THE PILLIKEN FOREST HEALTH PROJECT

BACKGROUND

The Pilliken Forest Health Project derives its name from the project area, located in the boundary of the 1973 Pilliken wildfire, that in-turn was named after the Pilliken family whose name appears as a camp or residence on the Leek Springs Quad.

The Pilliken plantations proposed for treatment under this project were established between 1975 and 1979 on the intensively burned portions of the much larger landscape burned in the Pilliken wildfire, which consumed over 10,000 acres of National Forest and private lands. Much of the intensively burned private land, currently owned by Sierra Pacific Industries, was successfully reforested during the same period of time as the National Forest lands and these private plantations currently resemble the National Forest plantations in terms of size, density and brush component.

Most of the private and National Forest plantations experienced excellent survival and relatively good growth in the 40 years since establishment. The current high stand densities, coupled with large quantities of understory brush put both the private and National Forest plantations at a high risk of insect infestation or wildfire loss. Sierra Pacific Industries has obtained timber harvesting plan approvals under the California State Forest Practice Act that will permit the thinning and follow-up treatment of their established plantations to maintain and increase growth, as well as increase forest resiliency on their company lands.

The proposed Pilliken Forest Health Project area is within the South Fork of the American River (South Fork) drainage on the Placerville Ranger District, Eldorado National Forest. The South Fork has been determined by the state of California and by the Chief of the Forest Service as a forested landscape that has been experiencing declining forest health pursuant to; and as described in the 2014 Farm Bill. The Farm Bill designation authorizes expedited project planning to alleviate insect infestation and disease concerns. The forested landscape of the South Fork consists of a rich diversity of vegetative conditions largely defined by the presence of a multitude of natural stands and established plantations.

A Forest Health Protection review of the Pilliken plantations by a Forest Service entomologist and pathologist in 2013 validated the concern expressed in the 2014 Farm Bill, categorizing these areas at high risk of bark beetle infestation, and noting scattered dead trees in the area likely due to beetle activity. The continuing, prolonged drought conditions have added to the moisture stress and insect infestation risk. Bark beetles are native to the central Sierra Nevada and do not post a significant threat to healthy trees, but stands that are stressed due to drought, high stand density, or other abiotic factors may by killed by bark beetle attack, potentially resulting in widespread infestations. Thinning remains the most effective treatment to improve forest health by reducing abiotic stress and thus reduce the risk of bark beetle infestation (Fettig 2012). Thinning combined with a reduction of accumulated surface fuels and shrubs also effectively reduces susceptibility to stand-replacing fire.

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Both management direction (2004 Sierra Nevada Forest Plan Amendment Record of Decision, SNFPA ROD) and current research (North et al. 2009, North 2012) identify spatial heterogeneity as a desired condition within stands. Variation in tree diameter, density, and species diversity are expected to increase stand resilience to insect infestations and promote lower intensity fire more consistent with historical patterns. Favoring oaks or other hardwood trees when they occur is also expected to improve forest health by decreasing stand density and increasing stand resilience.

PURPOSE AND NEED FOR THE PROJECT

The purpose of the Pilliken Forest Health Project is to reduce the threat of insect infestations and improve forest health in the project area. Specifically, the project will address four needs.

1. There is a need to reduce the density of selected plantations and adjacent natural stands. Decreased tree density would increase the resistance of the stands to insect infestation and reduce the effects of environmental stresses such as drought and potential wildfire.
2. There is a need to increase the base height of live crowns. The increased height to live crown would reduce the susceptibility of the trees to the effects of wildfire or prescribed fire.
3. There is a need to reduce surface fuels as follow-up treatments in the treated stands. These fuel treatments would reduce the susceptibility of the trees to the effects of wildfire or prescribed fire.
4. There is a need to reconstruct and/or maintain existing system roads and landings within the project area. The reconstruction is required to conduct the treatments described above and to mitigate existing watershed impacts caused by failed culverts and non-functional roadway ditches and graded dips.

PROPOSED ACTION

In order to meet the needs of the project, the following actions are proposed on an estimated 2,653 acres of National Forest system land within the South Fork of the American River drainage. The proposed actions consist of thinning, fuels reduction, prescribed burning, and road reconstruction in order to reduce the susceptibility of the existing stands to insect infestation and mortality.

THINNING

1. Commercial thinning on approximately 1,921 acres of 40-year old plantations and 516 acres of natural stands to remove selected conifer trees within identified natural stands and plantations. Within the plantations trees would be removed to attain residual basal areas that would vary from approximately 60 to 110 ft^2 /acre. The lower basal areas would occur on the upper portion of the dominant ridges whereas the higher basal areas would occur on the mid to lower portion of the slopes. Within the natural stands, the trees to be harvested would generally be the shade-tolerant, suppressed trees with

lower live crown ratios, or trees that show signs of defects or indicators of bark beetles or disease.

