



Oregon

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"STEWARDSHIP
IN FORESTRY"

Date: May 11, 2021

To: Andy White, Area Director
From: Steve Wilson, North Cascade District Forester

CC: Liz Dent, State Forests Division Chief
Ron Zilli, State Forests Deputy Division Chief
Colleen Kiser, State Forests Planning Manager

Subject: Revision of the FY2021 Annual Operations Plan (AOP)

The FY21 AOP (approved June 2020) for the North Cascade District has been revised due to the significant salvage activity that has occurred and will continue this year. In early September of 2020, fire damage from the Beachie Creek, Lionshead and Riverside Fires occurred on approximately 16,600 acres of the Santiam State Forest. As a result, the District is conducting post-fire operations. These post-fire harvests are prepared consistent with the Northwest Oregon State Forests Management Plan, the State Forest Bulletins regarding salvage (Salvage and Threatened and Endangered Species; Salvage Activities in Riparian Management Areas, Santiam State Forest Restoration and Recovery, Salvage Activities and Annual Harvest Objectives) and conform with the Oregon Forest Practices Act. All sales are consistent with the 2021 North Cascade Implementation Plan Major Revision; however, two post-fire sales (Stout Creek and Niagara Restoration) and two contingency wood sales were prepared and sold prior to the approval of the 2021 Revision, consistent with the 2012 North Cascade District Implementation Plan.

Management activities planned for this AOP seek to balance and to manage the forest for economic, environmental, and social values for the North Cascade District using different approaches. Post-fire harvest operations will replace the original primary operations that had not been sold prior to the fires (Captain Kirk, Crab Kake, Kaupp Out, Last West, and Silver Dollar). The Cedar Creek Thin sale (0.6 MMBF) was sold on 8/20/2020, prior to the fires. Activities also include reforestation, road repair, and hazard tree removal. All activities consider recreational uses, facilities, and infrastructure. Reforestation combined with retention of snags, downed wood, green trees, and wide riparian areas protect and aid in the recovery of habitat for native fish and wildlife, and water quality.

During its preparation, this plan was reviewed by technical specialists from within the department, biologists from the Oregon Department of Fish and Wildlife and archeologists from the Oregon Department of Transportation. Information on the consultations with other agencies can be found in Appendix C. A 14-day comment period was held starting March 23 and concluding April 6, 2021. In all, ODF received 105 written comments related to the Annual Operations Plan revision and/or Santiam State Forest restoration generally, including 84 from organizational email campaigns. These comments were taken into careful consideration prior to approval of the plan. A summary of the comments received, responses to those comments, and changes made to the AOP can be found in Appendix D of the Summary Document.

Approval of this plan does not constitute final approval of individual project details. Individual operations are subject to additional review processes at the district and division staff level before implementation. The planned amount and location of all management activities are based on the latest site-specific assessments and estimates of operational, T&E surveys and market variables. Management activity levels may be adjusted and modified to account for any significant changes to these variables.

Approved:

Steven Wilson

Steven Wilson (May 11, 2021 15:43 PDT)

5/11/21

Steve Wilson – North Cascade District Forester

Date

North Cascade District 2021 ANNUAL REVISED OPERATIONS PLAN



TABLES OF CONTENTS

Introduction	4
INTEGRATED FOREST MANAGEMENT OPERATIONS	6
Timber Harvest Operations	6
Overview of Timber Harvest Operations.....	6
Harvest Operations within Terrestrial Anchor Sites and Aquatic Anchors	7
Summary of Timber Harvest Operations by Basin.....	8
Forest Roads Management	13
Overview	13
Road Construction	13
Road Improvement.....	13
Road Access Management	13
Road Maintenance	13
Management of Rock Source/Supply	14
Land Surveying	14
Young Stand Management	14
Seedlings / Nurseries	15
Site Preparation	15
Planting	16
Tree Protection	16
Vegetation Management – Release Treatments	16
Stocking Surveys.....	17
Invasive Species	17
Recreation Management	17
Overview	17

Facilities	18
Trails.....	19
Volunteer Program	19
Event Management.....	19
Grants	19
Other Integrated Forest Management Projects.....	20
Aquatic & Riparian Management	20
Land Exchange	21
Law Enforcement and Public Safety	21
Firewood Cutting Program.....	21
Non-Timber Forest Products	21
Planning	21
Stand Level Inventory	21
Wildlife Surveys	21
Research and Monitoring.....	22
Other Planning Operations	22
Public Information and Education	23
Administration	23
APPENDICES	25
Appendix A.....	26
Appendix B.....	34
Appendix C.....	36
Appendix D.....	37
Appendix E	42

NORTH CASCADE DISTRICT

FY 2021 REVISED ANNUAL OPERATIONS PLAN

Introduction

This revised annual operation plan (AOP) outlines activities on state-owned forestland managed by the North Cascade District for Fiscal Year 2021 (FY21), which began July 1, 2020 and ends June 30, 2021. It outlines initial operational steps toward rehabilitating a healthy, productive forest after wildfires burned about 16,600 acres on the forest in September 2020. By law, ODF must manage state forests for economic, environmental, and social benefits. This plan outlines a balanced approach to meeting this mandate as well as the goals, strategies, and objectives of the *NW Oregon Forest Management Plan (FMP)*, *Santiam State Forest Recreation Action Plan*, and the *North Cascade District 2021 Implementation Plan Major Revision (IP)*.

Oregon's devastating wildfire season burned more than 1.2 million acres of private, state, federal and tribal forestland, with catastrophic effects on numerous communities. In early September, three of these fires, the Beachie Creek, Lionshead and Riverside Fires caused widespread damage across the Santiam State Forest. The fire perimeters encompassed approximately 24,000 acres of the Santiam State Forest and damaged approximately 16,600 acres. The fire burned in a patchy, mosaic pattern, severely damaging some areas while other locations in the fire perimeter saw little or no damage.

This plan outlines initial activities such as reforestation, safety hazard mitigation, wildlife habitat protections, post-fire logging, road repair, and assessment of damage to recreational amenities. Reforestation activities include active replanting, aerial seeding, and natural regeneration with no human intervention. Under this plan, riparian protections will meet or exceed the standards outlined in the FMP. Proposed activities are designed with the intent to provide a variety of habitat for Oregon's native wildlife, including species of concern.

Rehabilitation efforts will require significant financial resources. Timber sales are the primary source of revenue to fund recovery and restoration of the Santiam State Forest, including the environmental protections and recreational opportunities Oregonians expect from state forests. Approximately two-thirds of revenues from sales are provided to counties and local service providers where harvests take place, benefiting rural communities that saw unprecedented devastation in the 2020 fires.

Proposed post-fire logging is generally focused on the most heavily damaged areas that would benefit from active rehabilitation efforts and generate revenue consistent with the multiple-use mandate for state forests. Live green trees will be left on the landscape whenever operationally possible, and sale plans have been repeatedly refined to ensure post-fire sales occur in the most severely damaged locations with poor prospects for timely natural recovery of adequately stocked stands of trees.

Time is of the essence when responding to post-fire harvest activities. Fire damaged timber starts to deteriorate quickly with warm weather and its marketability quickly falls over time. As a result, most of the post-fire harvesting will be prepared and sold by June 30, 2021. Due to this shift in harvesting priority, unsold planned sales in the District's original FY21 AOP have been suspended. The activities summarized in this revised FY21 AOP are sales sold prior to

these fires, sales of timber that was felled during the active fire suppression, post-fire timber sales sold to begin rehabilitation activities quickly, planned post-fire sales that are still under development, young stand management, road management, and recreational assessments and activities.

The AOP document is divided into five major categories: Integrated Forest Management; Planning and Information Systems; Public Information and Education; Administration and Appendices.

A 15-day public comment period on these revised activities was held from March 22 - April 5, 2021. A summary of the comments received, responses to those comments and changes made to the AOP since the public comment period can be found in Appendix D. The District Forester carefully considered all comments before approving this revised plan. Unfortunately, the Santiam State Forest remains closed to the public due to resource protection and safety concerns caused by the devastating fires. As part of our commitment to transparency, we invite you to take a look at our public WebApp map ([Santiam Restoration Public Viewer](#)) – that includes information on the fire effects (including post-fire imagery), and information and maps of post-fire harvest activities.

INTEGRATED FOREST MANAGEMENT OPERATIONS

Timber Harvest Operations

Overview of Timber Harvest Operations

All of the primary post-fire harvest operations have been reviewed by ODF’s wildlife biologists, aquatic specialist, geotechnical engineer, road engineer, and planning manager, as well as fish and wildlife biologists from the Oregon Department of Fish and Wildlife, and have been screened for the presence of historic and cultural resources by an archeologists from the Oregon Department of Transportation.

The initial estimate of harvest volume to be prepared and sold in FY21 is 54.3 MMBF. Some events may result in an AOP volume or acreage that is farther from the Revised IP volume and acreage targets. These events may consist of, but are not limited to, insect and/or disease outbreaks, unexpected conditions, or other significant events.

Refer to the attached North Cascade District Financial Summary Table (Appendix A, Table A-1) and vicinity map (Appendix B) for more detail.

Table 1. Annual Operations Plan objectives compared to harvest ranges identified in the North Cascade District 2021 Revised Implementation Plan. Harvest values are acres, Volume is in MMBF.

Harvest Objectives	FY21 IP Harvest Ranges		2021 AOP
	Low	High	
Volume (MMBF)	35	60	54.3
Partial Cut Harvest	500	1,200	1,116
Regeneration Harvest	1,000	3,000	1,909

Units labeled as salvage-partial cut within this plan refer to areas that have a larger number of green trees present in the stand with at least 80 square feet of basal area. All the green trees in these partial cuts will remain where operationally feasible. The green trees will not be thinned, however, when the burned trees have been removed, these stands will resemble partial harvests with wider spacing between residual green trees, potential small gap openings and may have areas of no harvest.

In addition, areas labeled as partial cut – roadside hazard mitigation will occur in this plan. Roadside hazard mitigation will remove trees that pose a post-fire safety risk. Only hazard trees or snags that are within 1 ½ tree lengths on either side of road will be removed. Hazard trees or snags are defined as a tree or snag that has been damaged and can strike a target (people, infrastructure, or property) based on individual tree condition. Hazard trees or snags that are felled along roadways that are also within a stream buffer shall be felled towards the stream if possible and not removed. Trees will be evaluated on a case-by-case basis and the majority of the trees in the roadside hazard mitigation areas may not meet the hazard tree/snag criteria. Portions of the areas identified for hazard tree assessment and removal may have no trees or snags removed.

