EXAMPLES OF RECENT THP WILDFIRE RISK AND HAZARD ASSESSMENTS

highway modifications, road construction, change in speed limits, increase and decrease of businesses along the haul route, timing of snow melt, local events, etc.... There is no known official study that studied whether there has been an increase in traffic due to a growth in rural populations along the traffic route. Logging and logging related traffic have been occurring since the middle 1800s and modern log truck traffic have utilized these routes since the 1930's. Thus, these haul routes have historically supported logging traffic and seasonal logging traffic is normal and well incorporated into the haul route system. This project does not present a potential increase in traffic over the baseline and does not add to the traffic load.

No known existing traffic or maintenance problems are identifiable as per Technical Rule Addendum No. 2. The hauling operations of this THP will not change the normal traffic loads along these routes.

It is concluded that the hauling operations will not significantly impact the traffic concern.

G. GREENHOUSE GAS (GHG) IMPACTS

See 4. CEQA - Green House Gas (GHG) Analysis after Item H.

H. WILFIRE RISK AND HAZARD

1. Fire hazard severity zoning:
   Very High

2. Existing and probable future fuel conditions including vertical and horizontal continuity of live and dead fuels:
   SPI owns approximately 43% of the WAA along with 55% of it being managed by the USFS. Other private landowners represent approximately 2%. The assessment area has a history of logging where over the past two decades even-aged management has been emphasized. This has created openings in the landscape as well as developing different age classes of timber throughout, reducing the horizontal and vertical fuel continuity on SPI ownership. Fuel loading on SPI lands can be considered low to moderate as a result of this continued management over the years. Fuel loading on the National Forest is estimated to be moderate to high depending on the location.

   Within the defined wildfire risk and hazard assessment area the THP proposes the use of primarily the Fuelbreak silvicultural prescription (289 acres, 40% of the THP acres). The intent of the proposed Fuelbreak treatment is to reduce the level of surface and ladder fuels, lower canopy bulk density, lower tree density, reduce the horizontal and vertical continuity of forest fuels, provide a high representation of larger diameter classes and reduce the threat of potential crown fires. These characteristics are consistent with the application of the proposed Fuelbreak treatment and will help regulate fire behavior and provide a defensible area for firefighting resources. The wildfire risk and hazard assessment area will experience a significant reduction in fuels and the vertical and horizontal continuity of live and dead fuels.

   The proposed THP Fuelbreak will implement a significant and strategic fuelbreak specifically designed to help protect adjacent communities and potential resources at risk in the region. Objectives of the Fuelbreak include but are not limited to the following:

• Provide a defensible space at the western boundary of Bear River Recreational Area within the Rattlesnake and Bear River drainages. At these locations shaded fuelbreak conditions have the potential to slow or impede the progress of a wildfire and provide an area where firefighting resources can effectively stage and backfire, go direct on the fire if feasible, and/or initiate aerial retardant drops that can penetrate to the ground surface.
• Provide continuity between roads critical for wildfire prevention making them more accessible and safer to operate in the event of catastrophic wildfire; Highway 88, Ellis Road, Bear River Road, 8N29, 8N28, 8N10 and roads tangent to fuelbreak ridges.
• Provide a fuel-break on the south side of Highway 88, extending the fuels reduction work from USFS project, where the potential for fire starts is high due to regular vehicle traffic, public access and wildland/public interface. In conjunction with the paved road, the additional fuel break area under some circumstances may provide a defensible location for firefighting resources in the event of a wildfire.
• Provide a choke point between West and East Henley Ridge, and an unnamed ridge east of West Henley Ridge and Bear River Road where firefighting resources can effectively stage and backfire, go direct on the fire if feasible, and/or initiate aerial retardant drops that can penetrate to the ground surface.

In addition to the significant amount of existing and proposed fuelbreaks on SPI managed lands in the region the USFS has conducted fuel reduction activities along the State Highway 88 corridor for an average distance of about 200 feet on each side of the highway for a distance of several miles within the past 5 years. Existing public roads and past, present and future management of SPI lands in the area will maintain road access for management and emergencies and will continue to facilitate and expedite access for fire suppression resources in the event of a wildfire. The proposed application and implementation of the Fuelbreak Prescription in the wildfire risk and hazard assessment area will contribute to a cumulative decrease in wildfire risk and hazard and decrease forest fuel loading in the vicinity of public recreation areas near the THP area.

Within the even-aged management silvicultures, the levels of tree stocking are controlled throughout the life of the stand, with those levels kept no higher than needed for optimal stand growth. Individual trees grow up together with adjacent trees, and as the stand develops, the bottom of the live crowns lift and natural limb pruning occurs. No new trees are added to the understory of the stand, and in fact tree densities decrease with applications of periodic thinning.

By contrast, under all-aged management with the frequent stand entries, there is essentially no control over stocking levels. Each entry in a stand results in new soil disturbance and the establishment of a new generation of trees (generally shade tolerant and persistent) in the understory. Over the span of several entries the resultant stand contains several (as many as five or six) generations of stocking, all combining to form horizontally uninterrupted and vertically continuous ladder fuels.

SPI's management results in even-aged harvest entries of once in ten years in any given planning watershed. Over time, across the landscape, this results in a mosaic of stands with varying levels of biomass and live crown height. For instance, a younger stand may contain a very low level of biomass close to ground level, while an adjacent older stand has a higher biomass density but has outgrown the issue of low crown heights. The important point is that in the context of landscape level analysis, this management results in a great deal of heterogeneity in terms of the level of fire hazard. Moreover, this landscape is increasingly receiving fuel reduction treatments (generally linear shaded fuel breaks) further adding to the discontinuity of higher fuel level stands.

This mosaic across the landscape of distinct areas 20 acres or less in size, wherein the spatial density of the biomass present is dramatically reduced, has aided firefighting efforts on several large fires in recent history as crews have successfully tied these areas together with fire line construction or aerial retardant drops. In addition, fire-line construction in a plantation is quicker and more efficient than an older or unevenly sized forest stand.

In contrast, all-aged silviculture, as it has widely and historically been practiced on many ownerships in the Sierra Nevada, generally was applied frequently and continuously. That is, harvest entry return intervals were typically 10 to 15 years or less, but harvest units were typically hundreds or thousands of acres of contiguous area. This persistent creation of a new and receptive seedbed over large areas with every entry, combined with the shade tolerant residual overstory, most often resulted in a prolific new generation of trees in the understory whose age and height would become bracketed by a similar regeneration pulse a decade older, and one to come a decade hence. Given that this phenomenon was the norm across widespread landscapes in the Sierra Nevada for most of the period of 1940 through 2000, with a concurrent exclusion of fire, it is reasonable to assume that the widespread practice of all-aged management has had a significant contribution in creating the overstocked forests with hazardous ladder fuel levels we are so concerned with today.
A better strategy is to continue even-aged treatments creating stands wherein stocking is kept at levels that promote rapid individual tree and stand growth that results in a quickly rising canopy height, an understory with low fuel loads, and a vigorous resistance to harmful insects and disease. Each generation of such stands can then combine with other differently aged stands to form the heterogeneity of fuel types across the landscape that make it more resilient to fire and afford suppression opportunities should that need arise.

Arguments that even-aged management should be avoided or somehow disallowed because distinct and relatively small stands scattered across the landscape may have a very temporal susceptibility to fire severity due to age or a treatment (such as pre-commercial thinning) simply do not stand up to reason. Indeed, Starrs.et. al. found that average annual fire probability was nearly always higher and more closely correlated to areas with federal ownership, federal fire protection, and reserve status ("reserved forest land" being defined as land permanently reserved from wood products utilization through statute or administrative designation). Starrs goes on to say that their results revealed a relatively minor effect of climate variables on fire probability compared to ownership, firefighting, and reserve status: with private ownership, state responsibility for fire protection, and unreserved (i.e., "managed") status having a lower average annual fire probability. The literature repeatedly asserts that altering the forest fuels through conversion, reduction and isolation is the only proactive option available that can help reduce the potential rate of spread and intensity of large wildfires.

3. <u>Location of known existing public and private fuelbreaks:</u>

The proposed THP proposes 289 acres of the Fuelbreak Silviculture as discussed in Sections II, III and IV. The USFS has completed the "View 88" project which included fuelbreak and fuels reduction work along the Highway 88 corridor transecting the assessment area. Please also see the CAL FIRE letter by Steve DeBenedet contained within Section V. The proposed plan contains areas that are within existing fuelbreaks; Highway 88 Fuelbreak, Ellis Road fuels treatment areas and the Power Fire area. Cooperative members of the Amador County Cooperative Fuelbreak System includes the U.S. Forest Service, California Department of Forestry and Fire Protection, and Sierra Pacific Industries.

4. Road access for fire suppression resources:
   The assessment area has a sufficient number of roads to provide access for fire suppression. Roads are public and private which are either seasonal, permanent, or are associated with county or state road system. Access to water resources for fire suppression are readily available by the numerous drainages that hold water throughout the year.
   The project boundary contains roads critical for wildfire prevention by making them more accessible and safer to operate in the event of catastrophic wildfire. These roads include; Highway 88, Ellis Road, Bear River Road, 8N29, 8N28, 8N10 and roads tangent to fuelbreak ridges.

Conclusion: The THP as proposed will reduce fuel loading on the landscape through the harvesting of timber, the treatment of slash piles (fuel), and the incorporation of strategically located fuelbreaks along major roads and property boundaries associated with the THP. Additionally, the road infrastructure will be improved through road maintenance & new construction. Water drafting locations will be improved and established, providing better onsite suppression resources for firefighting agencies. As a result of the implementation of the THP, no cumulative increase in wildfire risk and hazard is expected to occur.

Articles

Starrs, C., Bustic, V. Stephens, C. and William Stewart. 2018. *The Impact of Land Ownership Firefighting, and Reserve Status on Fire Probability in California*. Environ. Res. Lett. 034025.

harvest plan that reduce carbon emissions, any reasonably feasible alternatives, and other information currently in this proposed timber harvest plan, this THP, as proposed, will not cause a potential cumulative significant adverse impacts that might contribute to greenhouse gas emissions or climate change and will not cause a potential cumulative significant adverse impact on the environment.

