Accelerated Restoration and Priority Landscapes

Fremont-Winema National Forest

Version 1.0

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INTRODUCTION

The US Forest Service recently acknowledged the critical need to increase the pace of restoration[1] to address a variety of threats including fire, climate change, and bark beetle infestations. In response to this, the Chief of the Forest Service has asked Region 6 to increase restoration by 20% over the next three years. Across the nation and in the Pacific Northwest, there is broad public support for actively managing forests to be more resilient to the uncertainties of climate change and the effects of insect outbreaks, disease, and uncharacteristic wildfires that follow decades of fire suppression in fire-dependent forests. However, the current rate of restoration is not keeping pace with forest growth. Unless we do some things differently, acres in need of restoration will continue to out-pace restoration accomplishments. Therefore, to restore ecological resiliency to significant areas of eastside national forests and ensure socio-economic viability of eastside communities, the Pacific Northwest Region is actively working towards accelerating the pace and scale of restoration.

In a recent report prepared for Governor John Kitzhaber and Oregon's Legislative Leaders, which provided an economic assessment of forest restoration on Oregon's Eastside National Forests, it recommends several steps to advancing landscape-scale forest restoration including: 1) any effort to 'scale up' the pace of forest restoration on Oregon's Eastside National Forests will have to be accompanied by a large-scale planning effort led by the USFS and 2) improving the efficiency of the USFS' planning and implementation will reduce total management costs creating the potential to accomplish more forest restoration.[2]

The Fremont-Winema National Forest (Forest) is committed to: 1) increasing the pace of integrated restoration at a scale that will be effective given today's challenges and to increasing the efficiency of project planning and implementation, 2) being strategic with restoration efforts to assure that limited funding is supporting those landscapes that are considered high priority for restoration, and 3) taking a holistic approach to restoration that includes the restoration of dry forest landscapes, wildlife and fisheries habitat, aquatic and riparian resources, recreation resources, range, and cultural and social values. Ecosystem restoration can be defined as:

> "The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions."[3]

The goal of this document is to help support and guide decisions at the Forest and local level including: 1) identification and prioritization of large landscapes, 2) analysis of data at the watershed and landscape scale that may be helpful for project planning, 3) to identify potential

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[1] USDA FOREST SERVICE. 2012. *Increasing the Pace of Restoration and Job Creation on our National Forests.* Available online at www.fs.fed.us/publications/restoration/restoration.pdf

[2] National Forest Health Restoration: An Economic Assessment of Forest Restoration on Oregon's Eastside National Forests. Prepared for Governor John Kitzhaber and Oregon's Legislative Leaders. Nov. 26, 2012.

[3] USDA. 2012. 36 CFR Part 219. National forest system land management planning. *Fed. Regist.* 77(68):21162–21276.

efficiencies in project planning and implementation, and 4) to provide recommendations that could all contribute to accelerating the pace and scale of restoration. This is version 1.0 of this document, which emphasizes the fact that this is meant to be a "living" document which will be updated and revised as projects are completed and new information becomes available.

LARGE-SCALE RESTORATION LANDSCAPES

In a recent paper addressing accelerated restoration in R6, it suggests that we consider a landscape approach to prioritize restoration efforts, and processes and patterns should be viewed at a broad landscape rather than an accumulation of stand level or watershed level characteristics.[4] In addition, large scale disturbance has increased on the Forest in the last decade including the Barry Point Fire (~95,000 acres), Red and Dead bark beetle event (~300,000 acres) and the Toolbox Fire Complex (~130,000 acres). A recent paper suggests that *"it is clear that the mega-fire fight cannot be won with response actions; the intersection of severe weather, extreme fuels, and ignitions offers little opportunity for management responses to be effective. Advanced planning and investment in effective, landscape-scale activities before fires develop provide the only effective ways for reducing the loss of forest health, property, and lives.*[5]*"*

Based on the above recommendations, restoration landscapes (see Appendix B Map 1) were delineated based on a combination of the following factors: 1) subwatershed boundaries, 2) a consideration for logistical prescribed burning landscapes, and 3) previous project area boundaries. Landscapes were also delineated irrespective of district/zone boundaries. Preliminary landscape boundaries were given a cursory review by key district specialists in April 2013 and adjustments were made to the maps based on these reviews.

Currently, integrated restoration projects on the Forest range from 6,000 – 65,000 acres. It is recommended that the Forest increase the efficiency of project planning by increasing the size of project areas. The identified landscape boundaries (see Appendix B Map 1) may provide a logical boundary for project planning. In some cases, it may be necessary to do more than one planning effort within a landscape. Regardless, it is recommended that the Forest complete the planning for one landscape before moving to the next. As stated in the Oregon Conservation Strategy, focused investments on priory landscapes can increase the likelihood of long-term success over larger areas, improve funding efficiency, and promote cooperative efforts across ownership boundaries.[6]

It is also important that the Forest is effective in "maintaining" restored landscapes through cost-effective methods such as landscape fire. If the Forest makes the decision to invest in restoring a landscape, it should be committed to "maintaining" that landscape over time by continuing to introduce fire that mimics the historic fire regime. It is recognized that some landscapes may not provide opportunities for landscape fire which is discussed below in more detail.

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[4] Walter, J. 2013. Region 6 Regional Leadership Team Notes; Discussion on Accelerated Restoration.
[5] Binkley, Dan. 2011. Exploring the Mega-fire Reality 2011: The Forest Ecology and Management Conference. Fire Management Today. Vol. 72 No. 3 2012.
[6] Oregon Department of Fish and Wildlife. 2005. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, Oregon.

PRIORITY FOR RESTORATION

There are many social and ecological factors that may contribute to the prioritization of landscapes for restoration. Franklin and Johnson suggest that restoration efforts should prioritize the most degraded landscapes or those landscapes where human activities have increased the risk of catastrophic disturbance or created extensive landscapes deficient in important successional stages.[7] Franklin and Johnson also suggest that restoration focus on productivity more than missed fire cycles in setting priorities.[8] Forests on the moister and more productive mixed-conifer sites often are most in need of restoration treatments because they are both more productive than forests on sites characterized by the drier ponderosa pine plant series and have tree species that quickly generate large amounts of fuels, produce superb ladder structures, and compete with existing old-growth trees for moisture and nutrient resources.[8]

On the other hand, dryer sites may be viewed as a higher priority because they are less resilient after wildfire because they are less productive sites. Another view is to restore landscapes that are in fair/decent shape rather than focus on the most degraded areas because some degraded landscapes may require larger inputs of funding and time, while that same amount of money could potentially treat more acres in several watersheds.