The anticipated harvest acres, volume, and revenue for each proposed operation in this AOP are listed in the “Harvest Operations – Financial Summary” Table A-1 in Appendix A.

Overview of Structural Components

Retained legacy structure, quality and configuration will vary from unit-to-unit based on the site characteristics. Within post-fire regeneration harvest units, live green trees and any remnant old growth trees within the timber sale perimeters will be retained where operationally possible and safe to do so. The number of green trees and their arrangement on the landscape is dependent on the burn severity and will be unique to each harvest unit. If 5 or more live green trees per acre are not available within the harvest unit, snags will be substituted at an average rate of 2.5 snags per acre at a minimum to achieve overall results for wildlife, habitat, and forest diversity goals. Preference for snags will be given to large diameter snags and those with old growth characteristics such as large cavities, deeply furrowed bark, crooks, missing tops, or multiple tops. Down woody debris will also be retained during post-fire harvest to contribute towards landscape level goals.

Harvest Operations within Terrestrial Anchor Sites and Aquatic Anchors

The original North Cascade District 2012 IP implemented the State Forests’ Species of Concern Strategies that specifically identifies fish and wildlife species of concern on the Santiam State Forest. These strategies will continue with the 2021 IP Revision. Two of these strategies are Terrestrial Anchor Sites (TAS) and Aquatic Anchor (AA) sites.

- Terrestrial Anchor Sites (TAS) areas are intended to benefit terrestrial wildlife species of concern, especially those associated with older forest or interior habitat conditions, sensitive to forest fragmentation, or do not readily disperse across younger forest conditions. Management within TAS is intended to be limited, to emulate natural small-scale disturbance patterns, and to minimize short-term negative impacts to habitat. All areas that were designated as TAS were designated for the development of complex structure in the Landscape Design.
- Aquatic Anchor (AA) sites are watersheds where salmon and aquatic amphibian conservation is of concern. Riparian management strategies beyond those described in the FMP will be applied within AAs. In addition, areas designated for the development of complex structure in the Landscape Design are clustered around streams important to fish in the AA.

The Species of Concern Strategies provide long term goals for TAS and AA. The management activities within those areas are designed to achieve those goals. These strategies have not identified specific limits to the total area that can be harvested within these areas; however, the district and resource specialist will be tracking the harvest trends within these areas to ensure the harvest prescriptions and rate is consistent with the goals of these strategies.

Terrestrial Anchor Sites (TAS)

Since the adoption of the TAS in the July 2011, the district has been proceeding with operations in these areas. Great care has been given in selecting stands for harvest and developing prescriptions in these areas to ensure that these harvest activities achieve the goals of the TAS. These sales were reviewed with ODF and ODFW Resource Specialists. The entire Rhody Lake TAS was within the 2020 fire perimeters. Approximately 83% of the TAS was

burned with the majority in a moderate or high burn severity. There are no planned regeneration harvests within the TAS as shown in Table 3. There will be some roadside hazard mitigation within the TAS that focuses on removing trees that pose a post-fire safety risk and are not shown in Table 3 because exact acreage is unknown at this time. Table 3 shows the cumulative operations in TAS since the strategy was adopted (AOPs 2012 through 2021).

Table 3. Summary of Harvest Operations within TAS (Acres and Percent)

Acres within TAS	Current AOP (FY 2021)		Cumulative Harvest (Since FY 2012)	
	Modified Clearcut	Partial Cut	Modified Clearcut	Partial Cut
Rhody Lake TAS (1,376 ac)	0	0	0	269
% of Acres	0%	0%	0%	19.5%

Aquatic Anchors (AAs)

The AAs became effective July 1, 2011. Increased water protection measures will be implemented on regeneration harvest operations planned within the AA's as specified in the Species of Concern strategy. All of the Sardine Creek AA was within the 2020 fire perimeters with 86% of the AA burned, the majority of this in moderate to high severity. Only 19 acres of the Rock Creek AA were within the 2020 fire perimeters with the majority being a low burn severity. There may be a small amount of roadside hazard mitigation within the Sardine Creek AA that focuses on removing trees that pose a post-fire safety risk and is not shown in Table 4 because exact acreage is unknown at this time. Table 4 shows the cumulative total from FY 2012. Rehabilitation work has already begun in portions of the Sardine Creek AA with an aerial seeding project that is in progress this spring.

Table 4. Summary of Harvest Operations within AA (acres and percent)

Acreages	Current AOP (FY 2021)		Cumulative Harvest (since FY 2012)	
	Modified Clearcut	Partial Cut	Modified Clearcut	Partial Cut
Rock Creek (12,263 ac)	0	0	271	1,191
% of Acres	0%	0%	2.2%	9.7%
Sardine Creek (3,514 ac)	0	0	0	0
% of Acres	0%	0%	%	0%
All Aquatic Anchors (15,777 ac)	0	0	271	1,191
% of Acres	0%	0%	1.7%	7.5%

Summary of Timber Harvest Operations by Basin

In the following section, the harvest operations planned for FY21 will be summarized in the context of the seven management basins on the North Cascade District. Road strategies and standards are discussed in the Forest Roads Management section. Additional information regarding the harvest operations may be found within Table A-2, the Forest Resources Summary in Appendix A.

Table 5. Summary of Timber Harvest Operations in each basin. All values are in net acres.

Basin	2021 AOP	
	Partial Cut	Modified Clearcut
Butte Creek	570	642
Cedar Creek	101	1
Crabtree	0	0
Green	300	673
Mad Creek	145	240
Rock Creek	0	41
Scattered	0	312
Totals	1,116	1,909

Post-fire imagery is available for all of the post-fire harvest operations in the map section of the individual Pre-Operation Reports or in the public viewer Web Application (link in Appendix E) to enable the readers of this document or the Pre-Operations Reports to better understand the areas where harvest is taking place. The burn severity layer, fire perimeter, desired future condition layer, aerial seeding and several other informational layers are available in the public viewer as well. Burn Severity is defined in the North Cascade District 2021 IP Major Revision.

Butte Creek Basin

Butte Creek Contingency: This sale is a result of trees being felled during the active fire suppression by the Beachie Creek Fire Incident Management Team. This sale has been sold and contained the wood that had been felled and decked during the active fire incident and is approximately 4 acres.

Family Camp: This is a two-unit post-fire modified clearcut totaling 59 acres. The burn severity (from satellite imagery) for this sale is Moderate (36 acres) to High (23 acres). On the ground the patches of green trees remaining within the vicinity of this sale have been posted outside of the sale boundary. In all of the units, it is a goal to retain green trees wherever possible as mentioned in the *Overview of Structural Components* section of this document and the Pre Operations Report. This sale is not within the mapped landscape design for developing desired future condition complex stands. Following the completion of harvest, both units will be planted with a mixture of Douglas-fir and western redcedar seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation and depends on seedlings available.

Gawley Panther: This is an nine-unit post-fire modified clearcut totaling 579 acres. Unit 10 is partial cut roadside hazard mitigation. The burn severity (from satellite imagery) for this sale is Moderate (277 acres) and High (302 acres). Unit 1 has no residual green trees. Units 3-9 have minor amounts of scattered green trees. Unit 2 has a large interior patch of green trees. Green tree and snag retention areas have been posted between several of the harvest units. In all the units, it is a goal to retain green trees wherever possible as mentioned in the *Overview of Structural Components* section of this document and the Pre-Operations Report. Additional snags will be retained in places where green trees do not exist. The Desired Future Condition for the sale is for non-complex stands (579 acres). All stands planned for harvest that had a pre-fire condition of layered or older forest structure are burned and no longer contain sufficient living forest vegetative

components for those stand structure types. Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures. Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation.

All of Unit 9 and portions of Units 1 and 8 are located within burned portions of the Shoofly Creek Northern Spotted Owl provincial circle. A biological assessment is being prepared by an ODF biologist for review with the USFWS. Individual tree partial cut roadside hazard mitigation (portions of Unit 12) will occur within the Rhody Lake Terrestrial Anchor and within the Gawley Creek, Shoofly Creek, and Copper Ridge owl circles. A biological assessment is not required for roadside mitigation based on the individual tree assessment strategies being used to mitigate this safety hazard.

Approximately 1 mile of new road construction will be needed to facilitate the harvest and 3 miles of road will be improved.

Cedar Creek Basin

Cedar Creek Thin: This sale was part of the original FY21 AOP and sold prior to the fires and is located outside of the fire perimeter. This is a two-unit first entry partial cut totaling 101 acres. This partial cut will improve the growing condition in 36-year-old Douglas-fir stands. The current condition for both units is Understory with a desired future condition of non-complex stands.

A quarter mile of road will be constructed to facilitate the harvest and a little over a quarter mile of road will be improved.

Crabtree Basin

No sales are planned for this basin.

Green Basin

#2 Niagara Restoration: This post-fire timber sale has been prepared and sold. Units 1-8 and 10-11 are post-fire modified clearcut units totaling 362 acres. Unit 9 is a roadside hazard mitigation area. The burn severity (from satellite imagery) for this sale is Moderate (301 acres) and High (61 acres). As observed in the field, there are a very minor amounts of scattered green trees in Unit 11 and the majority of Unit 1. There are also two linear patches of green trees in a portion of Unit 1. Units 2, 3 and 5 – 8 and 10 have clumps of green trees ranging from a quarter of an acre to five acres in size. Unit 4 has a light amount of scattered green trees. In all of the units, it is a goal to retain green trees wherever possible as described in the *Overview of Structural Components* section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary.

The Desired Future Condition of the sale is for non-complex stands (270 acres), Layered (80 acres) and Older Forest Structure (12 acres). All stands planned for harvest that had a pre-fire condition of layered or older forest structure are burned and no longer contain sufficient living forest vegetative components for those stand structure types. Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures.

Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Units 1-5 will be planted with Douglas-fir. Units 6-8 will be planted with a mix of Douglas-fir, western redcedar, western hemlock and noble fir. Units 10 and 11 will be

planted with a mixture of Douglas-fir, western redcedar and western hemlock. Actual species mix will be determined closer to the time of reforestation and available seedlings are known.

Some roadside hazard mitigation (small portion of Unit 9) will occur within the Sullivan Creek Northern Spotted Owl provincial circle. A biological assessment is not required for roadside mitigation based on the strategies being used.