☐ Yes **(after mitigation)**
☐ No **(after mitigation)**
☒ No **(no reasonably potential significant effects)**

INFORMATION SOURCES
List and briefly describe the individuals, organizations, and records consulted in the assessment of cumulative impacts for the greenhouse gas assessment.

(H) WILDFIRE RISK AND HAZARD ASSESSMENT

ASSESSMENT AREA
Description: The assessment area consists of the watershed assessment area (see map at end of Section IV).
Rationale for establishing the assessment area: The assessment area includes the watershed basins in which the proposed plan is located. Fire behavior and fire protection efforts are heavily influenced by topography. This assessment area captures where the interactions of potential impacts from this project can be evaluated with the past impacts and potential impacts from future projects with the assessment area.

WILDFIRE ASSESSMENT
Cumulative increase in wildfire risk and hazard can occur when the Effects of two or more activities from one or more Projects combine to produce a significant increase in forest fuel loading in the vicinity of residential dwellings and communities. The following elements may be considered in the assessment of potential Cumulative Impacts:

☒ Yes ☐ **No Are there dwellings and/or communities within the assessment area of your project?**
There are numerous rural dwellings and the small community of Callahan, CA within the assessment area.

1. Fire Hazard Severity Zoning

In accordance with the CalFire FHZ Map for Siskiyou County, the proposed project is in Very High fire hazard severity zoning and is in local fire protection responsibility area.

2. Existing and probable future fuel conditions including vertical and horizontal continuity of live and dead fuels.

Current MCTC stands conditions are typical of Klamath and southern Cascade mixed conifer, Douglas-fir and fir forest types intermixed with pure pine and Douglas-fir plantations. The native stands are composed multiple crown classes, size classes, and percent live crowns. In mixed conifer stands surface fuel loading can be around 12.7 tons per acre (Ganey & Vojta 2010) and 6.15 tons per acre in the canopy (Scott & Reihardt 2002). Douglas-fir stands and fir stands surface fuel loading is generally lower around 5 tons per acre. In both stands however there is variability and this loading can be more or less. MCTC generally uses even-aged silviculture to regenerate its lands. This initially removes all contiguous vertical fuels. Whole tree yarding minimizes slash retained in the unit. Slash near landings are piled and burned while slash near roads are lopped. Horizontal fuels are broken up by skid trails and yarding corridors. The new stand is most vulnerable from establishment to a few years past pre-commercial thin when the initial harvesting slash has not fully decomposed and more slash is created from the PCT. The PCT creates some heterogeneity in the stand structure creating gaps and clumps which can reduce fire behavior within the stand (Jain et al 2008). After this point fuel continuity decreases, crown closure reduces the understory while self and manual pruning reduces ladder fuels (Jain et al 2007). At a landscape scale, this silvicultural practice also can replicate smaller stand replacing fire disturbances common in California mixed conifer forests (Collins & Stephens 2010).

3. Location of Fuelbreaks and fuel hazard reduction activities

☒ Yes ☐ **No Are there any known existing public or private fuel hazard reduction activities within the assessment area? If yes, describe their locations or provide a map.**

Callahan Complex Fuels Treatment, USFS Klamath National Forest
T40N R8W Sections 20, 21, 28, and 29 of the Mount Diablo Meridian

4. Road access for fire suppression resources

Roads on Michigan-California Timber Company lands are maintained routinely and kept in driveable condition. Road maintenance occurs concurrently with timber operations. Having machinery available from timber operations if a fire does occur near the project area ensures that roads are open on not only MCTC lands but adjacent landowners.

IMPACTS EVALUATION

Will the proposed project, in combination with the impacts of past and future projects as identified in the "Wildfire Risk and Hazard" section above, have a reasonable potential to produce a significant increase in forest fuel loading in the vicinity of residential dwellings and communities?

☐ **Yes (after mitigation)**
☐ **No (after mitigation)**
☒ **No (no reasonably potential significant effects)**

INFORMATION SOURCES

List and briefly describe the individuals, organizations, and records consulted in the assessment of cumulative impacts for the wildfire risk and hazard assessment.

Technical Rule Addendum No.2 in 14 CCR 932.9.

Collins, B.M. and Stephens S.L. 2010. Stand-replacing patcges within a "mixed severity" fire regime: quantitative characterization using recent fires in a long-established natural fire area. Landscape Ecology. March 2010.

Ganey J.L. and Vojta S.C. 2010. Course Woody Debris Assay in Northern Arizona Mixed-Conifer and Ponderosa Pine Forests. Res, Pap. RMRS-RP-80WWW. Fort Collin, CO: U.S. Department of agriculture, Forest Service, Rocky Mountain Research Station. 19 p.

Jain, Theresa B.; Graham, Russell T. 2007. The relation between tree burn severity and forest structure in the Rocky Mountains. In: Powers, Robert, tech. ed. Restoring fire-adapted forested ecosystems: proceedings of the 2005 national silviculture workshop; 2005 June 6-10; Lake Tahoe, CA. Gen. Tech. Rep. PSW-GTR-203. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 213-250. online: www.treesearch.fs.fed.us/pubs/25904.

Jain, Theresa B.; Graham, Russell T.; Sandquist, Jonathan; Butler, Matthew; Brockus, Karen; Frigard, Daniel; Cobb, David; Han, Han-Sup; Halbrook, Jeff; Denner, Robert; Evans, Jeffrey S. 2008. Restoration of Northern Rocky Mountain moist forests: integrating fuel treatments from the site to the landscape. In: Deal, R. L., tech. ed. Integrated restoration of forested ecosystems to achieve multi-resource benefits: Proceedings of the 2007 national silviculture workshop; 2007 May 7-10; Ketchikan, AK. Gen. Tech. Rep PNW-GTR-733. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 147-172. online: www.treesearch.fs.fed.us/pubs/32782.

Scott J.H. and Reinhardt E.D. 2002. Estimating Canopy Fuels in Conifer Forests. Fire Management Today. Volume 62. No 4. Fall 2002. p45-50

United Nations Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter9.pdf

U.S. Department of Agriculture, Forest Service. 2007. Forest Inventory and Analysis 2007. http://www.fs.fed.us/pnw/fia/

U. S. Department of Energy. 2005. 1605(b) Tables. http://www.eia.doe.gov/oiaf/1605/index.html

U.S. Environmental Protection Agency (U.S.E.P.A.). 2005. Greenhouse Gas Mitigation Potential in U.S. Forestry and Agriculture. http://www.epa.gov/sequestration/pdf/greenhousegas2005.pdf

U.S. Fish & Wildlife Service and National Marine Fisheries Service (FEIS). 2006. Final Environmental Impact Statement for Authorization for Incidental Take and Implementation of a Multiple Species Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances: Green Diamond Resource Company, Del Norte and Humboldt Counties, California.

U.S. Senate, Environment and Public Works Committee. 2008. Minority Report: More Than 650 International Scientists Dissent Over Man-Made Global Warming Claims. https://www.epw.senate.gov/public/index.cfm/press-releases-all?ID=2674e64f-802a-23ad-490b-bd9faf4dcdb7

H. Wildfire Risk and Hazard

A cumulative increase in wildfire risk and hazard can occur when the effects of two or more activities from one or more projects combine to produce a significant increase in forest fuel loading in the vicinity of residential dwellings and communities.

Fire hazard is generally based on physical conditions or factors that create a likelihood that an area will burn such as fuel load, slope and fire weather. Wildfire risk generally considers the potential for damage based on factors such as possibility of ignition, the presence of high value resources and any mitigation measures that have been implemented to reduce risk of damage or loss. Mitigation measures can include reducing fuel loads, altering the arrangement of the fuel, creating defensible space, providing access for suppression, or reducing potential for ignition.

The following elements have been considered in the assessment of potential Cumulative Impacts of wildfire risk and hazard:

1. Fire hazard severity zone: The CalFire Fire and Resource Assessment Program (FRAP) has provided maps depicting fire hazard severity zones (FHSZ) of moderate, high or very high. The FRAP maps for each county can be found at the following link:

https://egis.fire.ca.gov/FHSZ/

The plan area is located within high fire hazard severity zone as designated by CalFire FRAP mapping. These fire hazard severity zone maps are based on a high level regional modeling effort that incorporated known data on fuels, terrain, weather and other relevant factors. The wildland area zones are based on polygons that are 200 acres and larger with similar vegetation type and topography. These zone maps are best suited for regional fire hazard assessments rather than project level hazard analysis. One of the objectives behind development of this modeling and mapping process is to support the implementation of Wildland-Urban Interface (WUI) building codes that have been adopted by the California Building Standards Commission. While FHSZs do not predict when or where a wildfire will occur, they do identify areas where wildfire hazards could be more severe and may be of greater concern.

The proposed project will reduce total fuel loading through the harvest of forest products and rearrange the continuity of the fuels, however the proposed project is unlikely to result in a change to the FHSZ designation within the assessment area. Given the discussion above, this proposed project is not expected to result in a significant adverse or cumulative impact relating to fire hazard severity zones as mapped by FRAP.

2. Existing and probable future fuel conditions including vertical and horizontal continuity of live and dead fuels: The project area is located within an ownership that has been managed for commercial timber production for many years. Timber stands within the assessment area generally range in age from 20-70 years old. There are a few younger regenerating stands within the assessment area as well as a few older stands that are associated with resource protection.

The vertical and horizontal continuity of live and dead fuels within the assessment area is discontinuous due to;

- Clearings for forest access roads,
- Changes in the vertical continuity created by recent intermediate silviculture treatments,
- Recently regenerated evenage harvest units,

- Stands of evenaged young merchantable timber, and
- WLPZ/RMZ corridors with older forests and other buffers retained in past harvest units.