Other efforts at the Regional and National Level have identified priority landscapes for restoration. Each of these efforts prioritized landscapes based on different factors or emphasis areas such as fish, aquatics, wildlife, or botanical resources. Since these different strategies used various methods to determine priority areas, the more overlap between strategies provides supporting documentation that a landscape may be a high priority for restoration.

1) Watershed Condition Framework (WCF) - The WCF is a comprehensive approach for: 1) evaluating the condition of watersheds, 2) strategically implementing integrated restoration, and 3) tracking and monitoring outcome based program accomplishments. It improves the way the FS approaches watershed restoration by targeting the implementation of integrated suites of activities in focus watersheds. Primary emphasis is placed on indicators that directly or indirectly impact soil and hydrologic functions and riparian and aquatic ecosystems.
2) Terrestrial Restoration and Conservation Strategy (TRACS) - The TRACS is a comprehensive planning tool that identifies the most important terrestrial species, habitats and watersheds by R6 ecoregion, and provides examples showing how this information can be used to design integrated restoration projects that unite Forest Service disciplines and accomplish multiple objectives simultaneously. The primary emphasis is placed on wildlife and botanical resources.
3) R6 Aquatic Restoration Strategy – In response to the Aquatic Restoration Strategy Framework for the Pacific NW Region, the Forest prioritized watersheds to provide the

[7] Franklin, J. F. and K. Norman Johnson. 2012. A Restoration Framework for Federal Forests in the Pacific Northwest. J. For. 110(8):429-439.
[8] Franklin, J. and K. N. Johnson. 2011. Dry Forest Restoration Principles and Prescription. Prepared for a workshop on June 28-29, 2011 on the Fremont-Winema NF.

highest likelihood of success in completing terrestrial and aquatic restoration by focusing treatments on a limited number of watersheds.

4) Oregon Conservation Strategy – Oregon Department of Fish and Wildlife identified landscapes where broad conservation goals for fish and wildlife could be met.

The need to effectively "maintain" large landscapes over time (i.e. landscapes that require fire for maintenance) is a consideration for prioritization. Focusing restoration within landscapes where landscape fire can be used as a tool is a good management alternative in place of more expensive mechanical treatments. Based on the knowledge of the ground and potential social/political constraints, landscapes were identified that may have the potential for landscape fire. Some landscapes do not lend themselves to landscape fire as a tool due to potential smoke management issues, terrain, plant association/fire regime, and/or the need to maintain bitterbrush for mule deer habitat.

Existing Geographical Information System (GIS) based datasets may also be used to prioritize landscapes such as the use of fire models that indicate areas with high crown fire potential; past restoration treatments that provide information on current condition and previous investment; Wildland Urban Interface (WUI) that may be a higher priority for treatment due to the proximity to homes or private land; and wilderness or special management areas that may not be available for restoration.

The data and GIS analysis used to prioritize landscapes are summarized in Table 1 below. For each variable, the data was reviewed by the team to determine how it may be used to prioritize landscapes. In some cases "total acres" was used and in some case "percent of landscape" was more appropriate. Each individual variable for each landscape was then identified as being high priority or not a high priority, relative to other landscapes on the Forest.

Stand structure extra-large/large and crown fire potential were given a higher weight compared to the other variables because the Forest considers these values to be a higher priority compared to other variables. In Tables 3-22, variables identified as a high priority are highlighted yellow. If the variable was a high priority for stand structure extra-large/large and crown fire potential it was given a rating of 2. If the variable was a high priority for all the other variables, it was given a rating of 1 (See Table 1 below). The landscapes were then given a low, moderate, or high priority for restoration based on the total number of variables that were identified as a high priority (see Table 2).

It is important to keep in mind that some landscapes may be identified as a low priority because a large proportion of the area has been recently managed (<10 years). These landscapes should be reviewed to determine if portions of the landscapes are in a condition that allows for landscape fire. If so, it may be a high priority to continue "maintaining" these landscapes with fire at the landscape scale.

The GIS analysis conducted for the project may also be beneficial for project planning. All the GIS datasets below are available at both the watershed and landscape scale.

Table 1. Data Used to Prioritize Landscapes

Variable	Data and GIS Analysis	Rationale	Threshold for High Priority
Regional and National Priorities	The following data was combined: 1) WCF – watersheds rated "fair", 2) TRACS high priority watersheds, 3) R6 Aquatic Restoration Strategy high priority watersheds, and 4) Oregon Conservation Strategy Opportunity areas. Total acres and percent were analyzed within each landscape.	Landscapes with watersheds that overlap in Regional and National priorities would be a high priority for restoration. Landscapes with a high amount of overlap with 3 or more of the regional or national priorities are a high priority for restoration.	>30%
Past Management	The following data was combined: 1) harvest <10 years, 2) fuels thinning <10 years, 3) precommercial thinning <10 years, 4) prescribed fire <10 years, and 5) wildfire <20 years. Total acres and percent were analyzed within each landscape available for restoration.[9]	Landscapes that have a high amount of recent wildfire (<20 years) or vegetation management (<10 years) would be a lower priority for restoration. It is generally assumed that these areas would not need extensive restoration in the near future.	<20%
Past Management Within WUI	The following data was combined: 1) harvest <10 years, 2) fuels thinning <10 years, 3) precommercial thinning <10 years, 4) prescribed fire <10 years, and 5) wildfire <20 years. Total acres and percent were analyzed within WUI within each landscape available for restoration. [9]	Landscapes that have a high amount of recent wildfire (<20 years) or vegetation management (<10 years) within WUI would be a lower priority for restoration. It is generally assumed that these areas would not need extensive restoration in the near future.	<20%
Current Stand Structure by Plant Association	Total acres and percent of extra-large/large stand structure within ponderosa pine and mixed conifer plant associations within each landscape available for restoration.[9]	Large trees are a value the Forest would like to protect. Landscapes with a high amount of extra-large/large structure would be a high priority for restoration.	>13,000 acres
	Total acres and percent of extra-large/large/medium/small stand structure within ponderosa pine and mixed conifer plant associations within each landscape available for restoration.[9]	These stand structures can indicate timber viability and feasibility of restoration within a landscape. Landscapes with a higher percentage would be a high priority for restoration due to the ability to economic viability of fully restoring a landscape.	>50%
WUI	Total acres and percent of WUI within each landscape.	WUI is a high priority for restoration. Landscapes with a high amount of WUI would be a high priority for restoration.	>40,000 acres
Crown Fire Potential	Total acres and percent of high crown fire potential within each landscape.	Landscapes with a high amount of high crown fire potential would be a high priority for restoration.	>40%
Landscape Fire Opportunities	Based on the knowledge of the ground and potential social/political constraints, landscapes were identified that may have the potential for landscape fire. Landscapes identified as "no" were due to potential smoke management issues, terrain, and/or plant association/fire regime. Landscapes identified as "maybe" were due to the potential need to maintain bitterbrush for mule deer habitat.	Landscapes noted as "yes" would be a high priority for restoration.	"yes"

[9] Landscape without wilderness or special management areas (Wilderness Fremont MA 10 and Winema MA 6 A/B/C; Semiprimitive Recreation Fremont MA 9 and Winema MA 1 A/B/C).