Packsaddle: Units 1, 3-8, and 11-12 are post-fire modified clearcuts totaling 304 acres. Units 2, 9 and 10 are post-fire partial cuts totaling 35 acres. Unit 13 is new road construction and rock pit expansion totaling 7 acres. An existing rock pit will be expanded as part of this sale to provide hard durable rock for the haul route and spur roads into the sale. The burn severity (from satellite imagery) for this sale is Moderate (140 acres) and High (199 acres). As observed in the field, there are very few, if any, green trees in Units 1, 3-6, 8 and 12. Unit 7 has two small clumps of green trees. Unit 11 has some clumped and some scattered green trees. Units 2, 9 and 10 have the most green trees scattered within the units and are partial cuts. In all the units, it is a goal to retain green trees wherever possible as described in the Overview of Structural Components section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary.

The Desired Future Condition of the sale is for non-complex stands (287 acres) and Layered (51 acres). All stands planned for harvest that had a pre-fire condition of layered or older forest structure are burned and no longer contain sufficient living forest vegetative components for those stand structure types. Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures. Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation and available seedlings are known.

Mad Creek Basin

Monument Peak: This post-fire timber sale has been prepared and sold. Units 1-4 are post-fire modified clearcuts totaling 82 acres. Unit 5 is a roadside hazard mitigation unit. The burn severity (from satellite imagery) for this sale is Moderate (74 acres) and High (8 acres). There are very few green trees in units 1-4. They are scattered and in small clumps. In all of the units, it is a goal to retain green trees wherever possible as described in the Overview of Structural Components section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary.

The Desired Future Condition of the sale is for non-complex stands (81 acres). All stands planned for harvest that had a pre-fire condition of layered structure are burned and no longer contain sufficient living forest vegetative components for that stand structure type. Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures. Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation.

The Santiam Horse Camp is adjacent to Unit 4 and within portions of Unit 5. Foresters will work closely with the Recreation Unit during sale layout and contract writing to put provisions in place to protect the campground infrastructure, recreation trails and to mitigate conflicts with the recreation users.

Sevenmile: This post-fire timber sale has been prepared and sold. Units 1-4 are post-fire modified clearcuts totaling 158 acres. Unit 5 is a roadside hazard mitigation unit. The burn severity (from satellite imagery) for this sale is Moderate (121 acres) and High (37 acres). There are very few scattered trees in Units 1 and 2. Unit 3 has several clumps of green trees ranging from a half-acre to four acres in size. Unit 4 has 1 clump of green trees less than half an acre and a handful of scattered green trees. In all of the units, it is a goal to retain green trees wherever possible as described in the Overview of Structural Components section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary.

The Desired Future Condition of the sale is for non-complex stands (149 acres) and Layered (9 acres). All stands planned for harvest that had a pre-fire condition of older forest structure (approximately 9 acres spread across three separate stands) are burned and no longer contain sufficient living forest vegetative components for that stand structure type. Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures. Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation.

Rock Creek Basin

South Block Contingency: This sale is sold and consisted of trees that were felled and decked during the active fire suppression by the Beachie Creek Fire Incident Management Team.

Scattered Basin

Gates Hill: This is a three-unit post-fire modified clearcut totaling 37 acres. The burn severity (from satellite imagery) for this sale is Moderate (35 acres) and High (2 acres). There is a very minor amount of scattered green trees in Unit 1. Unit 2 has one clump green trees and several scattered green trees. Unit 3 has three clumps of green trees and several scattered green trees. In all of the units, it is a goal to retain green trees wherever possible as described in the Overview of Structural Components section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary. This sale is not within the mapped landscape design for developing desired future condition layered or older forest structure. Following the completion of harvest, all units will be planted with seedlings native to the geographic area. Actual species mix will be determined closer to the time of reforestation.

#1 Stout Creek Restoration: This post-fire timber sale has been prepared and sold. It consists of eleven post-fire modified clearcuts totaling 275 acres. The burn severity (from satellite imagery) for this sale is Moderate (200 acres) and High (75 acres). Unit 1 has three clumps of green trees with several scattered green trees. Unit 2 has one small clump and a handful of scattered green trees. Unit 3 has a linear clump and a small scattering of green trees. Units 4, 5, 9 and 10 have a minor amount of scattered green trees. Units 6, 7, 8 and 11 have small clumps of green trees. In all the units, it is a goal to retain green trees wherever possible as described in the Overview of Structural Components section of this document and the Pre-Operations Report. Snags will be retained in place of green trees as necessary.

This sale is not within the mapped landscape design for developing desired future condition layered or older forest structure. Following the completion of harvest, all units will be planted with a mix of Douglas-fir and western redcedar seedlings native to the geographic area. Actual

species mix will be determined closer to the time of reforestation and available seedlings are known.

Forest Roads Management

Overview

The State Forest road network provides access for forest management activities, fire suppression, and recreation. Visions, guiding principles, and goals for managing the road network are discussed in the Northwest Oregon State Forests Management Plan (April 2010) and the State Forest Roads Manual (July 2000). The State Forest Roads Manual also provides standards and guidance for all road management activities and definitions, road classifications and other terms.

There are approximately 190 miles of road inside the fire perimeter. To mitigate public and employee safety concerns, an inventory of the affected road system was conducted, including inspecting all culverts and bridges. Repair work is described under the Road Improvement section below. This section describes the types of road management activities that will occur in FY21 and the attached Forest Roads Summary Table (Appendix A, Table A-3) describes the anticipated total amounts.

Road Construction

Approximately 1.7 miles of new road may be constructed to facilitate harvest in the FY21 AOP. New LiDAR based slope information is helpful in locating roads away from locally steep slopes.

Road Improvement

ODF road inventory protocols were used to assess existing road drainage, stability, and road bed damage to the transportation system within the fire perimeter. The resulting road work in this AOP to repair damage to the road system caused by the fires consists of roadside hazard tree and snag removal, culvert replacement, repair and maintenance, debris removal, road bed repair and bank stabilization.

Road Access Management

Currently the entire Santiam State Forest is closed to the public. Re-opening will occur in phases as it is safe to do so and ODF can protect forest resources. The district will be installing four gates during FY21 in strategic locations to facilitate the staggered re-opening of areas within the forest as it becomes safe to do so.

Road Maintenance

Roads will be maintained as necessary to protect water quality and the road system asset value. Road maintenance activities will follow the maintenance guidance in Chapter 7 of the Forest Roads Manual and the Forest Practices rules. Road maintenance is accomplished under timber sale contracts for roads used for hauling forest products or work order contracts. Maintenance is focused on ensuring proper drainage to prevent sediment entering streams. Collector roads and roads in active sale areas need and get the most maintenance. District

personnel respond to heavy storms and thaw periods by performing road inspections, and where necessary, stopping heavy truck use during periods when roads cannot handle traffic without damage to water quality or the road asset.

Management of Rock Source/Supply

The District provides durable rock for in-sale spurs and haul routes, which allows for year-round harvest and recreation opportunities as well as safe public travel and fire protection access. Rock quarry development, rock crushing, and/or purchasing rock is necessary to provide sufficient quantities of the road rock for planned road construction, road improvement, and road maintenance activities.

Quarry developments are planned for the following primary Timber Sale road projects; however, these plans are subject to change as timber sale project work is laid out:

- Cedar Creek Thin
- Niagara (TBD purchaser of the sale's choice to purchase rock from a third party or develop the quarry on ODF land)
- Packsaddle
- Family Camp (TBD)
- Gawley Panther (TBD)

The District will continue to explore new rock sources and further develop existing rock pits in FY21.

Land Surveying

The fires destroyed property line markers in many areas. These need to be resurveyed or refreshed prior to harvest. Survey work may be accomplished by utilizing the licensed surveyor on staff with ODF. Land surveying may be necessary on the following sales:

- Gawley Panther (TBD)
- Monument Peak
- Niagara
- Packsaddle
- Sevenmile
- Stout Creek

Young Stand Management

The impacts of the fires have drastically changed reforestation needs on the district. Approximately 25% of the forest requires some reforestation activity. The State Forest strategy is to use a range of silvicultural tools to establish and maintain diverse stands of well-adapted natural species throughout the landscape to meet the objectives and goals in the Forest Management Plan and District Implementation Plan. These tools include site preparation, planting, aerial seeding, natural regeneration, tree protection, vegetation management, pre-commercial thinning, early commercial thinning and interplanting or replanting. Each practice must be considered and prescribed for individual stands on a site-specific basis.

This section describes the types of reforestation and young stand management activities that will occur in FY21 and the attached Young Stand Management Table (Appendix A, Table A-4) describes the anticipated total amounts. The location and amount (acres) of these activities are estimates based on plans, information, and conditions as known at this point in time. The type, amount and specific stand management prescriptions will be further adjusted based on when existing harvest units are completed and on updated assessments and surveys that will occur during and after the 2020 growing season.

Reforestation activities will be completed by using experienced contractors. A portion of the activities may be completed by utilizing work crews from the Mill Creek Correctional Facility. These crews work on activities such as tree protection, mechanical hand release, and noxious weed control.

Seedlings / Nurseries

To meet the goals of the Forest Management Plan, the State Forests Program requires tree seedlings that are physiologically healthy and best suited for the planting sites. A wide variety of seedlings are grown at forest nurseries throughout the Pacific Northwest to meet the reforestation needs. Seedlings are grown in three different stock types: 1) plug seedlings or one-year-old container grown seedlings, 2) plug ones which are grown one year in a container followed by a second year in a bare root bed, and 3) straight bare root seedlings grown from seed in a bare root bed and then transplanted to a lower stocking bare root bed. The budget accounts for a string of growing costs over several years rather than just those costs of the trees being grown and planted in the winter. The budget for seedlings includes portions of the costs for growing seedlings for three planting years. Additionally, there are costs associated with the seed that is used for growing the seedlings, estimated transportation costs and various costs associated with packaging and freezer and/or cooler storage. The individual species mixture and stock type used for a particular reforestation unit is determined after the final inventory from the forest nursery and varies by District.

Site Preparation

Site preparation is any planned measure to prepare a site to allow for favorable growing conditions for newly planted seedlings. More than one of these techniques may be used for any given site based on the attributes and reforestation prescription for the site. The three main site preparation techniques are mechanical, chemical and slash burning.

- 1) Slash Burning: Slash burning will be accomplished by burning piles of slash that result from the harvest.
- 2) Chemical: Chemical site preparation involves the application of herbicides to control competing vegetation before planting or natural regeneration and during the early stages of seedling establishment. Applications occur by two primary methods: aerially by helicopter or ground based with the use of backpack application equipment. The objective is to control brush species to allow stand establishment and maintain 2-3 years free of significant competing vegetation. The actual site preparation plan will be prepared in late spring when harvest unit availability and brush development is better known.