The proposed harvest area is an even age stand of merchantable timber (50-65 years old) with a dense crown canopy, low to moderate cover of surface fuels (grasses, forbs, brush and down material) and low to moderate levels of ladder fuels (understory trees, lower branches of overstory trees, or other biomass located between the top of the surface fuels and below the overstory tree canopy). Other mature timber stands and WLPZ/RMZs in the assessment area generally have relatively dense canopies with light to moderate understories. Recently harvested areas have higher levels of dead surface fuels composed of logging slash and live fuels consisting of conifer regeneration and competing brush. Slash within recently harvested areas may be dispersed within the harvest areas or piled in the units or along roads.

The proposed harvest operations will reduce the overall fuel loading of standing fuels in the harvest area by the removal of commercial forest products. Fuel loading in the WLPZ/RMZs will not be significantly changed. Surface fuels in the form of logging slash will be increased following operations. Logging slash in ground based areas is generally crushed or scattered during shovel yarding operations but may also be gathered into piles if needed to successfully regenerate the site. Slash in cable yarding areas is generally left on site dispersed across the harvest area. Non-merchantable conifer tops and some hardwoods in the way of yarding the conifer may be yarded to a landing and piled. Additional non-merchantable material may be yarded and piled if needed to successfully regenerate the site. Piles will be burned if required for hazard reduction as per the FPRs and otherwise burned by the landowner to the extent feasible given regulatory and economic constraints. Conifer regeneration and growth of other vegetation following operations will also increase surface fuels. However the overall total fuel load will be reduced via the removal of commercial forest products from the harvest areas.

Given the general discontinuous nature or mosaic pattern of the fuels in the assessment area, and the overall reduction of fuels that will occur due to removal of commercial forest products, this proposed project is not expected to result in a significant adverse or cumulative impact relating to fuel conditions.

3. Location of known existing public and private fuel-breaks and fuel hazard reduction activities: All units are within a 0.5 mile from the closest RNP road or mainline logging road. All adjacent neighbors are large tracts of TPZ or the Redwood National Park. Existing private logging as well as RNP roads may serve as a "fuelbreak" as defined in 14 CCR 895.1 (a strip of modified fuel to provide a line from which to work in the control of fire). The narrow width of a typical logging road may limit their ability to stop the spread of a wildfire, but they do provide a cleared area that can be used for suppression activities. Fuelbreaks in the form of existing logging roads on Green Diamond's ownership are present in the assessment area as shown on the THP maps. The logging roads proposed for use as part of this project will continue to serve as a "fuelbreak" to the extent that they serve in that function in a preharvest condition.

Given the discussion above, this proposed project is not expected to result in a significant adverse or cumulative impact relating to fuelbreaks or fuel hazard reduction activities.

4. Road access for fire suppression resources: The project area is located within an ownership that has been managed for commercial timber production for many years and has an established network of access roads. The assessment area is accessed by these types of forest roads and paved county roads. The proposed project will maintain or improve the forest access roads to the logging area to facilitate the removal of forest products. These same roads will provide access for fire suppression resources. Given the discussion above and the well maintained forest access road network, this proposed project is not expected to result in a significant adverse or cumulative impact relating to road access for fire suppression.

5. Presence of residential dwellings and communities: There are no residential dwellings or communities located within the fire hazard and risk assessment area. In the event that residential dwellings and communities do exists within the Wildfire Risk and Hazard assessment areas across this ownership, the THP would reduce risk to these resources by including site specific measures to treat logging slash to reduce fire hazard and risk as required under 14 CCR 917.2. This proposed project is not expected to significantly increase the fire hazard and risk to residential dwellings or communities.

Proposed management actions to reduce impacts to wildfire hazard and risk:

- Reduce total fuel loading through the harvest of forest products,
- Maintain access for fire suppression activities,
- Eliminate the canopy fuels within the evenage harvest area

In conclusion, the proposed project is not expected to significantly change the fire hazard rating within the assessment area because fire hazard ratings are based in a large part on topography, slope conditions, fire weather and vegetation types. While fuel loads will be reduced by removal of commercial forest products from the harvest areas, they will not be entirely eliminated from the assessment area. The proposed project will significantly reduce canopy fuel load from the harvest area and this reduction in canopy fuels has the potential to reduce the potential for extreme fire behavior in the event that a wildfire occurs. The proposed project will increase the surface fuel load in the form of logging slash and in the form of vegetation regrowth following harvest operations. The proposed harvest operations will perpetuate a mosaic of discontinuous fuel loads and types across the landscape. Having a mosaic pattern of discontinuous fuels across the landscape can reduce the potential for extreme fire behavior (Omi and Martinson, 2002; USDA 2003). The proposed project will maintain or improve access to the harvest units and thus provide access for fire suppression operations if needed. Reducing the potential for extreme fire behavior and maintaining access for suppression operations reduces the risk of loss to high value resources. Given these considerations, the applications of the FPRs and site specific protection measures as needed, the proposed project is not expected to result in a significant adverse or cumulative impact to wildfire hazard and risk.

Omi, Philip N., and Martinson, Erik J. 2002. Effect of Fuels Treatment on Wildfire Severity, Western Forest Fire Research Center, Colorado State University.

USDA, 2003. Influence of Forest Structure on Wildfire Behavior and the Severity of its Effects - An Overview, USDA Forest Service, November 2003.

Given the above rational, it is the RPF's opinion that this THP or future THPs will not combine to cause significant impacts to vehicular traffic.

CUMULATIVE IMPACTS ASSESSMENT SUMMARY – In summary, having performed the Cumulative Impacts Assessment, it is the RPF's opinion that the proposed project as presented and mitigated, in combination with past, present, and reasonably foreseeable probable future projects will not cause, or add to significant cumulative impacts within the assessment area.

Bluenose Ridge THP – GHG Summary Estimate

Emissions Source/Sink/Reservoir	**Total Tonnes CO2 Sequestered/Emitted**
Live Trees	19,445
Wood Products	71,639
Site Prep Emissions	0
Non-Bio Harvest Emissions	-1,482
Non-Bio Milling Emissions	-893
Total Sequestration	75,548
Years to Recoup	24 years

8. Fire Prevention and Protection

Fires Severity Zoning

The plan area is within a Very High Fire Severity Zone according to the Mendocino County Fire Hazard Severity Zone Map.

Existing and probable future fuel conditions including vertical and horizontal continuity of live and dead fuels.

The plan area fire fuel conditions are typical of Mendocino county timberlands of the Douglas-fir, pine and oak woodland types with a high amount of fuels as a result of past land uses associated with grazing, timber harvest and lack of burning. Early settlers grazed vast areas with sheep and cattle when native perennial bunch grasses were dominant understory with true oaks and only patches of old growth overstory timberland were present and resilient to fire. Overgrazing of the perennial grasses resulted in non-native annual grasses and brush intrusion on poorer soils and lack of fire provided ideal sites for conifer encroachment in better soils. As a result, there is much more timber dominated areas that were once grass/oak woodlands culturally developed by Native Americans. Since then, silviculture treatments have been used to manage timber stands to produce a commercial harvest every 25-35 years and as such they have a variety of age classes and stand densities intermixed with hardwoods and brush. These are the dominant stands throughout much of the ownership.

The existing and probable future fuel conditions associated with vertical and horizontal continuity of live and dead fuels will continue to fluctuate via the commercial harvest regime discussed above. Stands will tend to be less flammable immediately following a typical selective type harvest where the stand is opened to provide new growing space. As the slash created by the timber harvest dries it will slightly increase the fuel continuity component but as it decomposes it will become less of a fire threat. The understory component will increase as a new stand develops and small openings that may develop are consumed by pioneer species before the next stand develops.

To produce a more fire-resistant stand is economically impractical without a cohesive, state-wide program for biomass allowing for commercially feasible fuel treatments or at least supplanted with subsidies for precommercial thinning or shaded fuel breaks. It is cost prohibitive for large landowners in the Covelo area to conduct specific fuel treatments on their properties on a large scale for fire protection due to the lack of available outlets for the products that would be created. The current and trending sawlog market is not viable enough to allow any additional monies to be invested in fuel treatments due to the high cost and zero return to treat areas for fuel reduction. Therefore, it is fire prevention that is the most cost-effective way to treat timberland on a large scale rather than fuel reduction.

Location of know existing public and private fuel breaks and fuel hazard reduction activities.
The plan area is near a small community of Hulls Valley Road. No other fuel reduction activities have been known to occur on immediately adjacent ownerships.

Road access for fire suppression resources.
The plan is well accessed with existing roads and during operations all roads will remain open in case of fire suppression activities. Water sources are delineated on the Appurtenant Roads and Roads and Features Map and are accessible to all types of firefighting equipment. The timber harvest area has cell service in the higher elevations of the plan for immediate reporting and directing of fire suppression equipment. The landowner has filed a Fire Management Plan with the local battalion chiefs and provided keys to gates on the main roads. The plan parallels the Hulls Valley County road along its west side and has multiple access points to existing roads. All slash and debris 8 inches in diameter created by timber operations will be treated by lopping or removing within 100 feet of the county road.

Timber Operations rely on the Forest Practice rules to regulate fire prevention during timber harvest. Fire Prevention Rules are posted at the entrance to logging operations during fire season when burning permits are required, these rules list the requirements for smoking, warming fires, maintenance of power saws and equipment, resources required and warning of additional safeguards when fire danger is high. The timber operator is required to have a Fire Box on all active landings containing one backpack pump-type fire extinguisher filled with water, two axes, two McLeaod fire tools, and sufficient number of shovels so that each employee at the operation can be equipped to fight fire. He is also required to have a serviceable chainsaw and all vehicles shall have a shovel and an axe.

A. Watershed Resources

Brown, L.R., P.B. Moyle, and R.M. Yoshiyama. 1994. Historical Decline and Current Status of Coho Salmon in California. North American Journal of Fisheries Management. 14(2):237-261.