Low
Moderate
High

Table 2. Summary of Priority for Each Variable and Landscape

Landscape	Regional Priorities	Past Management	Past Management within WUI	Current Stand Structure by Plant Association Extra Large/Large	Current Stand Structure by Plant Association Extra Large/Large/Medium/Small	WUI	Crown Fire Potential	Landscape Fire Opportunities	Total
Winter Rim									0
Chemult		1	1						2
Drews						1		1	2
Silver Lake						1		1	2
Panhandle		1	1					1	3
Chewaucan	1				1			1	3
Jack	1	1	1						3
Morter Coyote			1		1			1	3
Oatman_BigHole		1	1					1	3
Sycan	1	1	1					1	4
Thomas Creek			1	2	1	1			5
Fort_Ninemile	1		1	2			2		6
Black Hills	1	1	1				2	1	6
Sprague River		1	1		1		2	1	6
Klamath	1	1	1	2		1			6
Bluejay	1	1	1	2			2		7
North Warner	1	1	1	2	1			1	7
Lobert		1	1	2	1	1	2		8
South Warner	1	1	1	2	1	1		1	8
Sprague	1	1	1	2	1		2	1	9

EFFICIENCIES IN PROJECT PLANNING AND IMPLEMENTATION

It is recognized that the Forest is already very successful at planning and implementing large-scale projects. However, many specialists across the Forest have ideas for how the Forest could be even more efficient in project planning and implementation. It is recommended that the Forest invest the time to brainstorm and listen to these ideas from District staff at all levels of the organization. Below are a just a few ideas, recognizing that employees across the Forest have other ideas to consider.

Potential ways to improve efficiency in project planning and implementation:

- Develop EA and specialist report templates.
- Involvement of Program Managers through set check-ins with specialists and a mentoring role with newer members of the planning team.
- Incorporate information by reference as appropriate.
- To be more prescriptive or programmatic in project design.
- To consider having fewer, but larger and more focused project areas, then multiple planning projects across the Forest at one time.
- To plan projects at a larger scale.
- For IDTs to spend time learning from other Zones about what's working well or not working well.
- Allow the Forest to learn from other Forests that are planning projects at a landscape level.
- Work with R6 Regional Office Planning Staff to find a way to simplify and streamline NEPA.
- To establish meetings on a regular basis with key specialists and implementation crews to improve communication and provide for feedback opportunities.
- Where feasible allow implementation to utilize Designation by Prescription across large treatment units bordered by roads. This will have the effect to minimize unit boundary layout and tree marking.
- Check point spreadsheets may help with tracking project planning and implementation.
- Formalized NEPA training for new and inexperienced members of our IDTs.

To effectively implement efficient landscape level planning and implementation, the Forest may need to evaluate whether the current organizational structure is conducive to planning and implementing restoration projects at a larger scale. In addition, the Forest should consider how this effort could inform the five year timber plan and potentially expand the plan to include all vegetation management treatments.

SUMMARY OF RECOMMENDATIONS

1. To complete planning for one landscape before moving to the next.
2. To be strategic with restoration efforts to assure that limited funding supports those landscapes that are considered high priority.
3. To prioritize restoration at the Forest scale irrespective of district/zone boundaries.
4. To increase the efficiency of project planning by increasing the size of project areas.
5. To invest the time to brainstorm and listen to ideas from district staff, at all levels of the organization, of ways to be more efficient with project planning and implementation.
6. Pursue opportunities to increase the efficiency of project planning and implementation.
7. To evaluate whether the current organizational structure is conducive to planning and implementing restoration projects at a large scale.
8. To expand on the existing five-year timber plan and develop a 10 year natural resource integrated plan that includes all integrated restoration treatments.
9. The idea is NOT to do more with less, but rather to be creative in finding ways to do things different (i.e. more efficient) to accomplish more restoration on the ground.

APPENDIX A: DATA FOR EACH LANDSCAPE

Black Hills Landscape

Table 3. Summary of Data for the Black Hills Landscape

Black Hills Landscape (141,725 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	67,887 acres
Percent of Landscape with Overlap of 3 or More Priorities	48%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	9,678 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	7%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	160 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	2%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	8,438 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	6%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	47,410 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	33%
Fire and Fuels	
Total Acres of WUI	9,835 acres
Percent of Landscape Identified as WUI	7%
Total Acres with High Crown Fire Potential	88,747 acres
Percent of Landscape with High Crown Fire Potential	63%
Potential Opportunities for Landscape Fire	Yes

Bluejay Landscape

Table 4. Summary of Data for the Bluejay Landscape

Bluejay Landscape (132,214 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	84,444 acres
Percent of Landscape with Overlap of 3 or More Priorities	64%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	2,975 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	2%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	0 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	0%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	13,091 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	11%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	44,741 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	36%
Fire and Fuels	
Total Acres of WUI	1,588 acres
Percent of Landscape Identified as WUI	1%
Total Acres with High Crown Fire Potential	80,647 acres
Percent of Landscape with High Crown Fire Potential	61%
Potential Opportunities for Landscape Fire	Maybe

Chemult Landscape

Table 5. Summary of Data for the Chemult Landscape

Chemult Landscape (112,898 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	277 acres
Percent of Landscape with Overlap of 3 or More Priorities	0.20%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	3,397 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	4%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	0 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	0%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	5,654 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	6%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	14,071 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	15%
Fire and Fuels	
Total Acres of WUI	0 acres
Percent of Landscape Identified as WUI	0%
Total Acres with High Crown Fire Potential	19,189 acres
Percent of Landscape with High Crown Fire Potential	17%
Potential Opportunities for Landscape Fire	No

Chewaucan Landscape

Table 6. Summary of Data for the Chewaucan Landscape

Chewaucan Landscape (69,959acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	48,164 acres
Percent of Landscape with Overlap of 3 or More Priorities	69%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	15,024 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	27%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	11,215 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	32%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	6,113 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	11%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	31,898 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	57%
Fire and Fuels	
Total Acres of WUI	34,544 acres
Percent of Landscape Identified as WUI	49%
Total Acres with High Crown Fire Potential	12,458 acres
Percent of Landscape with High Crown Fire Potential	18%
Potential Opportunities for Landscape Fire	Yes