2. Remove small trees (4 inches to 10 inches dbh) to landings, or other designated disposal sites, on the commercially thinned areas.

3. Tree tops and small trees would be piled at landings and be made available for either biomass power generation or public fire wood cutting. Material remaining at landings would be burned.

4. Thinning of conifer trees less than 10 inches dbh on approximately 116 acres non-commercial sized plantations.

5. Pruning of select residual trees to increase the height of live crown.

FUEL REDUCTION

1. Conduct post-harvest treatments, including grapple or tractor piling of existing and activity fuels, or mastication, on thinned areas.

2. Treatment of understory brush in areas of high fuel density.

3. Prescription burning to treat brush and understory fuels on an additional 119 acres within the project area.

PRESCRIBED BURNING

1. Prescription burning of piles in accordance with the relevant burn plan that would be developed for this project.

2. Understory burning of treated and adjacent units with priority given to those which strategically reduce the risk of large fires on the surrounding landscape.

TRANSPORTATION SYSTEM

1. Reconstruction or heavy maintenance on approximately 52 miles of existing system roads. The road reconstruction would primarily consist of replacement of failed culverts, installation of graded dips or water-bars to control road surface drainage, pothole repair, surface grading roadside brushing and some road widening to accommodate log trucks.

2. Construction of approximately 0.5 mile of temporary road and turn-around, to be decommissioned within three years of the project completion.

3. An undetermined number of temporary landings may be established or enlarged to accommodate the accumulations of biomass removed from the thinned stands. The size of the log landings may range from ¼ to ½ acre in size depending on how much logging debris is generated.

Table 1. Roads proposed for temporary construction, reconstruction or maintenance under the Proposed Action.

System Road	Type of Work	Length of work (miles)
10N10Y	Maintenance	0.32
10N31	Maintenance	1.34
10N31	Reconstruction	1.71
10N31A	Reconstruction	0.54
10N31B	Maintenance	0.35
	Reconstruction	1.16
10N31BA	Reconstruction	0.60
10N31W	Reconstruction	0.04
10N32	Maintenance	1.33
10N32A	Reconstruction	1.37
10N32AB	Reconstruction	0.29
10N32C	Reconstruction	0.55
	Temporary access	0.04
10N40	Reconstruction	5.38
10N40B	Reconstruction	0.89
10N40D	Maintenance	0.49
10N40H	Reconstruction	0.66
10N40J	Reconstruction	0.39
10N40K	Reconstruction	0.83
10N41	Reconstruction	3.37
10N41A	Reconstruction	0.33
10N41B	Reconstruction	1.53
10N41BN	Reconstruction	0.32
10N42	Reconstruction	2.75
10N42A	Maintenance	1.06
10N42AB	Temporary access	0.35
10N43	Maintenance	4.08
10N43C	Reconstruction	0.53
10N43CW	Maintenance	0.08
10N50N	Reconstruction	0.97
10N50NA	Reconstruction	0.44
	Temporary access	0.08
10N52	Maintenance	0.47
	Reconstruction	0.77
10N52A	Reconstruction	0.17
10N95	Maintenance	0.50

System Road	Type of Work	Length of work (miles)
10NY09	Maintenance	0.80
11N18	Maintenance	3.63
	Reconstruction	0.83
11N18C	Maintenance	1.33
	Reconstruction	0.34
11N18C1	Maintenance	0.29
11N46	Maintenance	3.48
	Reconstruction	2.98
11N46B	Reconstruction	0.17
	Temporary access	0.05
11N46D	Reconstruction	0.64
11N47	Maintenance	2.66

DESIGN CRITERIA

Heterogeneity within Units

Silvicultural prescriptions will be designed to promote structural and species heterogeneity by incorporating recommendations from PSW-GTR-220 and PSW-GTR-237 to meet the following goals:

1. Reduce shading around oaks to improve growing conditions
2. Increase the percentage of shade intolerant pine and hardwoods in natural stands
3. Retain clumps of large trees
4. Retain large trees with defects such as rot, cavities, and multiple tops
5. Increase stand variability in species and structure

Cultural Resources

1. Protect historic properties within the area of potential effects (APE) from adverse effect through the application of the Approved Standard Protection Measures detailed in Appendix E of the *"Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), the California State Historic Preservation Officer, the Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forest of the Pacific Southwest Region (Regional PA, 2013)."*
2. Identify all resources at risk (RAR) within the APE with flagging and/or on maps prior to initiating project activities. Consider as exclusion zones areas in which activities would occur

within the APE and areas in which the archaeological survey has been deferred unless reviewed by the district archaeologist on a case-by-case basis.