Calfire GIS Data 2020

California Regional Water Quality Control Board (CRWQCB), Technical Support Document for the Total Maximum Daily Load for Sediment and Temperature for the Eel River Watershed

California Salmonid Stream Habitat Restoration Manual; State of California Resources Agency Department of Fish and Game; Second Edition; October 1994.

Past THPs on record with the California Department of Forestry and Fire Protection. Howard Forest and Santa Rosa Calfire Office.

Porter-Cologne Water Quality Control Act; State Water Resources Control Board, June 1992.

State Water Resources Control Board Resolution No. 98-055. "APPROVAL OF THE 1998 CALIFORNIA SECTION 303(D) LIST AND TOTAL MAXIMUM DAILY LOAD PRIORITY

SCHEDULE"

Water Quality Control Plan for the North Coast Region; North Coast Regional Water Quality Control Board; September 21, 1989.

Weaver, W.E., and D.K. Hagans. 2015. Handbook for Forest and Ranch Roads - A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads. Prepared for the Mendocino County Resource Conservation District, Ukiah, California. 420 pp.

B. Soil Productivity:

Keppeler, Elizabeth & Reid, Leslie & Lisle, Tom. (2009). Long-term Patterns of Hydrologic Response after Logging in a Coastal Redwood Forest.

Past THPs on record with the California Department of Forestry and Fire Protection. Howard Forest/ Santa Rosa Calfire Office.

Soil Survey, Mendocino County EAST, USDA Soil Conservation Service

C. Biological Resources:

California Department of Fish and Game; Natural Diversity Data Base; RareFind Version 3.1.1

California Department of Fish and Game; Wildlife Habitat Relationships; Version 8

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Project Carbon Accounting: Inventory, Growth, and Harvest: Seed Tree Seed Step

This worksheet addresses the sequestation and emissions associated with the project area's balance of harvest, inventory, and growth plus any emissions associated with site preparation. Complete the input for Steps 0- 8 on this worksheet.

Forest Type

Forest Type	Multipliers to Estimate Carbon Tonnes per MBF (Sampson, 2002)		
	Step 0. Identify the approximate percentage of conifers by volume within the harvest plan. Must sum to 100%	Multiplier from Cubic Feet (merchantable) to Total Biomass	Pounds Carbon per Cubic Foot
Douglas-fir	90%	1.675	14.38
Ponderosa Pine	10%	1.675	13.42
Hardwoods		2.214	11.76
Conversion of Board Feet to Cubic Feet	0.165	Pounds per Metric Tonne	2,204
Multipliers to Estimate Total Carbon Tonnes per MBF	Conifer	1.79	
	Hardwoods	1.95	
Multipliers to Estimate Merchantable Carbon Tonnes per MBF	Conifer	1.07	
	Hardwoods	0.88	

Harvest Periods / Inventory / Growth Rates / Harvest Volume

User must enter harvest cycles to 100 years and/or at least three entry cycles.

Harvest Periods	Inventory		Growth Rates		Harvest Volume	
Time of Harvest (years from project approval)	Conifer Live Tree Volume (MBF/Acre) - Prior to Harvest	Hardwood Live Tree Volume (BA square feet/Acre) - Prior to Harvest	Conifer Growth Rate BF/Acre/Year	Hardwood Growth Rate BA/Acre/Year	Conifer Harvest Volume (MBF/acre)	Hardwood Harvested / Treated Basal Area (BA/Acre)
Step 1. Enter the anticipated future harvest entries. The re-entry cycles should be supported by management plan, if available.	Step 2. Enter the estimated conifer inventory (mbf/acre) present in project area prior to harvest.	Step 3. Enter the estimated hardwood inventory (basal area per acre) present in project area prior to harvest.	Step 4. Enter the average annual periodic growth of conifers between harvests based on estimated growth in management plan, if available. Must be entered for each harvest cycle identified in Step 1.	Step 5. Insert average annual periodic growth of hardwoods between harvests based on estimated growth in management plan, if available.	Step 6. Enter the estimated conifer harvested per acre at current and future entries. The estimate should be based on projections from the management plan, if available.	Step 7. Enter estimated hardwood basal area harvested/treated per acre
0	18	10	300	0.5	10	2
20	14	18	350	0.5	6	2
40	15	26	300	0.5	8	1
60	13	35	350	0.5	10	1
80	10	44	300	0.5	6	1
100	10	53	350	0.5	8	1
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Inventory Conversion to Carbon / Site Preparation

Harvest Periods	Inventory Conversion to Carbon (prior to harvest)		0		Site Preparation	
	Conifer Live Tree Tonnes (C/acre)	Hardwood Live Trees Tonnes (C/acre)	Conifer Live Tree Tonnes (CO_2 equivalent/acre)	Hardwood Live Tree Tonnes (CO_2 equivalent/acre)	Step 8. Enter the value (in bold) for each harvest cycel that best reflects the site preparation activities, as averaged across the project area:	
from above (Time of Harvest as years from project approval)	Computed: MBF * Conifer Multiplier from Step 0.	Computed: BA*Volume/Basal Area Ration (to convert to MBF) * Hardwood Multiplier from Step 0.	Computed: Conversion of carbon to CO_2 (3.67 tonnes CO2 per 1 tonne Carbon)	Computed: Conversion of carbon to CO_2 (3.67 tonnes CO2 per 1 tonne Carbon)	**Heavy**- 50% or more of the project area is covered with brush and removed as part of site preparation or stumps are removed (mobile emissions estimated at .429 metric tonnes CO2e per acre, biological emissions estimated at 2 metric tonnes CO2e per acre) **Medium** - >25% <50% of the project area is covered with brush and removed as part of site preparation (mobile emissions estimated at .202 metric tonnes CO2e per acre, biological emissions estimated at 1 metric tonne per acre). **Light** - 25% or less of the project area is covered with brush and is removed as part of site preparation (mobile emissions estimated at .09 metric tonnes CO2e per acre, biological emissions estimated at .5 metric tonnes per acre). **None** - No site preparation is conducted.	
0	32	1	118	5	None	0
20	25	3	92	10	None	0
40	27	4	99	14	None	0
60	23	5	85	19	None	0
80	18	6	66	24	None	0
100	18	8	66	28	none	0
0	0	0	0	0	None	0
0	0	0	0	0	None	0
0	0	0	0	0	None	0
	Difference between ending stocks and beginning stocks		-53	23.07	Sum of emissions (Metric Tonnes CO2e) per acre	0

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Project Carbon Accounting: Harvesting Emissions (Seed Tree Seed Step)

This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 9- 14 on this worksheet.

Harvest Periods	Falling Operations	Production per Day	Emissions Associated with Yarders and Loaders			Emissions Associated with Tractors and Skidders			Emissions Associated with Helicopters			Landing Saws	Trucking Emissions		
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	Assumption: ((.25 gallons gasoline per MBF harvested * 5.33 (pounds carbon per gallon))/2205(conversion to metric tonnes)* mbf per acre harvested	MBF (all species) Yarded Delivered to Landing	Assumption:(((35 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((55 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((200 gallons jet fuel per day per piece of equipment * 5 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((.16 gallons gasoline per MBF * 5.33 (pounds carbon per gallon))/2205(conversion to metric tonnes)* 3.67 to convert to metric tonnes CO2 equivalent)/mbf per acre harvested. Applies to all species whether harvested or not.	Assumption: Round Trip Hours/Load average (from below, to compute the mbf/hour) /((6 gallons diesel/hour * 6.12 pounds carbon/gallon)/2205 (conversion to metric tonnes carbon))*3.67 (conversion to metric tonnes carbon dioxide equivalent)		
	Computed. Metric Tonnes CO2 equivalent per mbf harvestec Applies to all species whether harvested or treated	Step 9. Enter the estimated volume delivered to the landing in a day.	Step 10. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Yarders and Loaders CO2 equivalent/mbf (metric tonnes)	Computed. Yarders and Loaders CO2 equivalent per Acre Harvested (metric tonnes)	Step 11. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Tractor and skidder CO2 equivalent/mbf (metric tonnes)	Computed. Tractors and Skidders CO2 equivalent per Acre Harvested (metric tonnes)	Step 12. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Helicopter CO2 equivalent/mbf (metric tonnes)	Computed. Helicopters CO2 equivalent per Acre Harvested (metric tonnes)	Computed. Landing Saws CO2 equivalent per Acre Harvested (metric tonnes)	Steps 13 and 14 below		Computed. Estimated Metric Tonnes CO2e per harvested acre for each harvesting period.
0	(0.02)	30	1	-0.01	-0.11	2	-0.04	-0.34	0	0.00	0.00	-0.01	Step 13. Enter Estimated Load Average: MBF/Truck	4.2	-0.214110787
20	(0.01)	15	1	0.00	0.00	2	-0.07	-0.40	0	0.00	0.00	-0.01			-0.128466472
40	(0.02)	20	1	-0.02	-0.13	2	-0.06	-0.40	0	0.00	0.00	-0.01			-0.17128863
60	(0.02)	30	1	-0.01	-0.11	2	-0.04	-0.34	0	0.00	0.00	-0.01	Step 14. Enter Estimated Round Trip Haul In Hours	6	-0.214110787
80	(0.01)	15	1	-0.02	-0.13	2	-0.07	-0.40	0	0.00	0.00	-0.01			-0.128466472
100	(0.03)	20	1	-0.02	-0.13	2	-0.06	-0.40	0	0.00	0.00	-0.01			-0.17128863
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
Sum Emissions	-0.12				-0.60			-2.29			0.00	-0.07			-1.03

Project Carbon Accounting: Harvested Wood Products and Processing Emissions (Seed Tree Seed Step)

This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 15- 16 on this worksheet.