Planting

Tree planting operations are conducted for various reasons. These include meeting Forest Practices Laws, quickly establishing a new stand of trees after timber harvesting and increasing species diversity in the area and across the landscape. Planting is comprised of matching the appropriate species and stock type to the planting site. Forest health strategies are addressed on a site-specific basis when the planting plan is developed. Site specific prescriptions consider target species, aspect, elevation, soil types, Swiss Needle Cast risk where applicable, *Phellinus weirii* (laminated root rot) presence, required stocking guidelines, natural advanced regeneration, and the desired future condition of the stand. To accomplish this, a mixture of species and planting densities are utilized to provide for a healthy, productive, and sustainable forest ecosystem over time that is more resilient to climate change. The following are different types of planting.

- 1) Initial Planting (Regeneration harvest units): Planting activities establish the desired species and stocking levels to meet the goals in the Forest Management Plan and Forest Practices Laws. Planted seedlings will be well suited and adapted to the reforestation site and where appropriate, a mixture of species may be planted to increase diversity on the landscape.
- 2) Natural Regeneration: This approach will be utilized to accomplish reforestation goals in areas that have difficult access or safety concerns for planting due to remaining hazard trees and have enough surviving green trees in the overstory to provide seed. This approach will help promote a natural succession pathway that includes a delayed response to conifer regeneration and allow for perennial shrubs and hardwoods to colonize these areas.
- 3) Aerial Seeding: This approach will be utilized to accomplish reforestation goals in areas that have difficult access or safety concerns for planting due to remaining hazard trees and there are not enough green trees remaining in the stand to provide natural regeneration. This approach will help promote a natural succession pathway that includes a delayed response to conifer regeneration and allow for perennial shrubs and hardwoods to colonize these areas.

Tree Protection

Animal damage on newly planted seedlings reduces their overall size, health, and vigor. Extensive damage can lead to interplanting, may extend the time to achieve free to grow status as defined by the Forest Practices Act and prevent meeting Forest Management Plan goals. Deer and elk, as well as mountain beaver, can heavily damage young seedlings. Various tree protection strategies are applied to help re-establish trees in areas with high concentrations of these species. Most commonly, various types of physical barriers (bud caps, vexar tubes, etc.) help prevent damage from big game. Direct control includes trapping mountain beaver in highly populated areas prior to planting to help prevent damage to newly planted trees.

Vegetation Management – Release Treatments

Vegetation management is done to reduce light, moisture, or nutrient competition from undesirable vegetation in a young stand of trees to improve survival and growth. It can also be used to alter tree species composition under pressure from insect and disease and favor species that are tolerant or resistant to the threat. Vegetation management may be required

to meet forest practices reforestation stocking requirements, the NW Oregon State Forests Management Plan and the District Implementation Plans. There are two types of vegetation management, chemical and manual release treatments. Chemical release is described below.

Chemical Release: Chemical release treatments involve the application of herbicides to control undesirable vegetation. Typical application methods are broadcast, directed spray, and hack and squirt. Broadcast application treatments are sprayed over the top of seedlings and undesirable vegetation using either aerial or backpack methods. Directed spray applications are made with a backpack and target individual plants. This method is often used to remove invasive species such as Scotch broom from young stands. Hack and squirt involves basal or stem injection of chemicals. This method is typically applied to hardwoods to release conifers from hardwood competition.

Stocking Surveys

The Reforestation Unit has the responsibility of ensuring that the goals of the Forest Management Plan are met. Stocking surveys is one tool to ensure the stands are on track for the desired future condition. The surveys are done to check initial plantation survival at a time when the seedlings are vulnerable and there is still time to remedy problems, by using interplanting and animal damage control measures as examples. In addition, stocking surveys are conducted to assess free-to-grow status and to get baseline data on the stand for future management planning, for example evaluating release treatments and pre-commercial thinning candidates.

Invasive Species

Most noxious weeds or invasive plants are found along roads and have spread into plantations. The main sources for the weed introduction into the forest are vehicle tires, equipment moved into and out of district, and where soil disturbance occurs. 100% weed-free grass seed and certified weed-free straw used for mulch is required for project work on roads. Equipment washing is required in timber sale contracts to prevent the introduction of weed seed from other sites. It is also required that weed-free hay be used for feeding stock on State Forest Lands.

Recreation Management

Overview

Currently, the Oregon Department of Forestry manages 5 campgrounds, 1 OHV staging area, 7 trailheads and parking areas, 26 miles of non-motorized trails, 6 miles of OHV trails and dispersed camping, hunting, and target shooting opportunities on the Santiam State Forest.

The 2020 Labor Day wildfires significantly impacted the recreation opportunities on the Santiam State Forest and changed the forest setting around many of the trails and recreation facilities. 24 of the 32 miles of trails were impacted by the wildfires along with 3 of the 5 campgrounds and multiple day use areas.

Recreation program work is now being re-directed to planning the restoration, repair and replacement of trail and facility infrastructure damaged by the wildfires.

This section of the FY21 AOP is designed to provide information about the recreation program activities for the remainder of the FY21 period.

Facilities

A summary of costs can be found in Appendix A Tables A-5, A-6, and A-7. Following are some general maintenance and restoration efforts that will occur on the Santiam State Forest for the remainder of the FY21 period. More specific information is given by individual site below.

- Develop plan for restoration and repair of recreation facility infrastructure impacted by wildfire
- Develop plan for trail restoration and repair of trails impacted by wildfire
- Continue facilities maintenance and repair
- Develop plan for installation of informational and interpretive/educational opportunities

Shellburg Falls Campground

- Develop plan to repair trails and infrastructure damaged by the wildfire
- Improve spatial accuracy of GIS trail layer
- Continue coordination with Adopt-a-Trail group on improving the mountain bike trail system

Butte Creek Campground

- Paint restroom
- Replace restroom door

Santiam Horse Camp

- Develop plan to replace infrastructure damaged by wildfire

Rhody Lake Recreation Area

- Develop plan to repair and restore Rhody Lake Recreation Area and trails

Crooked Finger ATV Staging Area

- Conduct trail assessment and update GIS layer accuracy
- Installation of way-finding signs, motorized trail signs and no target shooting signs
- Construct target shooting area and redirect shooters to a new location

Trail Bridge Inspections

- Complete inspections of all trail bridges

Trails

Motorized (OHV) Trails

Oregon Department of Forestry will facilitate maintenance of the 6-mile designated ATV trail system located in the north block of the forest called the Crooked Finger OHV Area.

Non-Motorized Trails

The Non-Motorized Trail system on the Santiam State Forest provides opportunities for hiking, mountain biking and horseback riding. Annual trail maintenance includes bridge inspection, brushing, tread repair and drainage repair. Due to the extensive damage that occurred to the non-motorized trail system as a result of the 2020 Labor Day wildfires, ODF will conduct detailed assessments and develop plans to restore and repair trails impacted by wildfire.

Volunteer Program

Volunteers contribute labor, supplies, and expertise to the district recreation program. Our volunteers have partnered with ODF to construct new trails, maintain infrastructure, and preserve natural resources.

ODF will develop a plan to engage volunteers in the restoration and repair of trails and recreation facility infrastructure impacted by the wildfires.

Event Management

ODF will not be permitting any events through the remainder of the FY21 period.

Grants

In collaboration with our partner Trash No Land, the Recreation program will be administering the following grant to support the construction of the Crooked Finger Target Shooting area.

- NRA Grant

Other Integrated Forest Management Projects

Aquatic & Riparian Management

There are approximately 174 miles of streams within the fire perimeter of which 32 miles did not burn. All fish bearing streams found in State Forests are subject to the Management Standards for Aquatic and Riparian Areas as outlined in Appendix J found in the Northwest Oregon State Forests Management Plan (2010) at a minimum. An objective of State Forests' aquatic resources is to maintain, enhance, and restore quality fish habitat. This is achieved primarily through riparian buffer strategies specific to the aquatic resource characteristics such as presence of fish, stream size, and flow duration. Larger buffers will be utilized on many post-fire harvests based on site-specific conditions and in collaboration with ODFW and Department of Environmental Quality (DEQ).

Several strategies, described in the Forest Management Plan, dictate protection measures designed to protect, maintain, and restore aquatic and riparian functions. These strategies are employed during harvest activities and include but are not limited to: leave trees adjacent to streams to protect stream temperature, provide nutrients, protect stream banks, and eventually provide wood to improve fish habitat. Best management practices for road construction, reconstruction, and maintenance minimize impacts to water quality.

Threatened and Endangered Fish Species: Federally Threatened listed species with Critical Habitat Designations found within the District include Winter Steelhead and Spring Chinook.

Fish Distribution Surveys: Streams are classified in part as supporting anadromous fish, game fish species, or by fish species that are listed as threatened or endangered under either federal or state Endangered Species Acts (Type F) or not supporting fish (Type N). Riparian protection measures depend in part on the presence of fish. Many streams in the past have been surveyed with electro-fishing techniques that established the upper extent of fish use. However, many small streams have not yet been surveyed for fish presence. Streams needing classification in the AOP will be evaluated using a Physical Habitat Survey. This physical survey methodology was developed in conjunction with Oregon Department of Fish and Wildlife. The seasonal/perennial break in the streams will be evaluated during fish distribution surveys or during sale layout.

Restoration Goals and Identification Process: Approximately 65 acres of riparian area for Sevenmile Creek, a fish bearing stream, will be planted in FY21 with western hemlock and red alder seedlings after the riparian area was severely burned in the fires. With limited seedling availability, this area was chosen as a high priority area to plant since no live trees were left in the RMA. No stream enhancement projects have been identified for FY21. The Santiam State Forest Restoration Plan, which is in the development stage, will identify areas of restoration work for future AOPs in collaboration with ODFW, local watershed councils and other external partners. This includes additional planting of seedlings in areas of RMAs identified by the ODF Aquatic and Riparian specialist as having the greatest reforestation need.

Restoration accomplishments are reported to Oregon Watershed Enhancement Board using the Oregon Watershed Restoration Inventory electronic filing process and reported by ODF annually in our report to the counties, board of forestry, and Division of State Lands.

Land Exchange

The process for a potential purchase or land exchange with Weyerhaeuser will begin in FY21. Weyerhaeuser owns approximately 400 acres directly adjacent to the ODF Shellburg parcel just to the east. Acquiring this parcel will help create a safer public access point to the Shellburg Falls trail network and add 3 more waterfalls to the Recreation Area.

Law Enforcement and Public Safety

Currently the district participates in a Cooperative Law Enforcement program in Linn County and Marion County with other private timber companies.

Firewood Cutting Program

The primary objective of the District Firewood Cutting Program is to provide a source of firewood from Sate Forests to the public for personal use. The permit fee for personal firewood cutting is \$20 for two cords. Permits are issued for a period of three weeks. Historically firewood cutting has only been allowed outside the months of fire season. The District typically sells 50-75 woodcutting permits each year. Firewood permits will not be issued while there is a public use closure on the Santiam State Forest.