Drews Landscape

Table 7. Summary of Data for the Drews Landscape

Drews Landscape (181,750 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	0 acres
Percent of Landscape with Overlap of 3 or More Priorities	0%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	81,705 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	45%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	63,852 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	50%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	29,966 acres*
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	16%*
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	121,971 acres*
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	67%*
Fire and Fuels	
Total Acres of WUI	127,789 acres
Percent of Landscape Identified as WUI	70%
Total Acres with High Crown Fire Potential	57,213 acres*
Percent of Landscape with High Crown Fire Potential	32%*
Potential Opportunities for Landscape Fire	Yes

* Data is not accurate due to Barry Point Fire

Jack Landscape

Table 8. Summary of Data for the Jack Landscape

Jack Landscape (171,501acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	53,353 acres
Percent of Landscape with Overlap of 3 or More Priorities	31%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	14,753 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	9%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	0 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	0%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	6,733 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	4%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	25,549 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	15%
Fire and Fuels	
Total Acres of WUI	454
Percent of Landscape Identified as WUI	0.30%
Total Acres with High Crown Fire Potential	45,283
Percent of Landscape with High Crown Fire Potential	26%
Potential Opportunities for Landscape Fire	No

Klamath Landscape

Table 9. Summary of Data for the Klamath Landscape

Klamath Landscape (190,992 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	81,552 acres
Percent of Landscape with Overlap of 3 or More Priorities	43%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	4,177 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	4%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	3752 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	6%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	18,172 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	18%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	44,855 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	45%
Fire and Fuels	
Total Acres of WUI	59,839 acres
Percent of Landscape Identified as WUI	31%
Total Acres with High Crown Fire Potential	49,364 acres
Percent of Landscape with High Crown Fire Potential	26%
Potential Opportunities for Landscape Fire	No

Lobert Landscape

Table 10. Summary of Data for the Lobert Landscape

Lobert Landscape (127,126 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	17 acres
Percent of Landscape with Overlap of 3 or More Priorities	0.01%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	7,219 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	6.0%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	5,312 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	8.0%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	20,192 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	16%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	71,104 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	56%
Fire and Fuels	
Total Acres of WUI	67,294 acres
Percent of Landscape Identified as WUI	53%
Total Acres with High Crown Fire Potential	54,930 acres
Percent of Landscape with High Crown Fire Potential	43%
Potential Opportunities for Landscape Fire	No

Mortar Coyote Landscape

Table 11. Summary of Data for the Mortar Coyote Landscape

Mortar Coyote Landscape (93,096 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	819 acres
Percent of Landscape with Overlap of 3 or More Priorities	1.00%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	42,397 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	46%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	6,054 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	7%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	10,107 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	11%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	47,380 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	51%
Fire and Fuels	
Total Acres of WUI	10,180 acres
Percent of Landscape Identified as WUI	11%
Total Acres with High Crown Fire Potential	14,460 acres
Percent of Landscape with High Crown Fire Potential	16%
Potential Opportunities for Landscape Fire	Yes

Ninemile Landscape

Table 12. Summary of Data for the Ninemile Landscape

Ninemile Landscape (133,840 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	43,099 acres
Percent of Landscape with Overlap of 3 or More Priorities	32%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	40,025 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	30%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	9,598 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	7%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	18,902 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	14%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	57,978 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	43%
Fire and Fuels	
Total Acres of WUI	27,454 acres
Percent of Landscape Identified as WUI	21%
Total Acres with High Crown Fire Potential	76,102 acres
Percent of Landscape with High Crown Fire Potential	57%
Potential Opportunities for Landscape Fire	Maybe

North Warner Landscape

Table 13. Summary of Data for the North Warner Landscape

North Warner Landscape (49,858 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	21,689 acres
Percent of Landscape with Overlap of 3 or More Priorities	44%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	4,043 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	9%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	2,039 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	5%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	18,563 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	42%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	31,220 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	70%
Fire and Fuels	
Total Acres of WUI	29,361 acres
Percent of Landscape Identified as WUI	59%
Total Acres with High Crown Fire Potential	17,851 acres
Percent of Landscape with High Crown Fire Potential	36%
Potential Opportunities for Landscape Fire	Yes

Oatman Bighole Landscape

Table 14. Summary of Data for the Oatman Bighole Landscape

Oatman Bighole Landscape (113,313 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	0 acres
Percent of Landscape with Overlap of 3 or More Priorities	0%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	90 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	0
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	0 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	0
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	6,884 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	6%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	27,810 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	25%
Fire and Fuels	
Total Acres of WUI	34,432 acres
Percent of Landscape Identified as WUI	30%
Total Acres with High Crown Fire Potential	29,145 acres
Percent of Landscape with High Crown Fire Potential	26%
Potential Opportunities for Landscape Fire	Yes

Panhandle Landscape

Table 15. Summary of Data for the Panhandle Landscape

Panhandle Landscape (78,869 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	0 acres
Percent of Landscape with Overlap of 3 or More Priorities	0%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	12,180 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	17%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	0 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	0%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	6,465 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	9%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	12,020 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	16%
Fire and Fuels	
Total Acres of WUI	0 acres
Percent of Landscape Identified as WUI	0%
Total Acres with High Crown Fire Potential	24,366 acres
Percent of Landscape with High Crown Fire Potential	31%
Potential Opportunities for Landscape Fire	Yes

Silver Lake Landscape

Table 16. Summary of Data for the Silver Lake Landscape

Silver Lake Landscape (151,980 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	11,760 acres
Percent of Landscape with Overlap of 3 or More Priorities	8%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	62,583 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	47%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	34983
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	50%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	11,770 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	9%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	52,891 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	40%
Fire and Fuels	
Total Acres of WUI	70,164 acres
Percent of Landscape Identified as WUI	46%
Total Acres with High Crown Fire Potential	36,791 acres
Percent of Landscape with High Crown Fire Potential	24%
Potential Opportunities for Landscape Fire	Yes

South Warner Landscape

Table 17. Summary of Data for the South Warner Landscape

South Warner Landscape (70,996 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	45,068 acres
Percent of Landscape with Overlap of 3 or More Priorities	64%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	4,308 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	10%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	1,765 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	4%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	16,232 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	37%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	30,587 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	70%
Fire and Fuels	
Total Acres of WUI	42,484 acres
Percent of Landscape Identified as WUI	60%
Total Acres with High Crown Fire Potential	23,824 acres
Percent of Landscape with High Crown Fire Potential	34%
Potential Opportunities for Landscape Fire	Yes

Sprague Landscape

Table 18. Summary of Data for the Sprague Landscape

Sprague Landscape (126,083 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	65,290 acres
Percent of Landscape with Overlap of 3 or More Priorities	52%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	8,156 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	9%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	4,015 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	15%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	13,025 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	50%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	46,076 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	53%
Fire and Fuels	
Total Acres of WUI	26,186 acres
Percent of Landscape Identified as WUI	21%
Total Acres with High Crown Fire Potential	53,556 acres
Percent of Landscape with High Crown Fire Potential	43%
Potential Opportunities for Landscape Fire	Yes