Harvest Periods	Quantity of Forest Carbon Delivered to Mills				Non-Biological Emissions Associated with Mills	Quantity of Forest Carbon Remaining Immediately After Milling (Mill Efficiency)		Long-Term Sequestration in Wood Products	
	Conifer Percentage Delivered to Mills	Hardwood Percentage Delivered to Mills	Conifer CO2e Delivered to Mills / Acre	Hardwood CO2 equivalent Delivered to Mills / Acre	**Assumption.** 20 kw/hour (mill energy use) /(40mbf lumber processed/hour) *(.05 metric tonnes/kw hour) * mbf processed	**Computed.** Remaining CO2 equivalent after Milling Efficiency for Conifers	**Computed.** Remaining CO2 equivalent after Milling Efficiency for Hardwoods	**Computed.** CO2 Equivalent Tonnes in Conifer Wood Products in Use- 100 Year Weighted Average / Acre and Landfill	**Computed.** CO2 Equivalent Tonnes in Hardwood Wood Products in Use- 100 Year Weighted Average / Acre
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	**Step 15.** Insert the percentage of conifer trees harvested that are subsequently delivered to sawmills	**Step 16.** Insert the percentage of hardwoods harvested or treated that are subsequently delivered to sawmills	**Computed:** The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	**Computed:** The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	**Calculated.** **The CO2e associated with processing the logs at the mill**	The difference between carbon delivered to mills and carbon remaining after milling is assumed to be emitted immediately. The efficiency rating from mills in California is 0.67 (DOE 1605b) for conifers	The efficiency rating from mills in California is .5 (DOE 1605b) for hardwoods	**Estimate.** The weighted average carbon remaining in use at year 100 is 46.3% **Estimate.** The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.	**Estimate.** The weighted average carbon remaining in use at year 100 is 23.0% **Estimate.** The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.
0	90%	0%	35.32	0.00	-0.23	23.66	0.00	18.01	0.00
20	90%	0%	21.19	0.00	-0.14	14.20	0.00	10.81	0.00
40	90%	0%	28.26	0.00	-0.18	18.93	0.00	14.41	0.00
60	90%	0%	35.32	0.00	-0.23	23.66	0.00	18.01	0.00
80	90%	0%	21.19	0.00	-0.14	14.20	0.00	10.81	0.00
100	90%	0%	28.26	0.00	-0.18	18.93	0.00	14.41	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sum of emissions associate with processing of lumber			-1.08	Sum of CO2 equivalent in wood products		86.44	0.00

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Summary (Seed Tree Seed Step)

Emissions Source/Sink/Reservoir	Beginning Stocks	Ending Stocks
	Metric Tonnes CO2 Equivalent Per Acre Basis	
Live Trees (Conifers and Hardwoods)	123.69	94.17
Wood Products		86.44
Site Preparation Emissions		0.00
Non-biological emissions associated with harvesting		-4.10
Non-biological emissions associated with milling		-1.08
Sum of Net Emissions/Sequestration over Identified Harvest Cycles (CO2 metric tonnes)		51.74

Project Summary

Project Acres	Step 17- Insert the acres that are part of the harvest area.	195
Total Project Sequestration over defined Harvesting Periods (CO2 metric tonnes)		10,090

Years until Carbon Stocks are Recouped from Initial Harvest (Includes Carbon in Live Trees, Harvested Wood Products, and Landfill)
35 Years

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Project Carbon Accounting: Inventory, Growth, and Harvest Transition Units (Commercial Thin)

This worksheet addresses the sequestation and emissions associated with the project area's balance of harvest, inventory, and growth plus any emissions associated with site preparation. Complete the input for Steps 0- 8 on this worksheet.

Forest Type

Multipliers to Estimate Carbon Tonnes per MBF (Sampson, 2002)			
Forest Type	**Step 0.** Identify the approximate percentage of conifers by volume within the harvest plan. Must sum to 100%	Multiplier from Cubic Feet (merchantable) to Total Biomass	Pounds Carbon per Cubic Foot
Douglas-fir	90%	1.675	14.38
Ponderosa Pine	10%	1.675	13.42
	0%	2.254	12.14
	0%	2.254	11.18
Hardwoods		2.214	11.76
Conversion of Board Feet to Cubic Feet	0.165	Pounds per Metric Tonne	2,204
Multipliers to Estimate Total Carbon Tonnes per MBF	Conifer	1.79	
	Hardwoods	1.95	
Multipliers to Estimate Merchantable Carbon Tonnes per MBF	Conifer	1.07	
	Hardwoods	0.88	

Harvest Periods / Inventory / Growth Rates / Harvest Volume

	Harvest Periods	Inventory		Growth Rates		Harvest Volume	
	Time of Harvest (years from project approval)	Conifer Live Tree Volume (MBF/Acre) - Prior to Harvest	Hardwood Live Tree Volume (BA square feet/Acre) - Prior to Harvest	Conifer Growth Rate BF/Acre/Year	Hardwood Growth Rate BA/Acre/Year	Conifer Harvest Volume (MBF/acre)	Hardwood Harvested / Treated Basal Area (BA/Acre)
	Step 1. Enter the anticipated future harvest entries. The re-entry cycles should be supported by management plan, if available.	**Step 2.** Enter the estimated conifer inventory (mbf/acre) present in project area prior to harvest.	**Step 3.** Enter the estimated hardwood inventory (basal area per acre) present in project area prior to harvest.	**Step 4.** Enter the average annual periodic growth of conifers between harvests based on estimated growth in management plan, if available. Must be entered for each harvest cycle identified in Step 1.	**Step 5.** Insert average annual periodic growth of hardwoods between harvests based on estimated growth in management plan, if available.	**Step 6.** Enter the estimated conifer harvested per acre at current and future entries. The estimate should be based on projections from the management plan, if available.	**Step 7.** Enter estimated hardwood basal area harvested/treated per acre
User must enter harvest cycles to 100 years and/or at least three entry cycles.	0	12	8	300	0.5	6	0
	20	12	18	350	0.5	3	0
	40	16	28	300	0.5	6	0
	60	16	38	350	0.5	8	0
	80	15	48	300	0.5	10	0
	100	11	58	350	0.5	12	0
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0

Inventory Conversion to Carbon / Site Preparation

Harvest Periods	Inventory Conversion to Carbon (prior to harvest)		0		Site Preparation	
	Conifer Live Tree Tonnes (C/acre)	Hardwood Live Trees Tonnes (C/acre)	Conifer Live Tree Tonnes (CO_2 equivalent/acre)	Hardwood Live Tree Tonnes (CO_2 equivalent/acre)	**Step 8.** Enter the value (in bold) for each harvest cycel that best reflects the site preparation activities, as averaged across the project area:	
from above (Time of Harvest as years from project approval)	**Computed:** MBF * Conifer Multiplier from Step 0.	**Computed:** BA*Volume/Basal Area Ration (to convert to MBF) * Hardwood Multiplier from Step 0.	**Computed:** Conversion of carbon to CO_2 (3.67 tonnes CO2 per 1 tonne Carbon)	**Computed:** Conversion of carbon to CO_2 (3.67 tonnes CO2 per 1 tonne Carbon)	**Heavy**- 50% or more of the project area is covered with brush and removed as part of site preparation or stumps are removed (mobile emissions estimated at .429 metric tonnes CO2e per acre, biological emissions estimated at 2 metric tonnes CO2e per acre) **Medium** - >25% <50% of the project area is covered with brush and removed as part of site preparation (mobile emissions estimated at .202 metric tonnes CO2e per acre, biological emissions estimated at 1 metric tonne per acre). **Light** - 25% or less of the project area is covered with brush and is removed as part of site preparation (mobile emissions estimated at .09 metric tonnes CO2e per acre, biological emissions estimated at .5 metric tonnes per acre). **None** - No site preparation is conducted.	
0	21	1	79	4	None	0
20	21	3	79	10	None	0
40	29	4	105	15	None	0
60	29	6	105	20	None	0
80	27	7	99	26	None	0
100	20	8	72	31	none	0
0	0	0	0	0	None	0
0	0	0	0	0	None	0
0	0	0	0	0	None	0
	Difference between ending stocks and beginning stocks		-7	26.83	Sum of emissions (Metric Tonnes CO2e) per acre	0

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Project Carbon Accounting: Harvesting Emissions (Commercial Thin)

This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 9- 14 on this worksheet.

Harvest Periods	Falling Operations	Production per Day	Emissions Associated with Yarders and Loaders			Emissions Associated with Tractors and Skidders			Emissions Associated with Helicopters			Landing Saws	Trucking Emissions		
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	**Assumption:** ((.25 gallons gasoline per MBF harvested * 5.33 (pounds carbon per gallon))/2205(conversion to metric tonnes)* mbf per acre harvested	MBF (all species) Yarded Delivered to Landing	**Assumption:**(((35 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			**Assumption:** (((55 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			**Assumption:** (((200 gallons jet fuel per day per piece of equipment * 5 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)* 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			**Assumption:** (((.16 gallons gasoline per MBF * 5.33 (pounds carbon per gallon))/2205(conversion to metric tonnes)* 3.67 to convert to metric tonnes CO2 equivalent)/mbf per acre harvested. Applies to all species whether harvested or not.	**Assumption:** Round Trip Hours/Load average (from below, to compute the mbf/hour) /((6 gallons diesel/hour * 6.12 pounds carbon/gallon)/2205 (conversion to metric tonnes carbon))*3.67 (conversion to metric tonnes carbon dioxide equivalent)		
	Computed. Metric Tonnes CO2 equivalent per mbf harvested Applies to all species whether harvested or treated	**Step 9.** Enter the estimated volume delivered to the landing in a day.	**Step 10.** Enter number of pieces of equipment in use per day for each harvest entry	**Computed.** Yarders and Loaders CO2 equivalent/mbf (metric tonnes)	**Computed.** Yarders and Loaders CO2 equivalent per Acre Harvested (metric tonnes)	**Step 11.** Enter number of pieces of equipment in use per day for each harvest entry	**Computed.** Tractor and skidder CO2 equivalent/mbf (metric tonnes)	**Computed.** Tractors and Skidders CO2 equivalent per Acre Harvested (metric tonnes)	**Step 12.** Enter number of pieces of equipment in use per day for each harvest entry	**Computed.** Helicopter CO2 equivalent/mbf (metric tonnes)	**Computed.** Helicopters CO2 equivalent per Acre Harvested (metric tonnes)	**Computed.** Landing Saws CO2 equivalent per Acre Harvested (metric tonnes)	Steps 13 and 14 below		**Computed.** Estimated Metric Tonnes CO2e per harvested acre for each harvesting period.
0	(0.01)	15	1	-0.02	-0.13	2	-0.07	-0.40	0	0.00	0.00	-0.01	**Step 13.** Enter Estimated Load Average: MBF/Truck	4.2	-0.128466472
20	(0.01)	20	1	0.00	0.00	2	-0.06	-0.15	0	0.00	0.00	0.00			-0.064233236
40	(0.01)	30	1	-0.01	-0.06	2	-0.04	-0.20	0	0.00	0.00	-0.01	**Step 14.** Enter Estimated Round Trip Haul in Hours	6	-0.128466472
60	(0.02)	15	1	-0.02	-0.17	2	-0.07	-0.54	0	0.00	0.00	-0.01			-0.17128863
80	(0.02)	20	1	-0.02	-0.16	2	-0.06	-0.50	0	0.00	0.00	-0.01			-0.214110787
100	(0.03)	30	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	-0.02			-0.256932945
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			0
Sum Emissions	-0.10				-0.52			-1.80			0.00	-0.06			-0.96