Non-Timber Forest Products

The North Cascade District has suspended its commercial Miscellaneous Forest Products permit program due to lack of staffing resources. Previously, forest products such as mushrooms, vine maple, and salal were available for commercial permit. Many of these products are available throughout the forest landscape and can be found in the different stand structures on the forest. The permit program policy will be re-evaluated in FY22.

The district does issue personal use permits, consistent with Northwest Oregon Area policy. Gathering of these products is allowed provided that the products and quantities are not removed or exceeded as outlined in ORS 164.813. No personal use permits will be issued while there is a public use closure on the Santiam State Forest.

Planning

Below are the significant district-level planning projects currently scheduled for commencement, completion, or both in FY21.

Stand Level Inventory

Work has begun to update the stand boundaries within the burn based on burn severity. This process will set the stands up to be re-inventoried in the future.

Wildlife Surveys

Northern Spotted Owl Surveys

For the FY21 AOP, the District will continue the northern spotted owl (NSO) survey program, to comply with federal and state Endangered Species Acts and to contribute to Forest Management Plan (FMP) goals. Survey requirements are determined in accordance with *ODF Northern Spotted Owl Operational Policies*, November 2017.

T&E Plants

The District will continue to screen harvest operations against the Oregon Biodiversity Information Center (Orbic) database and other known locations on the District to identify potential conflicts with plant species listed in the District IP.

Species of Concern Wildlife

The District will continue to screen harvest operations against several wildlife databases to identify potential conflicts with wildlife of concern listed in the District IP.

Research and Monitoring

The district is actively evaluating past timber sales for compliance with the Oregon Forest Practices Act. The North Cascade District will use the information to assess and improve compliance.

Additionally, the district cooperates with Weyerhaeuser and Oregon State University on a study to help determine the abundance of the Oregon Slender Salamander on the western slopes of the Cascade Range. The study will also help to determine if there is a significant difference in the amount of down-woody debris, the Oregon Slender Salamander's primary habitat, pre- and post-harvest. This cooperative study was originally supposed to last 5 years, which ended last calendar year; the study has now been extended for another year. The district is still waiting to receive the results and utilize them for analysis on future planning.

The district is also conducting a cooperative research project with Oregon State University on the study of black bear and tree peeling. The status of this project is that the field portion of the study is complete, and the district is waiting to receive a report this year.

In cooperation with ODFW and their bat monitoring program as well as the BLM, the district has had 3 sound meters installed to monitor various species of bats that are found on the Santiam State Forest. The BLM has also installed a sound meter on an adjacent parcel near ODF ownership. This study is ongoing, and we will be receiving more data in the coming years.

In cooperation with ODFW the district also has a blacktail deer study which will occur in the Rock Creek drainage. The study is to determine population densities and the overall health of the blacktail deer population.

USGS has been given a permit to install monitoring equipment on Sardine Creek on the Santiam State Forest. Stream gages will measure precipitation, velocity, and stage as part of the USGS post-burn monitoring program.

Other Planning Operations

- Participate in the development of the Santiam State Forest Restoration Plan

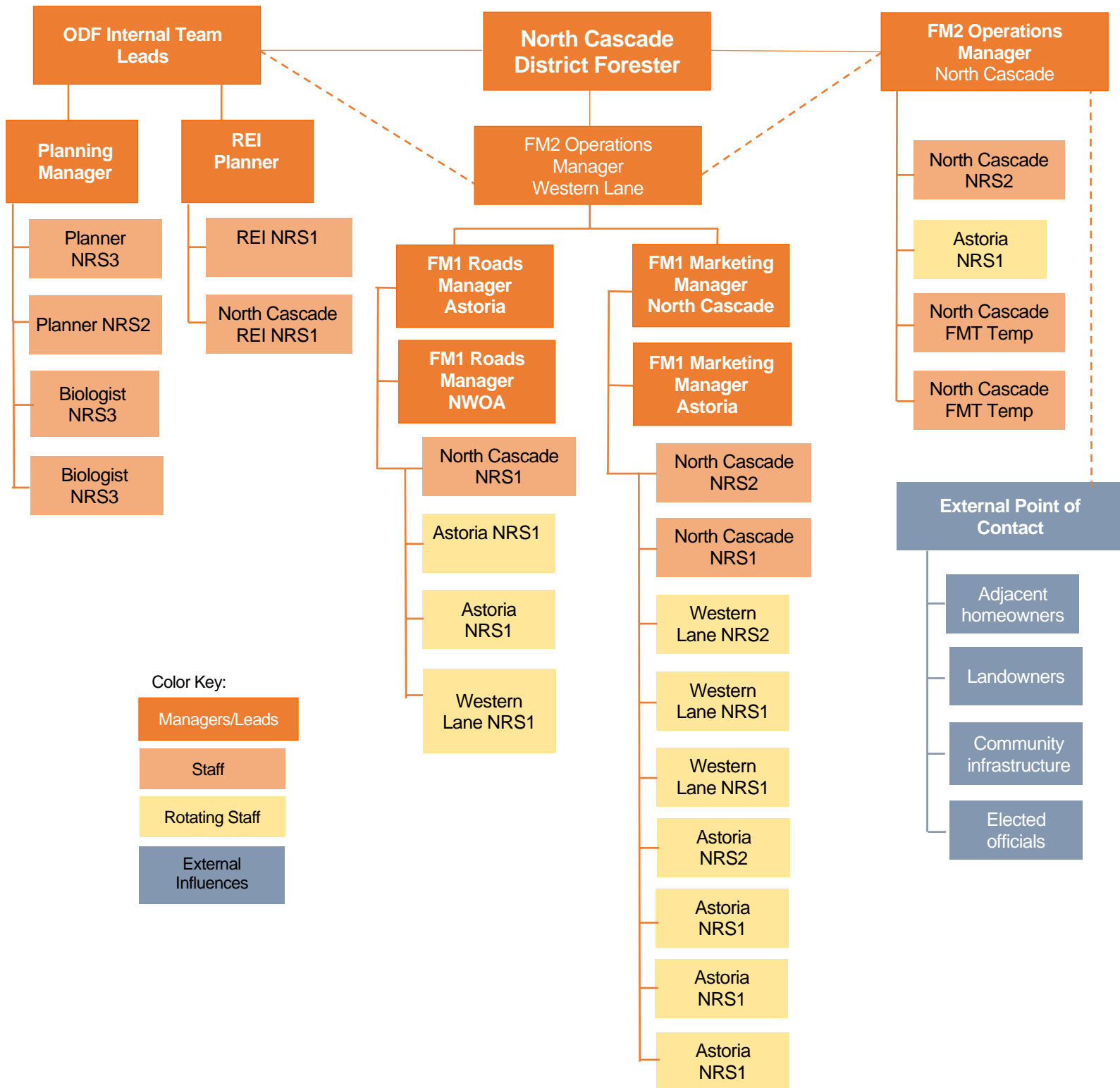
- The District will continue to conduct Hydrological Connectivity Surveys on the road systems as time allows.
- In conjunction with the REI Team, the District will provide input and context to recreation planning.
- The district will also continue to participate in FMP and HCP reviews as needed.

Public Information and Education

Public information and involvement activities will include review and input regarding the FY21 Annual Operations Plan and the 2020 Labor Day fires.

Administration

Following the fires, it became apparent that the district was going to need help not only in assessing the damage caused by the fires, but also during the recovery and restoration phase after the fires. ODF staff from all over northwest and southwest Oregon have come forward to help their Santiam State Forest co-workers begin the long process of restoring a healthy, resilient, productive forest that includes diverse fish and wildlife habitat, recreational opportunities and research and monitoring opportunities. Below is a chart that shows the diverse group of staff that will be involved in the recovery process in FY21 in addition to the District Forester, Business Manager and Office Specialists.



APPENDICES

A. Summary Tables

1. Harvest Operations – Financial Summary
2. Harvest Operations – Forest Resource Summary
3. Forest Road Management Summary
4. Reforestation and Young Stand Management Summary
5. Recreation Site Management Summary
6. Recreation Trail Management Summary
7. Recreation Grant Management Summary

B. Maps

1. Harvest Operations Vicinity Map

C. Consultations with Other State Agencies

This appendix summarizes the results of consultations with the Oregon Department of Fish and Wildlife, Oregon Department of Transportation, and other agencies as appropriate.

D. Public Involvement

This appendix will describe the results of the public involvement process of this AOP.

E. Pre-Operations Reports

Pre-Operations Reports are available on the ODF website.

Appendix A

Summary Tables

- **Table A-1: Commercial Forest Management Operations - Financial Summary**
- **Table A-2: Commercial Forest Management Operations – Forest Resource Summary**
- **Table A-3: Forest Roads Summary**
- **Table A-4: Reforestation and Young Stand Management Summary**
- **Table A-5: Recreation Site Management – Financial Summary**
- **Table A-6: Recreation Trail Management – Financial Summary**
- **Table A-7: Recreation Grant Management – Financial Summary**

TIMBER HARVEST OPERATIONS - FINANCIAL SUMMARY

District: North Cascade

Fiscal Year: 2021

Date: 05/04/2021

Primary Operation	Type	Status	Fund %		County	Sale Quarter	Net Acres		Volume (MMBF)			Value			
			BOF	CSL			Partial Cut	Clear-cut	Conifer	Hardwoods	Total	Gross	Projects	Net	
Cedar Creek Thin	Primary	Sold	100%	0%	Marion (100%)	1	101	1	0.6	0.0	0.6	\$246,751	\$25,077	\$221,674	
Butte Creek Contingency	Post-Fire	Sold	100%	0%	Clackamas (100%)	2	0	4	0.1	0.0	0.1	\$84,083	\$0	\$84,083	
South Block Contingency	Post-Fire	Sold	100%	0%	Linn (100%)	2	0	41	0.4	0.0	0.4	\$180,033	\$0	\$180,033	
#1 Stout Creek	Post-Fire	Sold	100%	0%	Marion (100%)	2	0	275	10.0	0.0	10.0	\$6,085,596	\$0	\$6,085,596	
#2 Niagara Restoration	Post-Fire	Sold	99%	1%	Marion (100%)	3	265	362	10.0	0.0	10.0	\$5,820,826	\$0	\$5,820,826	
Monument Peak	Post-Fire	Sold	100%	0%	Linn (100%)	3	70	82	1.7	0.0	1.7	\$747,754	\$0	\$747,754	
Sevenmile	Post-Fire	Sold	100%	0%	Linn (100%)	3	75	158	6.8	0.0	6.8	\$3,799,539	\$0	\$3,799,539	
Packsaddle	Post-Fire	Planned	95%	5%	Marion (100%)	3	35	311	7.0	0.0	7.0	\$1,762,250	\$300,000	\$1,462,250	
Gates Hill	Post-Fire	Planned	0%	100%	Marion (100%)	3	0	37	1.0	0.0	1.0	\$198,600	\$0	\$198,600	
Family Camp	Post-Fire	Planned	100%	0%	Clackamas (100%)	4	0	59	1.7	0.0	1.7	\$413,000	\$0	\$413,000	
Gawley Panther	Post-Fire	Planned	100%	0%	Clackamas (97%), Marion (3%)	4	570	579	15.0	0.0	15.0	\$3,006,600	\$200,000	\$2,806,600	
Pre-Fire Harvest							101	1	0.6	0.0	0.6	\$ 246,751	\$ 25,077	\$ 221,674	
Post-Fire Harvest							1,015	1,908	53.7	0.0	53.7	\$ 22,098,281	\$ 500,000	\$ 21,598,281	
Project WOC Sub-total:													\$ 486,735		
Total:							1,116	1,909	54.3	0.0	54.3	\$ 22,345,032	\$ 1,011,812	\$ 21,333,220	