Sprague River Landscape

Table19. Summary of Data for the Sprague River Landscape

Sprague River Landscape (61,291 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	0 acres
Percent of Landscape with Overlap of 3 or More Priorities	0%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	10,361 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	17%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	3,334 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	5%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	7,302 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	12%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	37,077 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	61%
Fire and Fuels	
Total Acres of WUI	13,869 acres
Percent of Landscape Identified as WUI	23%
Total Acres with High Crown Fire Potential	42,196 acres
Percent of Landscape with High Crown Fire Potential	69%
Potential Opportunities for Landscape Fire	Yes

Sycan Landscape

Table 20. Summary of Data for the Sycan Landscape

Sycan Landscape (116,412 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	58,206 acres
Percent of Landscape with Overlap of 3 or More Priorities	50%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	7,188 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	6%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	3,467 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	9%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	7,377 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	7%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	43,730 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	39%
Fire and Fuels	
Total Acres of WUI	39,889 acres
Percent of Landscape Identified as WUI	34%
Total Acres with High Crown Fire Potential	23,595 acres
Percent of Landscape with High Crown Fire Potential	20%
Potential Opportunities for Landscape Fire	Yes

Thomas Creek Landscape

Table 21. Summary of Data for the Thomas Creek Landscape

Thomas Creek Landscape (111,341 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	4,242 acres
Percent of Landscape with Overlap of 3 or More Priorities	2%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	24,179 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	25%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	17,642 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	22%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	21,451 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	22%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	69,705 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	71%
Fire and Fuels	
Total Acres of WUI	81,484 acres
Percent of Landscape Identified as WUI	43%
Total Acres with High Crown Fire Potential	39,264 acres
Percent of Landscape with High Crown Fire Potential	21%
Potential Opportunities for Landscape Fire	Maybe