Project Carbon Accounting: Harvested Wood Products and Processing Emissions (Commercial Thin)

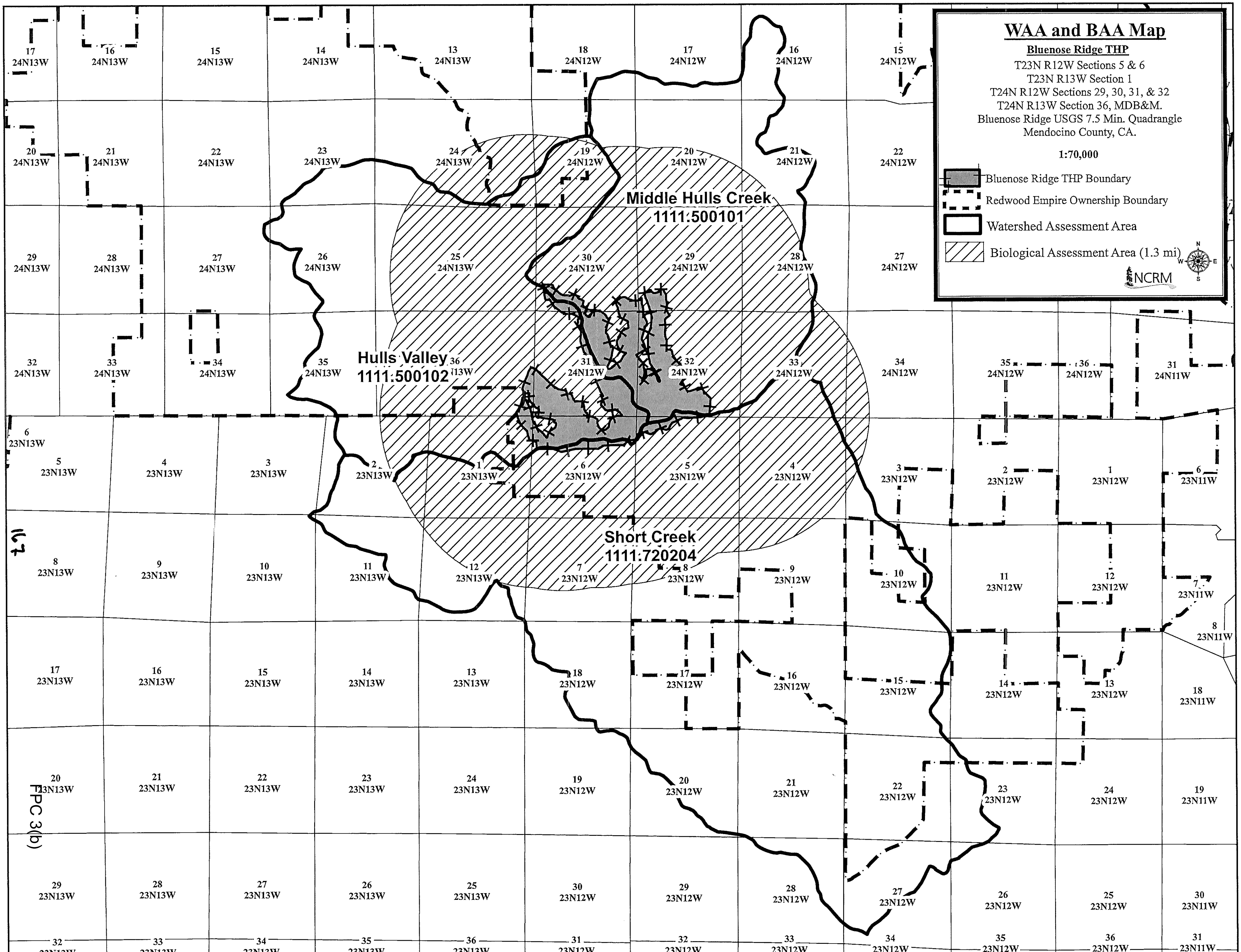
This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 15- 16 on this worksheet.

Harvest Periods	Quantity of Forest Carbon Delivered to Mills				Non-Biological Emissions Associated with Mills	Quantity of Forest Carbon Remaining Immediately After Milling (Mill Efficiency)		Long-Term Sequestration in Wood Products	
	Conifer Percentage Delivered to Mills	Hardwood Percentage Delivered to Mills	Conifer CO2e Delivered to Mills / Acre	Hardwood CO2 equivalent Delivered to Mills / Acre	**Assumption.** 20 kw/hour (mill energy use) /(40mbf lumber processed/hour) *(.05 metric tonnes/kw hour) * mbf processed	**Computed.** Remaining CO2 equivalent after Milling Efficiency for Conifers	**Computed.** Remaining CO2 equivalent after Milling Efficiency for Hardwoods	**Computed.** CO2 Equivalent Tonnes in Conifer Wood Products in Use-100 Year Weighted Average / Acre and Landfill	**Computed.** CO2 Equivalent Tonnes in Hardwood Wood Products in Use-100 Year Weighted Average / Acre
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	**Step 15.** Insert the percentage of conifer trees harvested that are subsequently delivered to sawmills	**Step 16.** Insert the percentage of hardwoods harvested or treated that are subsequently delivered to sawmills	**Computed:** The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	**Computed:** The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	**Calculated.** **The CO2e associated with processing the logs at the mill**	The difference between carbon delivered to mills and carbon remaining after milling is assumed to be emitted immediately. The efficiency rating from mills in California is 0.67 (DOE 1605b) for conifers	The efficiency rating from mills in California is .5 (DOE 1605b) for hardwoods	**Estimate.** The weighted average carbon remaining in use at year 100 is 46.3%. **Estimate.** The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.	**Estimate.** The weighted average carbon remaining in use at year 100 is 23.0%. **Estimate.** The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.
0	90%	0%	21.19	0.00	-0.14	14.20	0.00	10.81	0.00
20	90%	0%	10.60	0.00	-0.07	7.10	0.00	5.40	0.00
40	90%	0%	21.19	0.00	-0.14	14.20	0.00	10.81	0.00
60	90%	0%	28.26	0.00	-0.18	18.93	0.00	14.41	0.00
80	90%	0%	35.32	0.00	-0.23	23.66	0.00	18.01	0.00
100	90%	0%	42.38	0.00	-0.27	28.40	0.00	21.61	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sum of emissions associate with processing of lumber			-1.01	Sum of CO2 equivalent in wood products		81.04	0.00

Summary (Commercial Thin)		
	Beginning Stocks	Ending Stocks
Emissions Source/Sink/Reservoir	Metric Tonnes CO_2 Equivalent Per Acre Basis	
Live Trees (Conifers and Hardwoods)	83.18	103.43
Wood Products		81.04
Site Preparation Emissions		0.00
Non-biological emissions associated with harvesting		-3.45
Non-biological emissions associated with milling		-1.01
Sum of Net Emissions/Sequestration over Identified Harvest Cycles (CO_2 metric tonnes)		96.83
Project Summary		
Project Acres	Step 17- Insert the acres that are part of the harvest area.	674.5
Total Project Sequestration over defined Harvesting Periods (CO_2 metric tonnes)		65,312

Years until Carbon Stocks are Recouped from Initial Harvest (Includes Carbon in Live Trees, Harvested Wood Products, and Landfill)
13 Years

Revised FRC 8(4)b-20


WAA and BAA Map
Bluenose Ridge THP
T23N R12W Sections 5 & 6
T23N R13W Section 1
T24N R12W Sections 29, 30, 31, & 32
T24N R13W Section 36, MDB&M.
Bluenose Ridge USGS 7.5 Min. Quadrangle
Mendocino County, CA.
1:70,000
Bluenose Ridge THP Boundary
Redwood Empire Ownership Boundary
Watershed Assessment Area
Biological Assessment Area (1.3 mi)
NCRM
Middle Hulls Creek
1111:500101
Hulls Valley
1111:500102
Short Creek
1111:720204