PRIMARY HARVEST OPERATIONS - FOREST RESOURCE SUMMARY

District: North Cascade

Fiscal Year 2021

Date: 05/04/2021

This table lists Forest Resources and other issues addressed within Pre-Operations Report due to their presence within or near harvest operations

Primary Harvest Operations	Unit (Optional)	Forest Health Issues ¹	Invasive Species	LYR/OFS Structures ²	Landscapes Design LYR/OFS ³	Install/Replace Culverts on Fish Bearing / Perennial Streams	Harvesting within 100' of Fish Bearing Stream	Domestic Water Source	Potential Stream Habitat Improvement ⁴	Within Aquatic Anchor	Within Terrestrial Anchor	Operating within a NSO Provincial Circle (BA Required)	Operating within a MIMMA (BA Required)	Murrelet Timber Sale Screening Process Required (MM Policy 2.27)	T&E Fish Adjacent to Harvest Unit / Haul Route ⁵	T&E Plants	Geotechnical Issues Needing Field Review	Recreation Sites	Cultural Resources	Scenic Resources	Other Resources or Issues
Cedar Creek Thin		-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
#1 Stout Creek		X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	Haul route the same as road into Shellburg Falls. Powerlines near Units 3 & 4
#2 Niagara Restoration		X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	-	X	-	X	Portions of the haul route are the access road to Rocky Top and the Natural Arch trails. There is only roadside hazard mitigation within the SAH.
Monument Peak		X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	A horse camp and trails are within the sale boundary.
Sevenmile		X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	Powerlines are near the sale.
Packsaddle		X	X	X	X	X	-	X	-	-	-	-	-	-	-	-	-	-	-	X	
Gates Hill		X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
Family Camp		X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	Road through sale is used to access Butte Creek Recreation Area
Gawley Panther		X	X	X	-	-	-	-	-	-	X	X	-	-	-	-	-	X	X	-	Cold water corydallis is located within portions of haul route. There is only roadside hazard mitigation within the TAS. Haul route also the road into the High Lakes recreation area

¹ A 'x' (in any column) indicates yes the resource or other issue occurs within or near the harvest operation and is addressed by the Pre-Operations Report

² A 'x' indicates the harvest operation contains stands that were in pre-fire Layered or Older Forest Stand Structure

³ A 'x' indicate that the operation contains areas that have been designated for the development of complex forest stands (LYR/OFS); operations planned in stands with a pre-fire stand condition of layered or older forest structure are burned and no longer contain living forest components needed for those stand structure types.

⁴ The final decision on these projects will occur during sale preparation and inconslutation with ODFW.

⁵ This table lists harvest operations (units or log haul routes) that are adjacent to streams that are known to contain T&E fish.

FOREST ROADS SUMMARY

District: North Cascade

Fiscal Year: 2021

Date: 05/04/2021

Primary Operations	Construction		Improvement		Other Projects	Total Project Costs	Gross Value of Operation	Total Cost as a percent of Gross Value	Comments
	Miles	Cost	Miles	Cost					
Cedar Creek Thin	0.3	\$ 22,818	0.3	\$ 3,247	\$ -	\$ 25,077	\$ 246,751	10.2%	
Packsaddle	0.4					\$ 300,000	\$ 1,762,250	17.0%	The breakout of costs is unknown at this time. This is a rough estimate.
Gawley Panther	1.0					\$ 200,000	\$3,006,600	6.7%	The breakout of costs is unknown at this time. This is a rough estimate.
Sub-total	1.7	\$22,818	0.3	\$3,247	\$0	\$525,077	\$ 5,015,601	10.5%	
Sub-total WOC (see below)	0.0	\$ -	207.8	\$ 429,313	\$ 57,422	\$ 486,735	\$ -		
Totals	1.7	\$ 22,818	208.1	\$ 432,560	\$ 57,422	\$ 1,011,812			

Road Projects to be Completed as a Work Order Contract

Operation	Construction		Improvement		Other Projects	Total Project Costs	Funding Source	Comments
	Miles	Cost	Miles	Cost				
1000 Line Road Improvement			3.5	\$ 59,476	\$ 4,320	\$ 63,796		Linn County
Mid Santiam Road Repair			60.2	\$ 116,166	\$ -	\$ 116,166		Marion County
North Santiam Road Repair			55.4	\$ 127,785	\$ -	\$ 127,785		Marion (17%) Clackamas (83%)
South Santiam Road Repair			88.7	\$ 125,886	\$ -	\$ 125,886		Linn County
East Canyon Gates					\$ 53,102	\$ 53,102		4 gate installations in Linn and Marion County
Total	0.0	\$ -	207.8	\$ 429,313	\$ 57,422	\$ 486,735		

REFORESTATION AND YOUNG STAND MANAGEMENT SUMMARY

District: North Cascade

Fiscal Year: 2021

Date: 03/02/2021

Projects Conducted by ODF Staff or Contractors	Board of Forestry			Common School Forest Lands			District	
	Acres Planned	Average Cost*/Acre	BOF Cost	Acres Planned	Average Cost*/Acre	CSL Cost	Total Acres	Total Cost
Seedling / Nursery Costs			\$149,160			\$0.00	0	\$149,160
Initial Planting	1,028	\$173.00	\$177,844			\$0.00	1,028	\$177,844
Interplanting	0	\$0.00	\$0			\$0.00	0	\$0
Aerial Seeding	4,800	\$31.00	\$148,800			\$0.00	4,800	\$148,800
Underplanting			\$0			\$0.00	0	\$0
Tree Protection - Barriers			\$0			\$0.00	0	\$0
Tree Protection - Direct Control	414	\$12.00	\$4,968			\$0.00	414	\$4,968
Site Prep - Chemical - Aerial	203	\$40.00	\$8,120			\$0.00	203	\$8,120
Site Prep - Chemical - Hand	295	\$85.00	\$25,075			\$0.00	295	\$25,075
Site Prep - Broadcast Burning			\$0			\$0.00	0	\$0
Site Prep - Pile Burning	395	\$3.80	\$1,501			\$0.00	395	\$1,501
Site Prep - Mechanical			\$0			\$0.00	0	\$0
Release - Chemical - Aerial	208	\$40.00	\$8,320			\$0.00	208	\$8,320
Release - Chemical - Hand	250	\$40.00	\$10,000			\$0.00	250	\$10,000
Release - Mechanical - Hand			\$0			\$0.00	0	\$0
Precommercial Thinning	373	\$130.00	\$48,490			\$0.00	373	\$48,490
Pruning			\$0			\$0.00	0	\$0
Invasive Species			\$0			\$0.00	0	\$0
Roadside Vegetation Mngt			\$0			\$0.00	0	\$0
Stocking Surveys*	906	\$2.00	\$1,812			\$0.00	906	\$1,812
Other			\$15,200			\$0.00	0	\$15,200
Totals:	8,872	--	\$599,290	0	--	\$0.00	8,872	\$599,290

* Work to be completed by ODF staff; cost are for materials only

Projects Conducted by Mill Creek Crews	Board of Forestry			Common School Forest Lands			District	
	Acres Planned	Average Cost*/Acre	BOF Cost	Acres Planned	Average Cost*/Acre	CSL Cost	Total Acres	Total Cost
Initial Planting			\$0			\$0.00	0	\$0
Interplanting			\$0			\$0.00	0	\$0
Underplanting			\$0			\$0.00	0	\$0
Tree Protection - Barriers			\$0			\$0.00	0	\$0
Tree Protection - Direct Control	554	\$0.00	\$0			\$0.00	554	\$0

Approved

Table A-4 Young Stand Management Summary

Site Prep. - Chemical Aerial			\$0			\$0.00	0	\$0
Site Prep - Chemical - Hand			\$0			\$0.00	0	\$0
Site Prep - Broadcast Burning			\$0			\$0.00	0	\$0
Site Prep - Piling Burning			\$0			\$0.00	0	\$0
Site Prep - Mechanical			\$0			\$0.00	0	\$0
Release - Chemical - Hand			\$0			\$0.00	0	\$0
Release - Mechanical - Hand	40	\$0.00	\$0			\$0.00	40	\$0
Precommercial Thinning			\$0			\$0.00	0	\$0
Pruning			\$0			\$0.00	0	\$0
Invasive Species			\$0			\$0.00	0	\$0
Other			\$0			\$0.00	0	\$0
Totals:	594	--	\$0	0	--	\$0.00	594	\$0