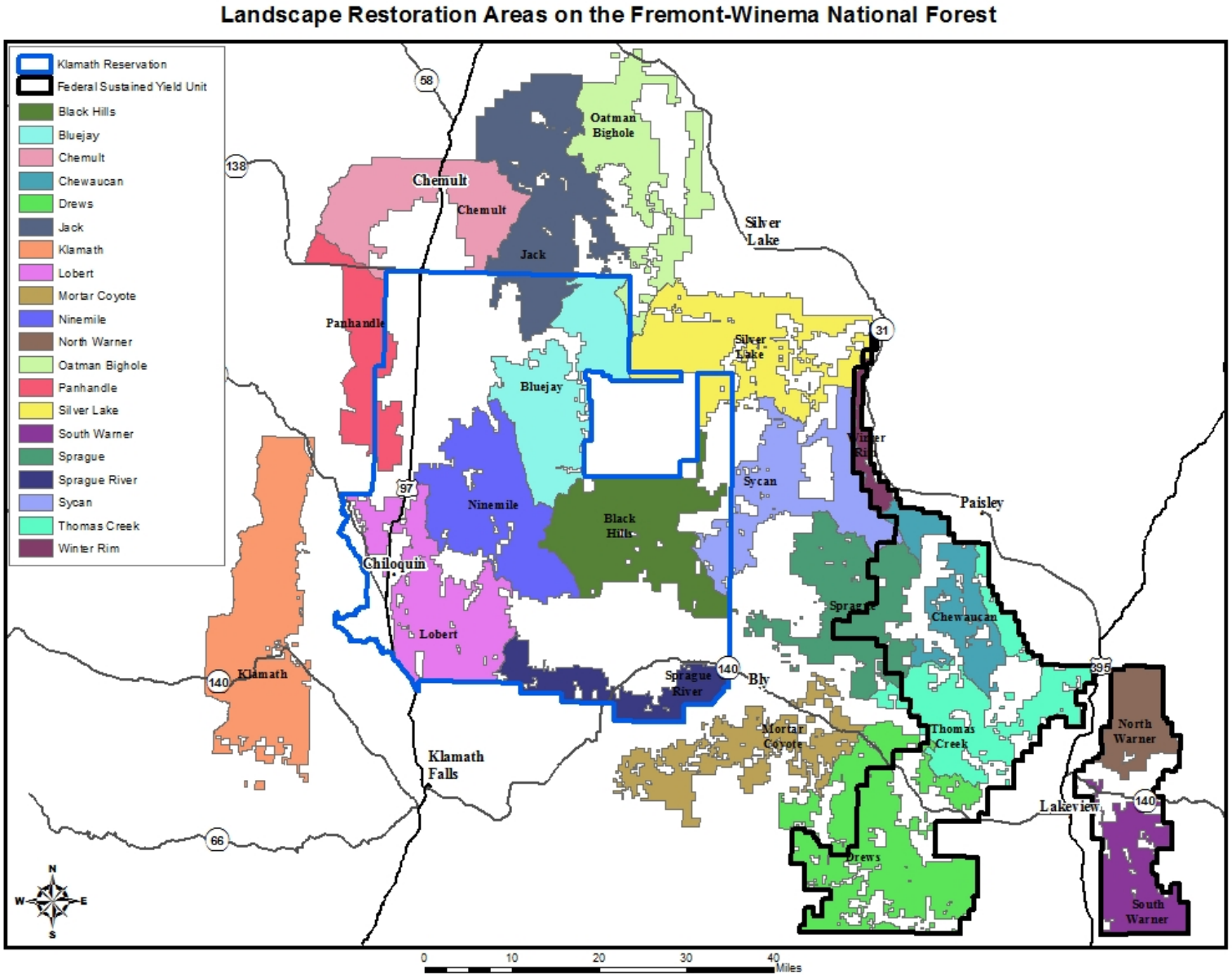
Winter Rim Landscape

Table 22. Summary of Data for the Winter Rim Landscape

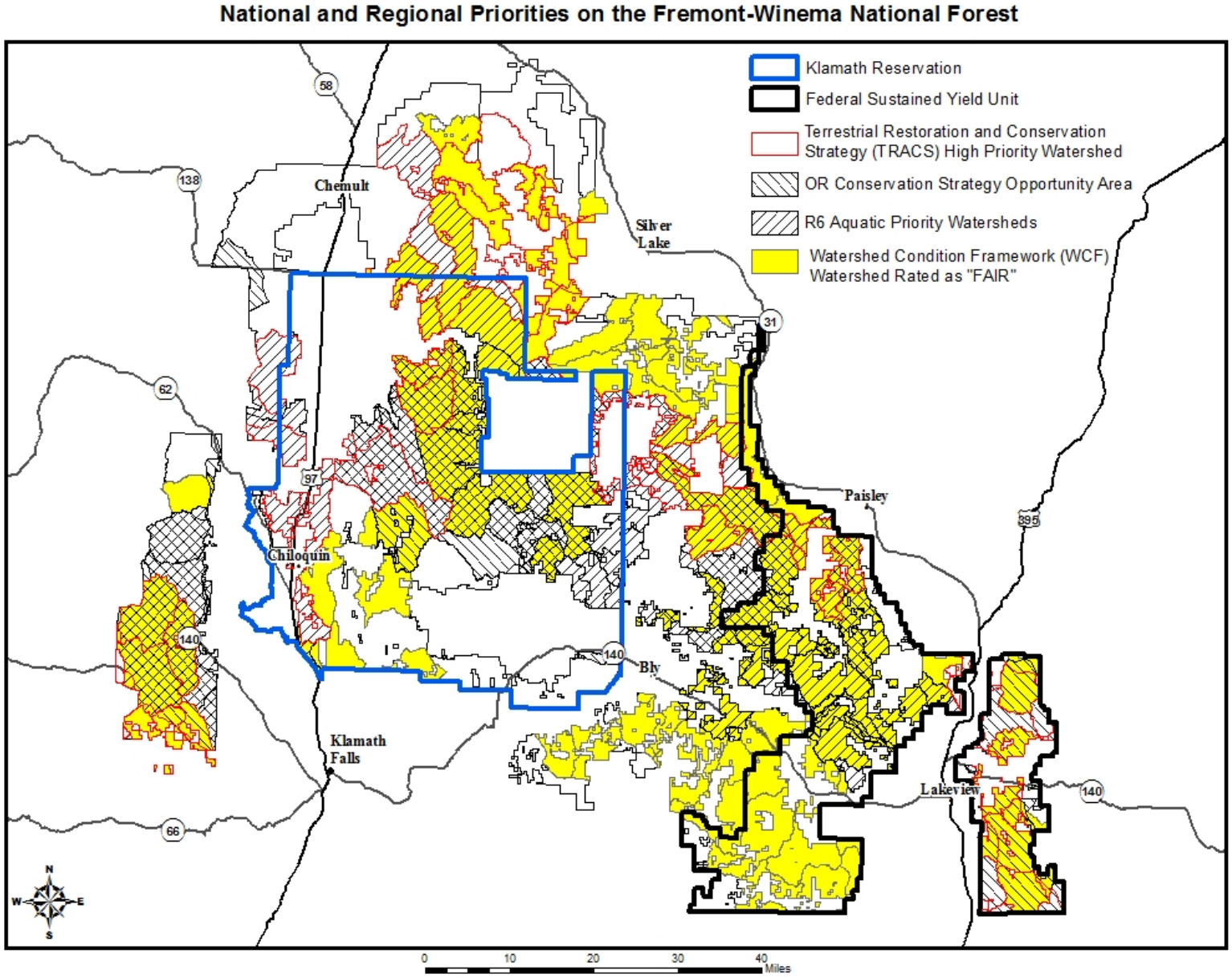
Winter Rim Landscape (17,518 acres)	Acres Percent
Regional/National Priorities	
Total Acres with Overlap 3 or More Priorities	0 acres
Percent of Landscape with Overlap of 3 or More Priorities	0%
Past Management	
Total Acres of Past Management <10 yrs and Wildfire <20 yrs	6,079 acres
Percent of Landscape Available for Restoration with Past Management <10 yrs and Wildfire <20 yrs	52%
Total Acres of Past Management <10 yrs and Wildfire <20 yrs within WUI	9,298 acres
Percent of WUI with Past Management <10 yrs and Wildfire <20 yrs	80%
Current Stand Structure by Plant Association	
Total Acres of Extra-Large/Large Structure Ponderosa Pine and Mixed Conifer	1,005 acres
Percent of Landscape Available for Restoration with Extra-Large/Large Structure	9%
Total Acres of Extra-Large/Large/Medium/Small Structure Ponderosa Pine and Mixed Conifer	4,414 acres
Percent of Landscape Available for Restoration with Extra-Large/Large/Medium/Small Structure	38%
Fire and Fuels	
Total Acres of WUI	17,285 acres
Percent of Landscape Identified as WUI	99%
Total Acres with High Crown Fire Potential	1,649 acres
Percent of Landscape with High Crown Fire Potential	9%
Potential Opportunities for Landscape Fire	No