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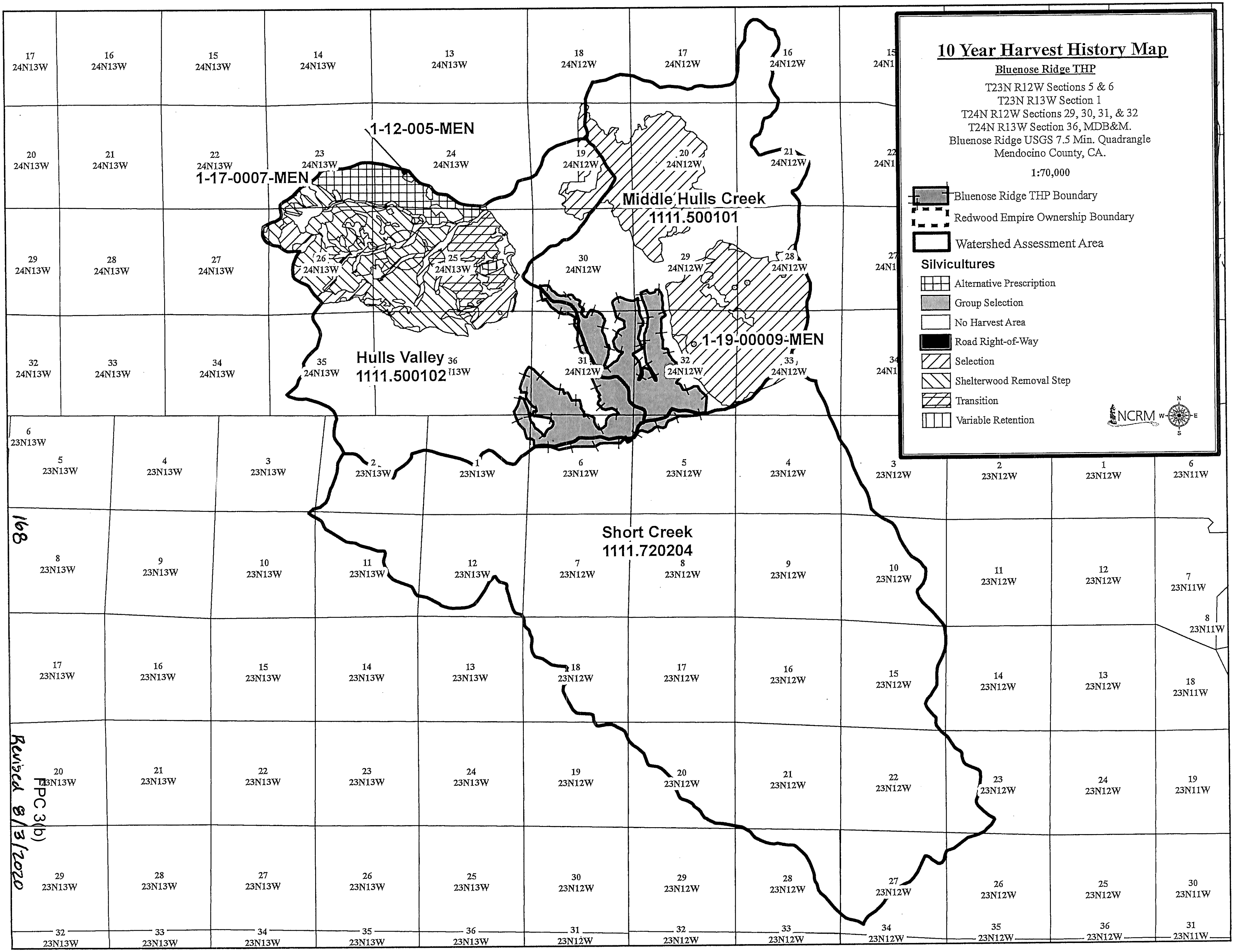
10 Year Harvest History Map
Bluenose Ridge THP
T23N R12W Sections 5 & 6
T23N R13W Section 1
T24N R12W Sections 29, 30, 31, & 32
T24N R13W Section 36, MDB&M.
Bluenose Ridge USGS 7.5 Min. Quadrangle
Mendocino County, CA.
1:70,000
Bluenose Ridge THP Boundary
Redwood Empire Ownership Boundary
Watershed Assessment Area
Silvicultures
Alternative Prescription
Group Selection
No Harvest Area
Road Right-of-Way
Selection
Shelterwood Removal Step
Transition
Variable Retention
NCRM
N
S
E
W
1-12-005-MEN
1-17-0007-MEN
1-19-00009-MEN
Middle Hulls Creek
1111.500101
Hulls Valley
1111.500102
Short Creek
1111.720204
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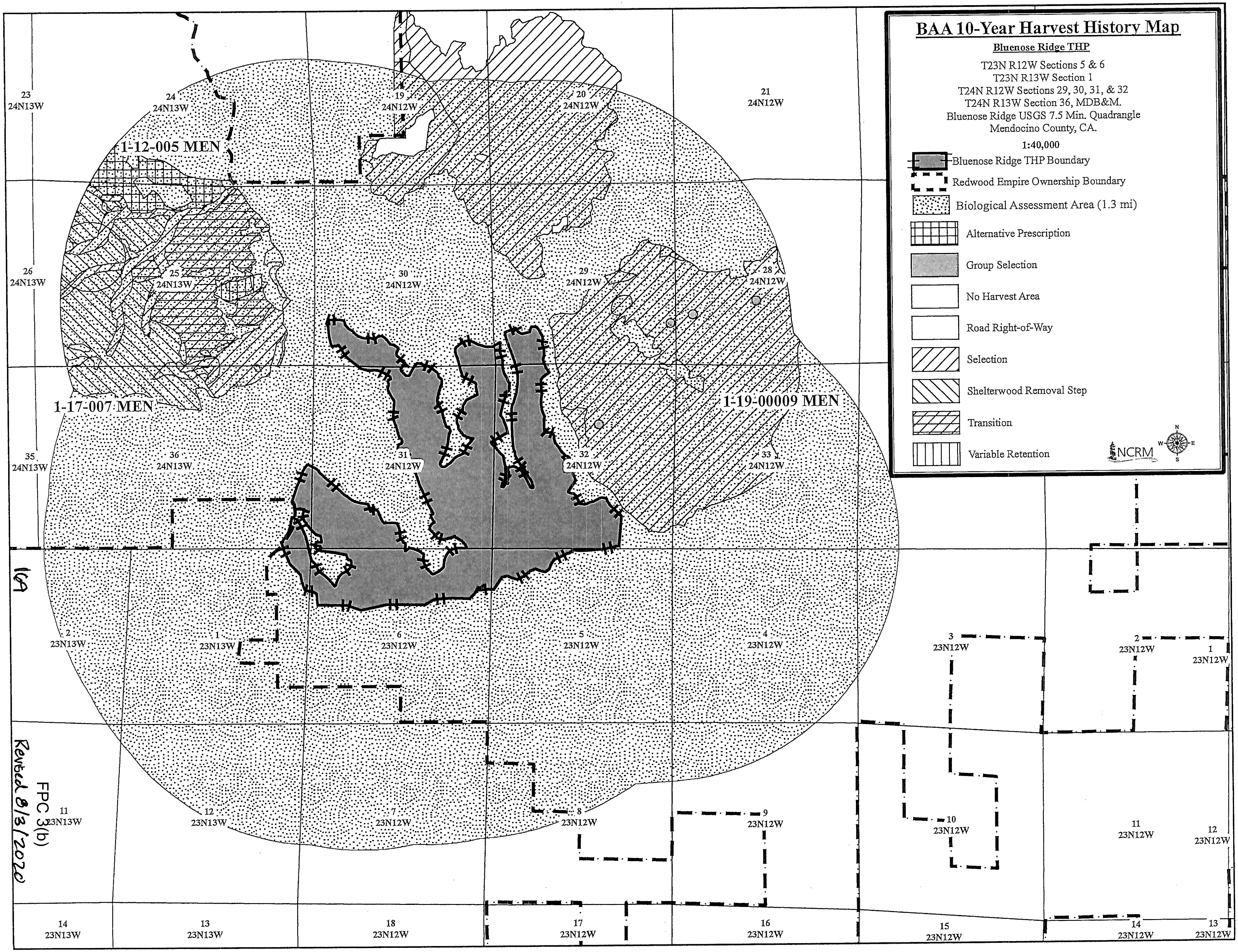

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FPC 3(b)

Revised 8/3/2020

agreement no. 18-CO-11052021-214, 17-CO-11261979-086, California Department of Forestry and Fire Protection agreement no. 8CA04056 and 8CA03714 and the University of Montana. Sacramento, CA: California Department of Forestry and Fire Protection and California Board of Forestry and Fire Protection. 552 p.

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Wildfire Risk & Hazard

Assessment Area: The assessment area is the same as the Watershed Assessment Area (WAA).

1. Assessment Area Fire Hazard Severity Zoning: **Very High.** It should be noted that numerous wildfires have occurred within the WAA over the past few decades.
2. Existing and probable future fuel conditions including vertical and horizontal continuity of live and dead fuels: SPI owns approximately 48.7% of the assessment area along with 29.7% of it being managed by the USFS. Other private landowners represent approximately 21.6% of the ownership. The area (specifically on SPI ownership) has a history of logging where over the past two decades even-aged management has been emphasized; this has created opening in the landscape as well as developing different age classes of timber throughout, reducing the horizontal and vertical fuel continuity on SPI ownership. Fuel loading on SPI lands can be considered moderate as a result of

this continued management over the years. Fuel loading on USFS managed land is estimated to be moderate to high depending on the location.

3. Location of known existing public and private Fuelbreaks and fuel hazard reduction activities: Currently a numerous fuel breaks are in the planning stages are proposed within WAA. Their location and implementation will be determined with the cooperative efforts of Cal Fire, USFS, BLM, the Weaverville Fire District, Weaverville Fire Safe Council & SPI.
4. Road access for fire suppression resources: The assessment area has a sufficient number of roads (private and public) to provide access for fire suppression. General access is obtained off Highway 3. Access to water resources for fire suppression limited to existing waterholes (a majority are located on SPI property) and available sources on Dutch Creek, Carr Creek, and Alder Gulch along and numerous other drainages that hold water through the year.
5. Other: There are a limited number of homes scattered throughout the Assessment Area.

Conclusion: The THP as proposed will reduce fuel loading on the landscape through the harvesting of timber, and the burning of slash piles. Additionally, the road infrastructure will be improved through road maintenance. Water drafting locations will be improved or established, providing better onsite suppression resources for firefighting agencies. As a result of the implementation of the THP, no cumulative increase in wildfire risk and hazard is expected to occur.