RECREATION SITE MANAGEMENT SUMMARY

District: North Cascade

Fiscal Year: 2021

Date : 03/05/2021

Project	Construction Cost (Funding)		Improvement Cost (Funding)		Operations/Maint. (Funding)		Total Costs	Comments
	ODF (\$)	Other (\$)	ODF (\$)	Other (\$)	ODF (\$)	Other (\$)		
Campgrounds								
Butte Creek			\$ 2,000		\$1,050		\$3,050	2 Vault Toilets - Pumped & Replace Doors
Shellburg					\$550		\$550	1 Vault Toilet - Pumped 2x/Yr
Santiam Horse Camp			\$ 20,000				\$20,000	Corral Replacement
Santiam Horse Camp				\$2,700			\$2,700	Rail Fencing
Santiam Horse Camp					\$1,050		\$1,050	2 Vault Toilets - Pumped 2x/Yr
Designated Dispersed Campsites								
Rock Creek					\$950		\$950	Chemical Toilet Maint.
Rhody Lake					\$750		\$750	1 Vault Toilet - Pumped 1x/Yr
Day Use Areas								
							\$0	
Trailheads								
Crooked Finger OHV				\$1,000			\$1,000	Kiosk/Signage Repairs/Replacement-ATV Transfer Expenditure
Interpretive Sites								
							\$0	
Other Operations								
Brochures/Fee Envelope Printing					\$100		\$100	
Law Enforcement					\$30,000		\$30,000	
Well Fee					\$300		\$300	New Annual OHA Fee \$150 per well
Water Testing					\$200		\$200	Well Water Analysis
Maint. Supplies				410	\$3,000		\$3,410	Cleaning supplies, toiletries, hardware, paint/sealer, misc. building materials, restroom repair, vandalism repair/cleaning supplies, etc.
District Total							\$59,950	
Other Total							\$4,110	
TOTAL							\$64,060	

RECREATION TRAIL MANAGEMENT SUMMARY

District: North Cascade

Fiscal Year: 2021

Date : 03/05/2021

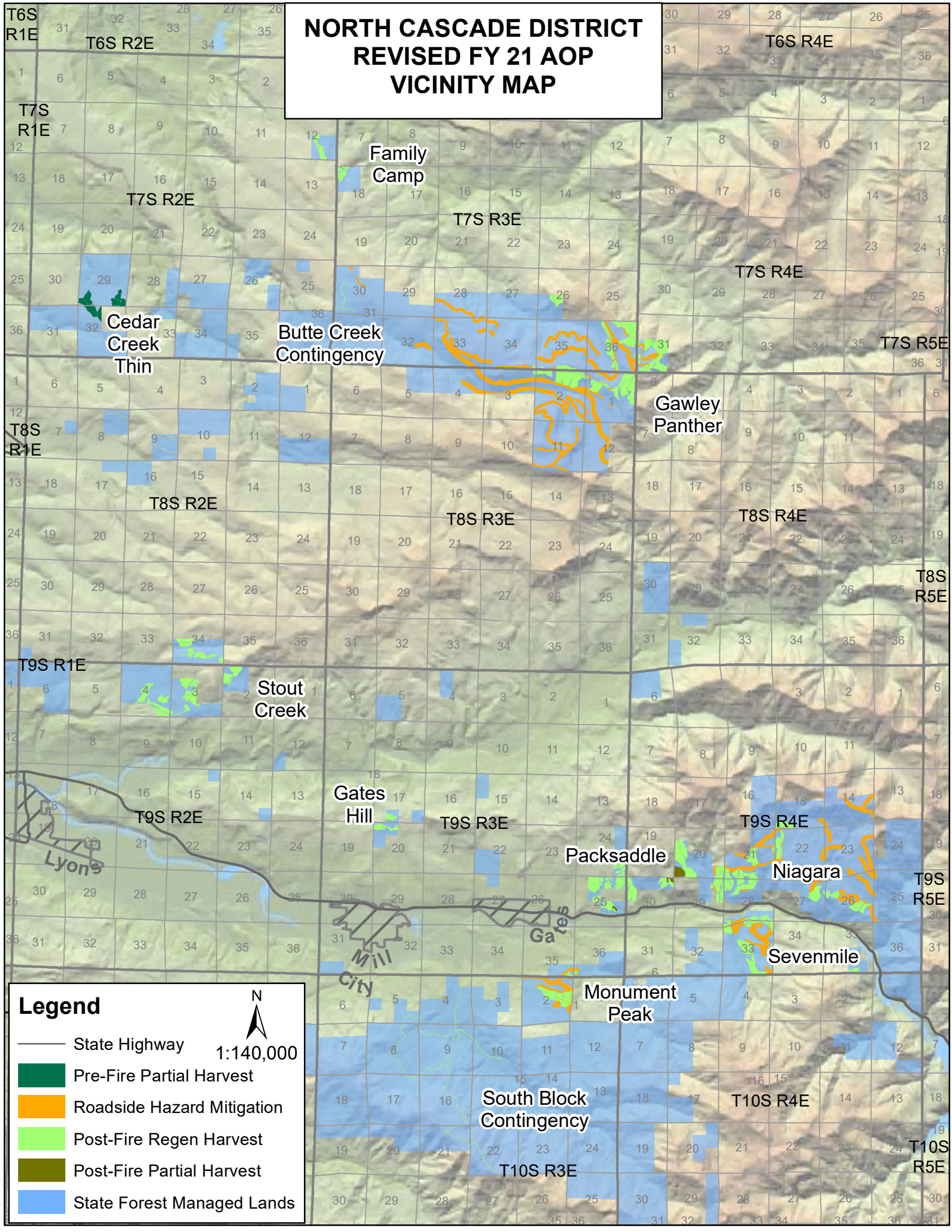
Project	Construction Projects			Improvement Projects			Operations & Maintenance Projects			Total Costs	Comments
	Miles	ODF (\$)	Other (\$)	Miles	ODF (\$)	Other (\$)	Miles	ODF (\$)	Other (\$)		
Non-Motorized											
Maintenance								\$2,500		\$2,500	General maintenance
Trail Bridge Inspections								\$5,000		\$5,000	Contract inspection of 7 bridges
Monument Peak Trail System				0.1	\$1,200					\$1,200	Improve water crossing - Insert culvert and rocking
Motorized											
Maintenance							6.0	\$500		\$500	
Trailhead Markers							6.0	\$1,000		\$1,000	Signage indicating official trails
								District Total		\$10,200	
								Other Total		\$0	
								TOTAL		\$10,200	

Appendix B

Vicinity Maps

- Harvest Operations Vicinity Map

NORTH CASCADE DISTRICT REVISED FY 21 AOP VICINITY MAP



Legend

— State Highway 1:140,000

■ Pre-Fire Partial Harvest

■ Roadside Hazard Mitigation

■ Post-Fire Regen Harvest

■ Post-Fire Partial Harvest

■ State Forest Managed Lands

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Appendix C

Consultations with Other State Agencies

Oregon Department of Fish and Wildlife (ODFW):

ODFW fish and wildlife biologists started collaborating with ODF staff on this Revised AOP in mid-October. ODFW biologists toured the burn area in the Santiam State Forest in January 2021 with ODF staff to discuss riparian management strategies, harvest prescriptions, legacy structure retention, ground-based yarding practices, culvert replacement, reforestation, and future collaboration during the Restoration Plan development. Additional follow-up and discussions will occur as needed as this work progresses. The following written comments were received:

Address more thoroughly in the AOP an accounting for climate change in reforestation practices, such as planting at lower densities and using genetically diverse seed to increase resiliency over time.

Information has been added to the Young Stand Management – Planting section to provide additional clarity. The specific details of species mix and planting densities will be determined during the implementation of this plan and will incorporate site-appropriate species mix factoring in seed zone, location, elevation, aspect, presence of root disease, the desired future condition of the site, and hotter, drier conditions as a result of climate change where possible.

Consider leaving more snags in areas with few green trees to increase vertical structure and security habitat for wildlife where feasible.

A variety of strategies are being used to retain snags based on site specific conditions and desired future condition. District staff plans to have additional follow-up discussions with ODFW to collaborate on snag retention strategies.

Oregon Department of Transportation – Archaeologists:

Archaeologists from the Oregon Department of Transportation (ODOT) have reviewed the proposed timber harvests, road construction and recreation projects for potential impacts to cultural resources. No known historical or archaeological sites were found during this review. However, ODOT's review of historic maps and other information indicates there was human activity near some of our planned operations that could have led to the presence of cultural artifacts today.

The following areas (listed by historic activity) will be reviewed on the ground to determine if cultural artifacts are present:

- Railroad camp: #1 Stout Creek Restoration,
- Trail: Gawley Panther, Gates Hill, Family Camp
- Trail, pond, access road: #2 Niagara Restoration
- Cabin, trail, road, railroad: Monument Peak

Appendix D

Public Involvement and Summary of Changes

The Oregon Department of Forestry issued a Press Release in March 2021, announcing a formal 15-day public comment period for the Revised North Cascade FY 21 Annual Operation Plan from March 22, 2021 through April 5, 2021.

The purpose of the Public Comment Period was to provide an opportunity for the public to review the AOPs, ask questions, make recommendations, and offer comments. As a public agency, ODF strives to operate in the best interest of Oregonians. We provide opportunities for public participation to assist us in securing the greatest permanent value from state forests for all Oregonians.

The following changes have been made to the Revised NC FY21 AOP since public comment:

- Gawley Panther: This sale has been modified to remove areas that had a desired future condition of layered or older forest structure stands. Approximately 85 acres have been dropped from the sale. The Pre Operations Report and maps have been updated to reflect this change.
- Page 12 of this summary document under the second paragraph in the summary of the Sevenmile sale: the acres in the following sentence were changed from 12 acres to 9 acres to correct a clerical error and reflect actual conditions in the field: “All stands planned for harvest that had a pre-fire condition of older forest structure (approximately 9 acres spread across three separate stands) are burned and no longer contain living forest vegetative components sufficient for that stand structure type.”
- Sevenmile Pre Operations Report: Page 2, table 3 the Desired Future Condition for stand 12655 in Unit 2 was changed from GEN to LYR (5 acres) to correct a clerical error. This now reflects how legacy component levels and arrangements are being determined in the field based on desired future conditions.
- Packsaddle Pre-Op Report: Page 1, in Table 1, the Unit 13 volume per unit was corrected from 52 MBF to 328 MBF.
- Minor language updates were made to all the Pre Operations Reports to better describe post-fire stand conditions.

The following is a summary of comments raised by the public and stakeholders related to the draft revised Fiscal Year 2021 Annual Operations Plan for the ODF North Cascade District:

The public was notified via statewide news releases and subsequent media coverage, as well as emails to citizens and stakeholders on ODF’s mailing lists, the ODF website, and posts on ODF’s Facebook and Twitter platforms. Public comment was accepted through the ODF website, email, or letter.