APPENDIX B: MAPS

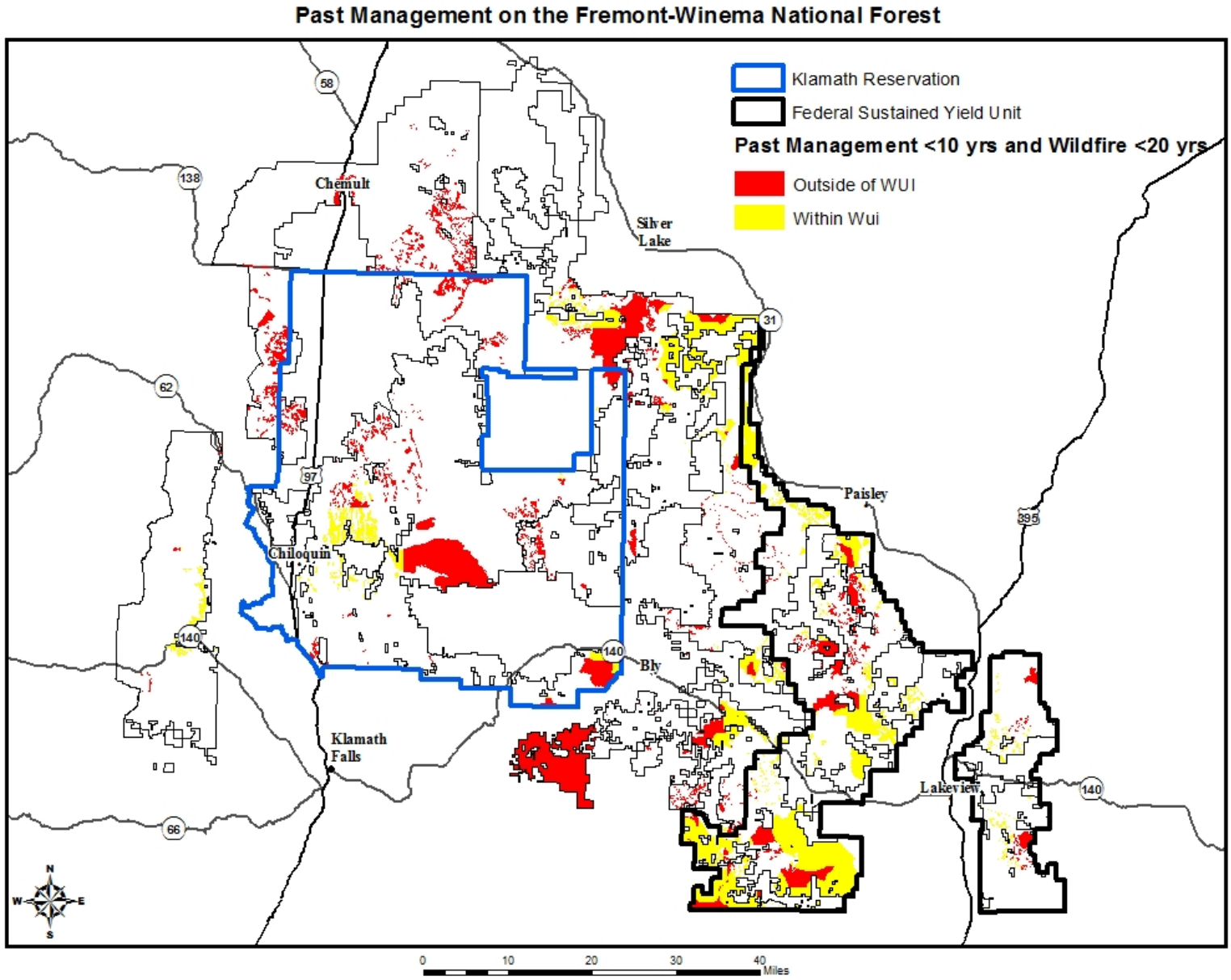
Map 1: Restoration Landscapes



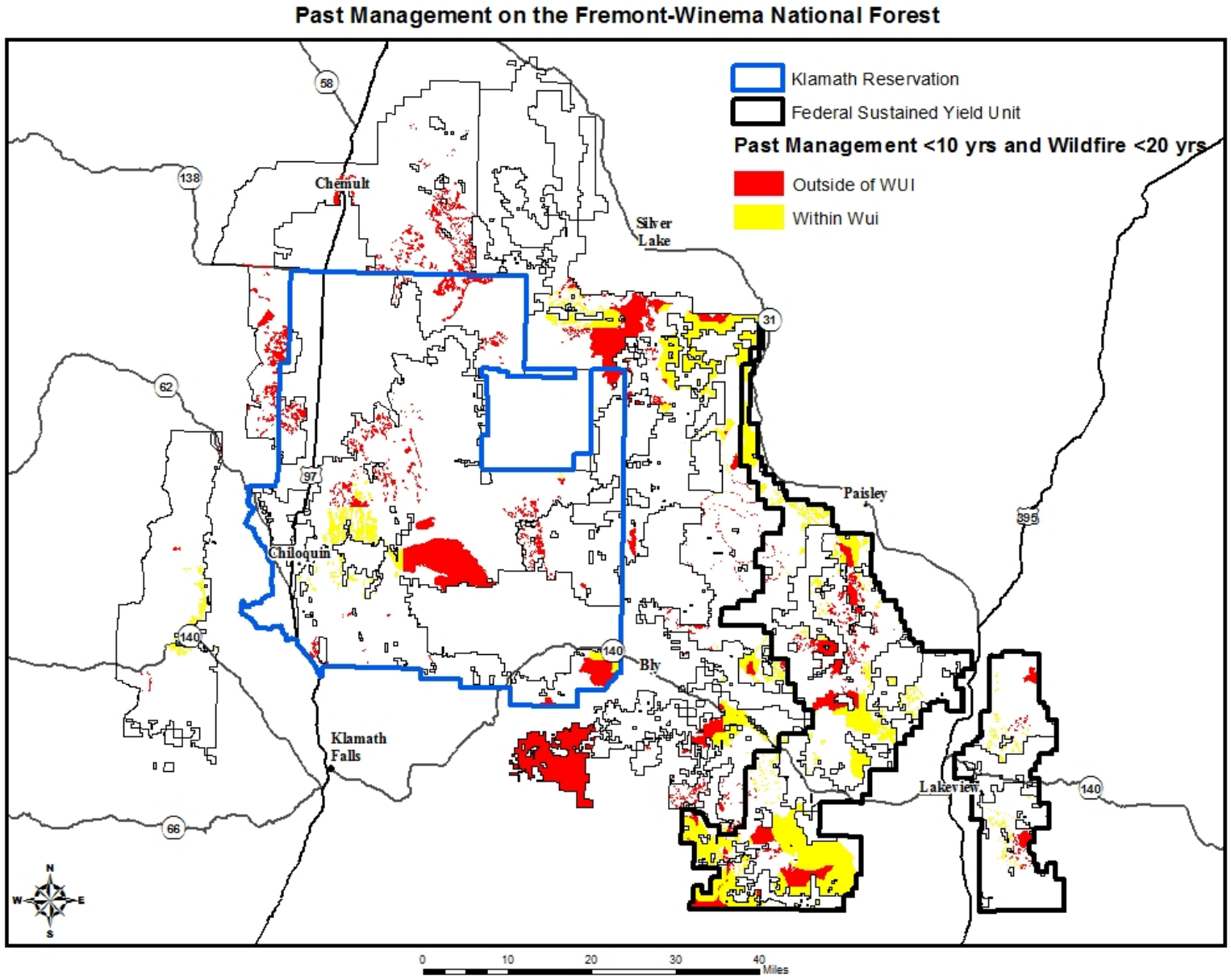
Map 2: National and Regional Priorities



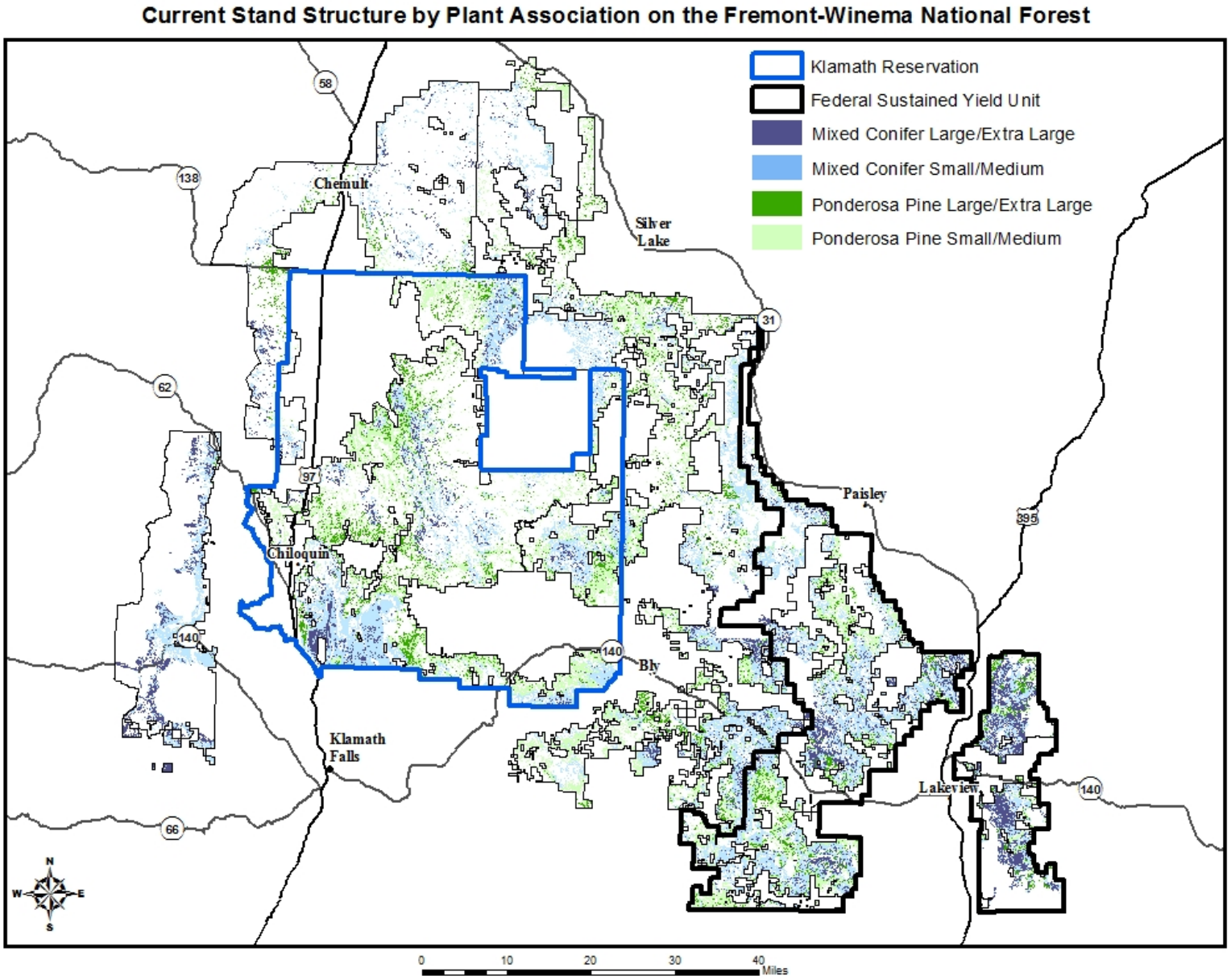
Map 3: Wilderness/Special Management Areas and WUI



