding cover about 89%." What is the source of those numbers?*

Response: The proposed “new roads” for timber operations are temporary roads and are of such low mileage that it does not affect the road density for the EAA during project implementation; therefore there is no measure effects (FEA pages 108-111). The source of the analysis are the worksheets used to analyze elk habitat effectiveness, based on Forest Plan direction to use the elk guidelines developed by Servheen et al. 1997.

Appendix E. Wildlife Species dismissed from detailed analysis

After preliminary analysis, the following species were eliminated from further analysis based on one or more of the following: the species would not likely be affected by the proposed activities, lack of suitable habitat or expected presence, or they would be affected at a level that does not impact the population.

Canada lynx- Boreal forest habitat (sub-alpine fir, Engellmann Spruce, Lodgepole Pine), main prey is the snowshoe hare.

Woodrat Salvage project area is not within a Lynx Analysis Unit (LAU). An LAU is a designed area that contains potential habitat that may support a female lynx and her litter. Transient lynx may pass through the project area. The project would have No Effect to lynx or its habitat.

Bald eagle - Associated with large bodies of water with abundant fish that provide suitable foraging. Nest and roost sites tend to be in large mature trees or snags near water. In forested areas, they select the tallest trees for nesting that tend to have at least one exposed perch. Such habitat is along the Middle Fork Clearwater River, which lies outside of the project area.

No eagle nests are in the project area. Woodrat Salvage project will have no impact to the bald eagle.

Belted kingfisher - Use a range of aquatic habitats. Important requirements for breeding are nearly vertical earth exposures for digging nesting burrows and the presence of water supporting aquatic prey species. Clear water and unobstructed view of prey are essential for successful foraging. Important foraging habitat characteristics include available perches, canopy cover, and location of pools.

No habitat for the bird is located within the project area. Project will have no impact to the belted kingfisher.

Coeur d' Alene salamander - Associated with springs, seeps, spray zone. Usually found above ground at night during moist weather in the spring and fall and retreat into the narrow spaces between fractured rocks to avoid desiccation in the summer and freezing in the winter.

No habitat for the amphibian is located within the project area. Project will have no impact to the CDA salamander.

Fisher- Mesic mature forest habitats. No potential fisher habitat would be affected by the project. No impact to the fisher.

Gray wolf - Closely associated with habitats that support prey animals (big game). Rendezvous sites include wetlands or small meadows with dense vegetation nearby. Wolf is present in the project area.

Project would not affect habitat, but may disturb wolves near units by human presence and noise. Wolves travel to where prey exists. No changes to motorized access or effects to prey species. The project would create an immeasurable impact on wolves to avoid disturbance. Wolves would move through or hunt prey in units at night.

Grizzly bear - Forage habitat includes open forest stands, meadows, shrub fields with grasses and upland shrubs. Hiding cover is defined as vegetation capable of concealing 90% of an elk at 200 ft. Thermal cover includes stands of conifer trees at least 40 feet tall with at least 70% canopy closure.

Grizzly bear is not considered to be present on the Forest.

Harlequin duck - Breeds on cold, fast-moving mountain streams with dense shrub/timber nearby and an absence of human disturbance. Adults stage on larger rivers before ascending to breed.

No habitat in the project area, therefore; no impact to the harlequin duck.

North American wolverine - Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. Denning is shown to be strongly associated with persistent spring snow cover (Copeland et al. 2010). Wolverine forage in all forested habitats but particularly those where carrion can be found.

No sightings of wolverine in the project area. The project will Not Jeopardize the continued existence of the distinct population segment (DPS) of the North American wolverine. Regional model shows no primary habitat found in the area; none of the proposed activities are considered a threat to the DPS, and the project's cumulative effects would not result in barriers to dispersing individuals.

Pygmy nuthatch - Ponderosa pine habitat, especially mature and old growth stands.

The project would not affect habitat: no impact to the pygmy nuthatch.

Ring-necked snake - Associated with dry coniferous forest with brushy understory, open grasslands, rocky hillsides, and early-seral riparian areas. This species requires moist microhabitats such as downed logs, rocks, or stumps.

Post-fire habitat is unlikely in burned areas, but in 5-10 years a potential prey base would be present for the snake. Also, habitat would improve in the same period. Project would not impact habitat or the Ring-necked snake.

Shiras moose - In the summer, moose feed on submergent and emergent aquatic vegetation in slow-moving water. They forage on shrub species year-round. Forest clearings 15-30 years post disturbance are heavily used. Utilize roadless blocks of mature timber for calving and hiding/escape cover.

The project would not impact moose or its habitat.

Townsend's big eared bat - Distribution strongly correlated with availability of caves and mines. Maternal roosts and hibernacula in the winter include mines, caves, or suitable buildings/structures. Foraging associations include: edge habitats along streams, adjacent to and within wooded habitats.

The project area does not contain habitat for the bat, therefore no impact.

Western (boreal) toad - Breed in shallow ponds, lakes, or slow moving streams. Adults occur in a variety of uplands.

No impacts to potential breeding habitat. Activities may slightly increase mortality risk because individuals may be present in the project areas, but this increase would not be measurable or discernible from normal public use.