In all, ODF received 105 written comments related to the Annual Operations Plan revision and/or Santiam State Forest restoration generally, including 84 from organizational email campaigns. The following is a synopsis of key themes by topic:

Post-fire logging

The bulk of comments received pertained to post-fire logging. Themes of comments in support of current or increasing post-fire harvesting levels included:

- Public and operator safety concerns around leaving standing dead trees
- Recouping value to help finance state forests
- With 18% of the burned area proposed for logging; results in reduced opportunity for restoration, cut volume, and less mill activity
- Job creation
- Revenue to counties and rural communities directly impacted by fire
- Concerns for insect infestation
- Questioning why stream buffers are larger than required under the Northwest Oregon Forest Management Plan
- Severely-burned terrestrial anchor sites – do they provide the same benefits they would pre-burn?
- Carbon emissions as organic material decays on the landscape
- Potential for increased sediment runoff in areas that aren't replanted
- Potential for shrubs and scattered hardwoods in areas not replanted
- Reduced reliance on imported timber
- Increased supply could lower timber prices for consumers
- Consider expanding treatment to areas with moderate severity to increase opportunity for shade development and slope stabilization

Themes of comments in opposition to or concerns with post-fire logging included:

- Avoiding logging in damaged older forest stands and areas designated as currently complex or future complex
- Operations in designated complex areas would delay progression into a complex status, which is inconsistent with the Northwest Oregon Forest Management Plan
- Concern for species that can live in post-fire affected areas, including northern spotted owl, woodpeckers and certain insects and plants
- Opposition to logging in draft Habitat Conservation Areas contained in the draft Western Oregon State Forest Habitat Conservation Plan
- Climate change was frequently cited as a reason to restrain or avoid post-fire harvest, with associated carbon emissions and lost potential for carbon storage in naturally recovering forests, and how these operations interact with Governor Brown's Executive Order 20-04.
- Soil disturbance from logging activity could cause more sediment runoff into waterways and disrupt growth of understory species
- Concern that logging could introduce invasive species
- Requests to ensure live green trees are not harvested
- Concern for water quality, particularly along the North Santiam River and feeder streams

Other comment themes received:

- Opposition to any and all clearcutting in public forests
- Restricting public land timber sales to worker-owned cooperatives
- Concern regarding replanting doesn't take seed zone into consideration

- Interest in close monitoring of logging activities
- A suggestion to allow and facilitate on-ground monitoring of post-fire timber sales
- References to the state's restoration of the Tillamook Burn into the Tillamook State Forest
- Operational flexibility within riparian buffers
- Roadside hazard tree removal operations should receive a biological assessment if Northern Spotted Owl circles are known to exist pre-fire
- During roadside hazard clearing, create snags that do not block roadways if they fall
- Consider reducing roadside clearing area to 1 tree height, which would be consistent with U.S. Forest Service operations in the area

Responses:

The Annual Operations Plan revision seeks to balance the agency's legal obligation to manage state forests for economic, environmental and social values for the North Cascade District. The department is using several different management and reforestation approaches throughout the burn. These different approaches combined will create a diverse landscape that includes a variety of age classes, stand densities, and complex early seral habitat. These approaches will also recover value from burned areas, create jobs, and provide for staff and public safety.

Green Trees and Contract Administration: Green trees (**at least 15% live crown**) are considered reserve timber in post-fire harvest timber sale contracts. Reserved timber shall not be cut, or removed by the purchaser of the sale, unless otherwise approved. Substitute snags will be left for any green trees that are cut due to safety or operational concerns. Contract administrators are at the timber sale on a regular basis to ensure that the provisions in the timber sale contract are being followed.

Reforestation: In areas slated for active replanting or aerial seeding, reforestation will incorporate a site-appropriate species mix factoring in seed zone, location, elevation, aspect, presence of root disease, the desired future condition of the site, and hotter, drier conditions as a result of climate change where possible. Planting densities will vary within a unit and across the landscape depending on the specific site conditions and management objectives, with the goal of achieving fully stocked stands for the given site and minimizing needs for future density management. Natural regeneration will also be used as a reforestation strategy in some areas. All of these strategies will lead to a healthy, resilient forest which is able to resist or tolerate changing climate, insect, disease and wind threats. Areas of aerial seeding and natural regeneration may be monitored to ensure that reforestation has been successful and meets the Forest Practices Act requirements.

Riparian Areas: All streams found in the Santiam State Forests are subject to the Management Standards for Aquatic and Riparian Areas as outlined in Appendix J found in the Northwest Oregon State Forests Management Plan (2010) at a minimum. The FMP buffers are designed to protect water quality. Streams on several sales within this AOP are receiving wider buffers based on recommendations made by ODFW, DEQ, and the Aquatic and Riparian Specialist. If there are circumstances that require alternative management that would accelerate the development of mature forest condition (current FMP objective) or is required for public safety (felling trees toward RMA where possible), a plan for alternate practice shall be discussed early in the process with the Aquatic and Riparian Specialist who will have final approval of the plan. Riparian underplanting may occur in areas designated by the Aquatic and Riparian Specialist to augment natural

regeneration and accelerate the mature forest conditions in the RMA. The first project of this type was described in this AOP.

Insects & Disease: The district is currently developing monitoring strategies for insect/beetle migration into the burn areas which includes funding sources. District staff are working with the staff entomologist to identify post-fire beetle evidence which will provide information on where to strategically place mitigation measures. As mentioned in the AOP, preventive techniques such as washing equipment before it enters the Santiam State Forest during operations will be used to prevent the spread of invasive weeds and diseases.

Soil Disturbance: Geotechnical assessment of slope stability for proposed harvests and roads will provide necessary adjustments for specific soil conditions on a unit-by-unit basis. Careful consideration of harvest, landing, and road layout will be used to minimize soil impacts from disturbance of ground-based machinery and soil gouging during yarding. In-unit practices utilized during harvest operations will reduce these potential soil impacts. By minimizing temporary stream crossings, minimizing the number of passes by machinery, employing one-end or full suspension while yarding, and establishing exclusion zones for ground-based machinery, soil impacts and sediment delivery to water will be minimized.

Roadside Hazard Mitigation: The district is following Oregon rules and Oregon Forest Practices Act guidance around hazard tree removal which may be different than federal rules and regulations. Hazard tree removal for safety concerns may be conducted up to 1.5 times tree height from the road (OAR 437-007-0200, 437-007-0225, 437-007-0500, 629-605-0400 and 2020 Fire Salvage and the FPA Guidance). Hazard trees or snags are defined as any tree or snag that has an imminent failure potential (leaning, compromised root systems, high-severity fire damage combined with other indicators, etc) and has the ability to strike a target (people, property, or structures) based on each **individual tree condition**. This means that not every tree or snag inside the roadside hazard mitigation areas shown on the maps will be removed: Only those that meet the definition above. In some areas there may be very few hazard trees or snags, if any, removed and in other areas most of the trees or snags may be removed. Hazard trees or snags that are felled along roadways that are also within a stream buffer shall be felled towards the stream if possible and not removed. District staff and an ODF biologist have been, and continue to, collaborate on minimizing the impacts of roadside hazard tree mitigation within northern spotted owl circles and across the landscape. Existing ODF salvage policy states that a biological assessment is not mandatory for roadside and structure hazard tree mitigation within northern spotted owl circles, with the intent to mitigate the hazard to life and infrastructure in a more timely fashion if needed.

Climate Change: The overarching approach to address climate change is to acknowledge and manage for uncertainty and change. This approach includes managing for integrity and resilience to maintain ecosystem function, biodiversity and management options over time. As mentioned above, the district is using several different management and reforestation approaches throughout the burn. These different approaches combined will create a diverse landscape that includes a variety of age classes, stand densities, and complex early seral habitat. Additional specific strategies for Climate Change can be found in the 2021 North Cascade Implementation Plan Major Revision.

Carbon Storage and Reducing Emissions: As mentioned above, several different management and reforestation approaches will be applied throughout the burn. While a

small area of the burn is being managed with post-fire harvests, many stands will remain unmanaged leaving their carbon stores intact. Legacy structures retained within post-fire harvest areas will continue to store carbon while the new seedlings regenerating around these structures will accumulate carbon at a fast rate. Additional strategies will be used to reduce carbon emissions where possible. These include prioritizing harvests that require little to no road building and are closer to main haul routes and minimizing equipment moving in and out by grouping operations together. These management considerations in addition to the climate change strategies mentioned above are in alignment with the Governor's Executive Order 20-04.

Pre-Fire Condition and Desired Future Condition: Proposed post-fire logging is focused on heavily damaged areas that would benefit from active rehabilitation efforts to restore healthy working forests and generate revenue consistent with the multiple-use mandate for state forests. All stands planned for harvest within the NC FY21 AOP, including a portion of stands that had a pre-fire condition of layered or older forest structure, sustained heavy fire damage made up of a mix of moderate to high burn severity. Individual trees therein have extensive bole scorch, little to no live crowns, and understory shrubs suffered high mortality. Stands that were designated as layered or older forest structure pre-fire, no longer contain sufficient living forest vegetative components for complex stand structure types. These stands are in the stand re-initiation process, which begins when a disturbance such as fire has killed most or all of the larger trees. Some overstory trees may remain from the previous stand, as well as snags and down wood. Most or all of the understory trees, shrubs, and herbs have been consumed.

Thoughtful consideration will be given during post-fire harvest to retain dead components within these stands as legacy structures in addition to any remaining live trees and to replant with site-appropriate species mix and spacing. This will re-establish a new cohort of trees while providing a variety of legacy structures. Exact numbers and arrangement of leave trees and snags will be finalized during sale layout in consultation with the Biologist and will take into consideration the existing site conditions and the desired future condition. Legacy structures will be left in a variety of arrangements including clumps and scattered in the uplands. Preference for snag retention will be given to larger diameter snags and those with old-growth characteristics such as large cavities, deeply furrowed bark, crooks, missing tops, or multiple tops. Leaving snags and green trees in the unit combined with unburned stands adjacent to the sale areas will provide a mosaic of legacy structures that will contribute to wildlife habitat and forest complexity at the landscape scale.

Monitoring: ODF is developing new monitoring in coordination with the inventory program and the Santiam State Forest Restoration Plan to track stand development over time, with permanent plots to compare sites with different impacts from the fire and management activities. Field work will begin in FY22. Examples of studies may include the impacts of active management (e.g. aerial seeding, riparian underplanting, or post-fire harvest) versus passive management (i.e. natural regeneration) on long-term forest structure and function. ODF will also be piloting a stream monitoring program to target impacts of post-fire management on stream temperature with continuous sensors. Other physical properties such as sediment and turbidity may be monitored.

Appendix E

Pre-Operations Report

Pre-Operations Reports are available online through a Web Application at the following link:

<https://experience.arcgis.com/experience/71b6681f422946a2968eacf350522ab7>

This link should be opened using Chrome or Edge. Zoom to the sale area of interest and click inside the polygon. A pop-up box should show up with a link to the Pre-Op Report for the sale. The burn severity layer, fire perimeter, desired future condition layer, aerial seeding and several other informational layers are available in this Web Application as well. Burn Severity is defined in the North Cascade District 2021 IP Major Revision.