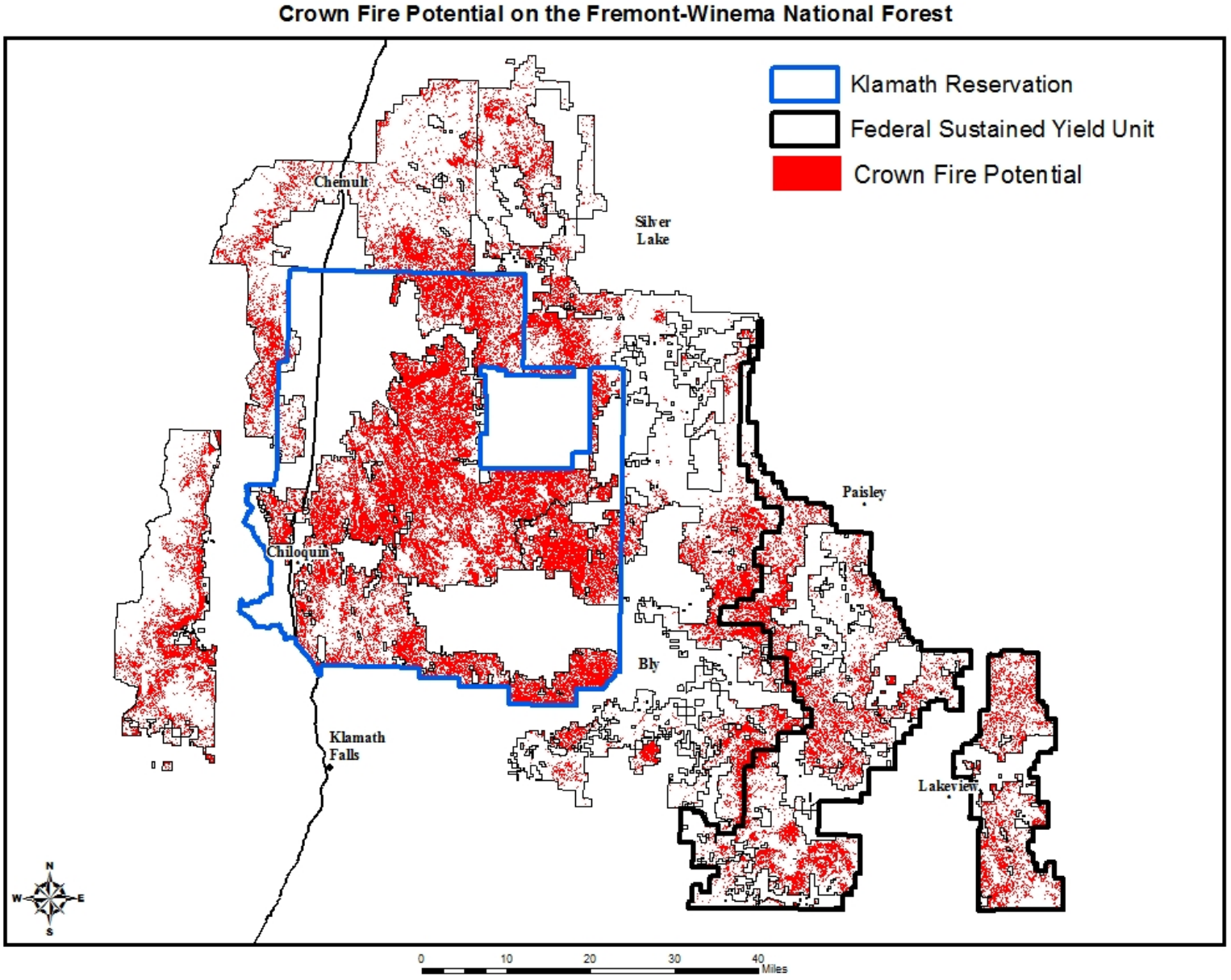
Map 4: Past Management



Map 5: Current Stand Structure by Plant Association



Map 6: Crown Fire Potential



Map 7: Restoration Landscape Priority

Priority for Restoration
Landscape Restoration Areas on the Fremont-Winema National Forest