3. Establish protection measures specific to prescribed burn activities, detailed in the Regional PA, 2013, Appendix E, Section 2.2, (b)(1)(A-K), for each RAR based on coordination between cultural resource managers and fuels specialists prior to implementation.
4. Should any previously unrecorded cultural resources be encountered during implementation of this project, immediately cease all work in that area and immediately notify the District Archaeologist. Resume work subsequent to approval by the District Archaeologist for implementation of additional protection measures, as necessary to meet provisions in the Regional PA (2013). Should any cultural resources become damaged in unanticipated ways by activities proposed in this project, follow the steps described in the Regional PA, 2013 for inadvertent effects.

Botany

1. Sensitive Plant populations within the project area would be flagged for avoidance. Due to the fact that prescribed burn implementation could occur several years after completion of thinning or other treatments, the project leader or burn boss would notify the project botanist prior to line construction in order to re-flag occurrences. All ground disturbing activities, burn piles, hazard tree removal, roadside brushing, mechanical equipment, line construction, and spring burning would be excluded from sensitive plant protection areas unless approved by project botanist.
2. Where necessary to remove trees from within Sensitive plant boundaries, the project botanist would be consulted to mitigate impacts. All thinning of trees adjacent to site boundaries would be directionally felled away from the site. Hand thinning and prescribed fire within sensitive plant protection areas may occur at the recommendation of the project botanist. The project botanist would be notified prior to implementation of the prescribed burn in sensitive plant populations and if available would be onsite to take part in, and/or monitor burning and associated effects. At a minimum, a post burn visit would be conducted by the botanist. If new sensitive plant occurrences are discovered during project implementation the project botanist would be notified to develop necessary protection measures.
3. Lava caps, which support unique plant communities in the project area, would be protected from motorized equipment and vehicles. Line construction through lava cap communities would be avoided when feasible. If necessary, line construction would be completed with hand tools only.
4. Eldorado National Forest Priority 1 and 2 invasive plant infestations within the project area would be flagged for avoidance and treated using integrated pest management techniques as a part of the Pilliken project for up to 3 years after implementation. Treatments under the project will tier to the Eldorado National Forest Invasive Plant EA and may include a combination of techniques including tarping, manual removal, string trimming, and targeted herbicide application.
5. Off-road equipment vehicles would be cleaned to insure it is free of soil, seeds, vegetative matter or other debris before entering National Forest System lands to prevent the introduction

or spread of invasive plants. Prior to the start of operations, the Forest Service would do a visual inspection for such debris. Where possible, work in areas with invasive plant infestations last. If working in infestations or infested areas, equipment shall be cleaned before moving to other un-infested National Forest lands. These areas will be identified on project maps.

6. Where proposed road work occurs in known invasive plant infestations equipment would be cleaned prior to leaving infested areas.
7. All earth-moving equipment, gravel, fill or other materials would be weed free. Onsite sand, gravel, rock, or organic matter would be used where possible.
8. Straw or mulch used for erosion control would be certified weed-free. A certificate from the county of origin stating the material was inspected is required.
9. Any seed used for restoration or erosion control would be from a locally collected source (following the Eldorado National Forest Seed, Mulch and Fertilizer Prescription, 2000).

Soils

1. Ground based yarding would not occur on slopes exceeding 35 percent without a site specific environmental analysis by a soil scientist determining that damage is unlikely.
2. Skid trails would be placed within the unit in order not to exceed 15 percent of the total unit area. Skid trails would be adequately drained in order to prevent overland water flow. Skid trails should not be placed perpendicular to slopes greater than 20 percent on soils with severe/very severe erosion hazards, on these slopes skid trails should contour the hillside.
3. Reuse existing skid trails where practical in all units that currently have skid trails. Skid trail location would be approved prior to use. Do not reuse skid trails on steep slopes where soils are highly erosive.
4. Leave appropriate amounts of coarse woody debris (5 trees/acre).
5. Organic matter would be left on site so that at least 50 percent of the soil surface is covered with litter and fine woody material. On steeper slopes with high erosion hazards, organic matter would be left on site so that at least 70 percent of the soil surface is covered with litter and fine woody material to reduce soil erosion and increase soil productivity.
6. Avoid wet areas and slumps within units. Identify these areas and flag for avoidance during layout.

Additional Design Criteria will be added consistent with specialist reports and public input.

REFERENCES

Fettig, C.J. 2012. Forest Health and Bark Beetles. *In*: North, M. (ed.) Managing Sierra Nevada Forests. Gen. Tech. Rep. PSW-GTR-237. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 184 p.

North, M., P. Stine, K. O'Hara, W. Zielinski, S. Stephens. 2009. An ecosystem management strategy for sierra mixed-conifer forests. Gen. Tech. Rep. PSW-GTR-220. Albany, CA. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 49 p.

North, M., ed. 2012. Managing Sierra Nevada forests. Gen. Tech. Rep. PSW-GTR-237. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 184 p.

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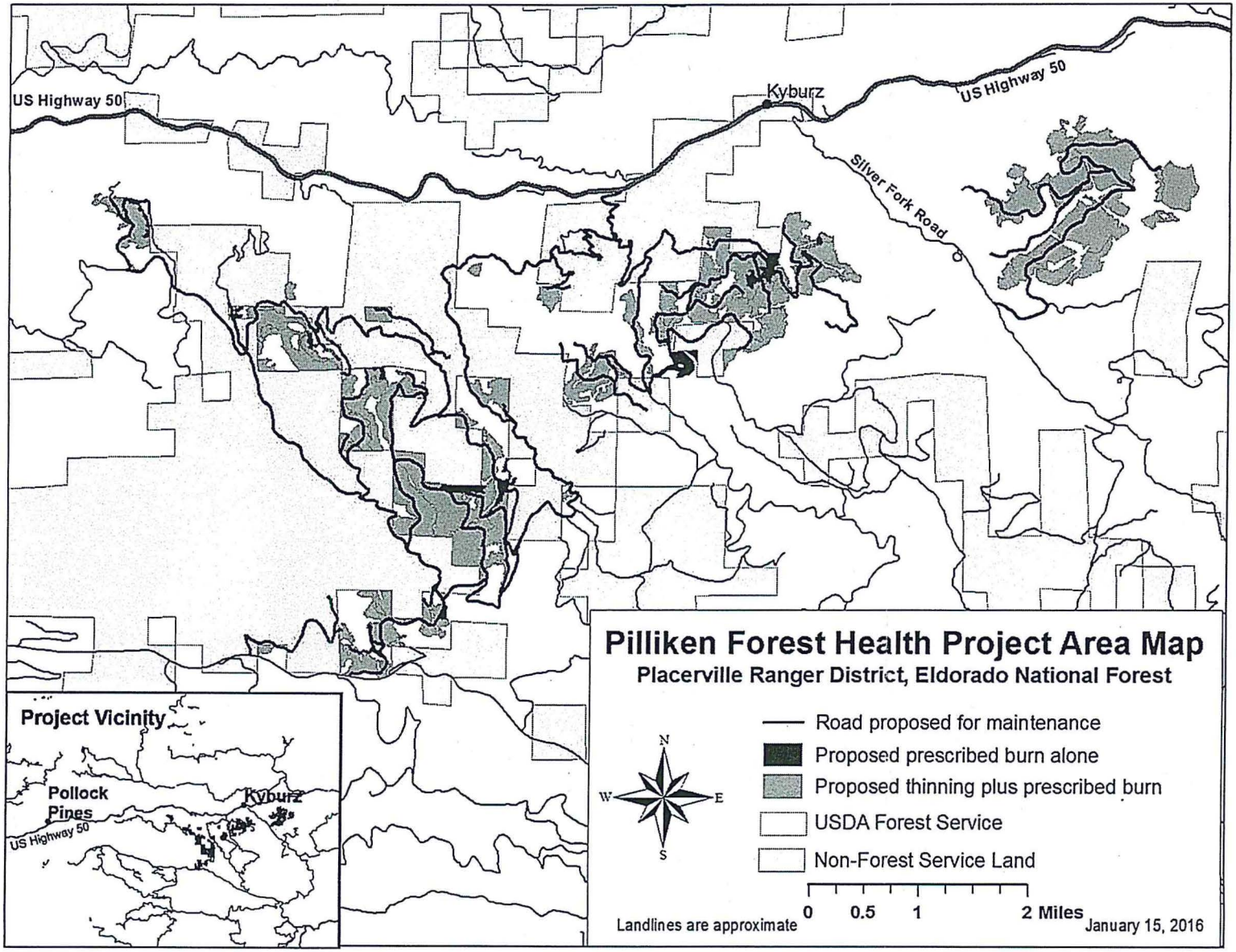
US Highway 50
Kyburz
US Highway 50
Silver Fork Road
Pilliken Forest Health Project Area Map
Placerville Ranger District, Eldorado National Forest
Road proposed for maintenance
Proposed prescribed burn alone
Proposed thinning plus prescribed burn
USDA Forest Service
Non-Forest Service Land
N
W
E
S
0 0.5 1 2 Miles
Landlines are approximate
January 15, 2016
Project Vicinity
Pollock Pines
Kyburz
US Highway 50