CUMMULATIVE IMPACTS ANALYSIS CONCLUSION

There are cumulative watershed effects currently leading to the existing 303(d) listing, due in part to past historic mining and (1950's and 60's) timber harvesting harvest practices. However, the proposed project prepared in accordance with the California Environmental quality Act (CEQA) and implemented under the CAL FIRE's Forest Practice Rules (FPRs), the requirement of the North Coast Regional Water Control Board's General Discharge Requirements (GDWR), the Department of Fish and Game's 1600 Streambed Alteration Agreement, if applicable, and participation of the California Geologic Survey, during the interdisciplinary review process, shall ensure that the project as approved by the California Department of Forestry shall not individually or cumulatively result in a significant cumulative impacts to the environment.

Additional References Cited:

Note: Many of these references have been provided to CalFire in a set of Binders called the shelf binders and are located at each of the CalFire THP review offices and are incorporated in this THP by reference.

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The Pacific Crest National Scenic Trail traverses through the McArthur-Burney Falls State Park with a 264-foot segment crossing the southeast corner of Shasta Forests Timberlands. The 0.26-acre area south of the trail will not be harvested. Therefore, no equipment will cross or impact the trail.

No cumulative effect on recreational resources is expected to occur as a result of this plan.

E. VISUAL RESOURCES

The assessment area for visual resources is that portion of the plan area that is visible to significant numbers of people within three miles. The guidelines offered by the California State Board of Forestry and Fire Protection, Technical Rule Addendum No. 2, were used as the rationale for the establishment of the assessment area.

No visual value Special Treatment Areas described by the Board of Forestry are on or contiguous to the plan area.

The proposed timber operations will be visible to a small number of people. Viewing is done on foot, in vehicles, and from stationary points. No significant negative visual impacts are anticipated, since the plan will be harvested using group selection. This plan may have a positive future visual impact in the area; if a catastrophic wildfire occurs in the area, the severity (and thus visual impacts) within the plan area will be reduced due to the thinning of trees under this plan. Additionally, the proposed timber operations will be visible from the Pacific Crest Trail. Aesthetics will not be affected by unevenaged silviculture which will promote growth of healthy and vigorous trees.

No cumulative effect on visual resources is expected to occur as a result of this plan.

F. VEHICULAR TRAFFIC IMPACTS

The assessment area for traffic impacts is the first public roads over which logging traffic must travel. The guidelines offered by the California State Board of Forestry and Fire Protection, Technical Rule Addendum No. 2, were used as the rationale for the establishment of the assessment area.

Logging truck traffic will access the Clark Creek road where a few residents live. The increased traffic from log trucks will have a minimal effect to the residents relative to other continuous commercial operations. The Clark Creek Road is a paved county road that connects the Summit Lake Road to Highway 89. All timber operations on Shasta Forests in the SW Side Lake Britton Planning Watershed will use either the north or south end of this road depending on destination. All vehicles exceeding the weight limit over the Lake Britton Dam will be required to use the north end only. This road receives moderate use by recreationalists, other industrial timberland owners, the USFS, and by Dicalite employees and operations. Heavy truck traffic uses a posted Citizens Band radio channel to announce their location on this windy road.

No cumulative effect on vehicular traffic impacts is expected to occur as a result of this plan.

G. GREENHOUSE GAS EVALUATION

The assessment area for greenhouse gas evaluation is the THP area. The guidelines offered by the California State Board of Forestry and Fire Protection, Technical Rule Addendum No. 2, were used as the rationale for the establishment of the assessment area.

Operations planned under this THP are consistent with the Shasta Forests Timberlands Option A (see Table 10 in the attached Option A Addendum). The results of this analysis on the THP area indicate carbon stocks will decline as a result of operations under this plan by 1,667 metric tons of carbon dioxide. However, growth throughout the Shasta Forests Timberlands ownership will offset this loss and in turn have a net positive impact on greenhouse gases ownership wide during the first 10-year period of the Option A.

No cumulative effect on greenhouse gas emissions is expected to occur as a result of this plan.

H. WILDFIRE RISK & HAZARD

The assessment area for Wildfire Risk & Hazard is the plan area and all access roads. The guidelines offered by the California State Board of Forestry and Fire Protection, Technical Rule Addendum No. 2, were used as the rationale for the establishment of the assessment area.

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1. FIRE HAZARD SEVERITY ZONING.
The THP falls under the Very High Fire Hazard Severity Zone based on the FRAP map created by Cal Fire and is considered State Responsibility Area (SRA).

2. EXISTING AND PROBABLE FUTURE FUEL CONDITIONS INCLUDING VERTICAL AND HORIZONTAL CONTINUITY OF LIVE AND DEAD FUELS.
Previous biomass operations have reduced fuel continuity in portions of the stands within the THP boundary. Fuels shall also be decreased within the plan area following harvesting operations with a reduction in basal area and trees per acre (TPA). Timber harvesting will focus on the removal of merchantable weakened and diseased trees as well as tree spacing. Slash created, and trees knocked down by timber operations within 50 feet of the edge of the traveled surface of seasonal private roads shall be treated by lopping, chipping, or removal from the zone so that no slash remains more than 30 inches above the ground. Landing slash and tops shall be removed via piling and burning and/or chipping.

3. LOCATION OF KNOWN EXISTING PUBLIC AND PRIVATE FUELBREAKS AND FUEL HAZARD REDUCTION ACTIVITIES.
A 150-foot fuel break on each side of Highway 89 is proposed under Rojo THP, 2-19-00017-SHA(4).

4. ROAD ACCESS FOR FIRE SUPPRESSION RESOURCES.
The THP area can be accessed from the Clark Creek Road at Highway 89. Water drafting locations are located near the plan area on Rock Creek to aid in fire suppression.

No cumulative increase in wildfire risk and hazard is expected to occur within the THP assessment area.

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Based on the above referenced study, the site specific location of the project, and the proposed silviculture, the project as proposed will not have a reasonable potential significant effect on the amount of fog drip in the project area.

Will the proposed project as presented in combination with the impacts of past and future projects have a reasonable potential to cause or add to significant cumulative impacts related to the benefits of fog drip in the redwood forest?

Yes (after mitigation)	[ ]
No (after mitigation)	[ ]
No (no reasonably potential significant effects)	**[X]**

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J. Wildfire Risk and Hazard Assessment

A. Fire Hazard Impacts Assessment Area

The fire hazard impacts assessment area includes the extent of the THP area. This is the area where the landowner has the prospect of manipulating the vertical and horizontal distribution of vegetation.

B. Activity Levels

The proposed management under this THP will alter the distribution of fuels within the harvest area. Single-tree selection silviculture, as described in Section II under Item 14, has the potential to reduce the vertical and horizontal continuity of fuels, thereby reducing the ladder fuels and the potential for "crowning". Residual logging slash from operations has the potential to increase surface fuels immediately following operations; however, the hazard posed by slash decreases rapidly as the material drops needles and small branches and starts to decompose. The proposed hazard reduction measures described in Section II under Item 30 are specifically designed to accelerate the decomposition of said surface fuels. Logging slash shall be treated no later than April 1st of the year following creation. The LTO is responsible for lopping and distributing logging slash throughout the project area so that no part of it generally remains more than 30 inches above the ground. Roads within the property will be maintained and upgraded where necessary to continue to provide and improve long-term general and fire access on the property.

C. Other Projects

Other projects within the assessment area that have the potential to impact fire hazard include mowing, brush removal, and maintenance of roads and access routes.
Fire history work done in the Santa Cruz Mountains within the distribution of coast redwood trees suggests that fires were very frequent prior to the displacement of Native Americans in the mid-1800s. (Stephens and Fry, 2005) The ethnographic literature supports the notion that Native Americans were responsible for the majority of the fires in the coastal forests (Lewis 1973, Boyd 1999). Many studies revealed that fire occurred at least once per decade, and sometimes several times per decade. Most of these fires are thought to have been "surface fires", meaning they burned fuels on the ground surface and did not ignite the tree canopies. The forest structure is thought to have been far more open than the current forest structure. These pre-European forests had a larger component of old growth, with very tall trees and towering tree canopies. There were far fewer trees per acre and the individual tree boles were spaced much further apart. There was less vertical and horizontal continuity of fuels than in

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modern unmanaged stands. These conditions made it more conducive for redwood and Douglas-fir trees to survive the surface fires.

The second growth forests on the property today have vastly different stand conditions. These stands originated from the extensive clearcutting around the turn of the century. Practices of the day typically involved burning the area after falling to facilitate easier log yarding. The second growth forest regenerated after the logging and burning exhibits a dramatic structural change from the old growth redwood that had been present beforehand. Multiple trees species in the southern redwood region regenerate by coppice sprout including redwood, tanoak and madrone. After a disturbance such as the expansive clearcutting in the San Lorenzo River watershed, multiple times more stems per stump regenerated after the harvest. With the increase in the sheer number of stems present, the horizontal and vertical continuity is increased and surface fuels accumulate more rapidly. Without surface fires or hands-on management, in-growth of young trees, often tolerant of the shade and competition, increase continuity of the canopy (horizontally and vertically), leading to hazardous fuel conditions that are difficult to remedy without intensive vegetation treatments.

Natural fires are also suppressed in modern times, so spreading fires occur much less frequently. Evidence of the last wildfire to burn through the THP area is visible on the outer bark of large redwood trees in the project area. The scarcity of low-intensity fires on the landscape causes surface fuels to accumulate and prolific regeneration does not get thinned out Introducing prescribed fire to the property is not a likely possibility due to the risk and liability involved. Re-introduction of fire would also not be a sound management decision unless pre-fire fuel treatments were implemented first and significant resources were expended constructing fire lines, monitoring conditions, and enlisting capable crews.

There is no hope of acceptably mitigating fire hazard by doing nothing and letting nature take its course. The more time that elapses in these dense forests, during the era of fire suppression, the more fuel accumulates and the worse the fire hazard becomes. The actions proposed in this THP are intended to keep the forest healthy and therefore more resistant to devastating wildfires. Harvest operations will entail thinning the overstory trees to decrease continuity of the tree crowns, which decreases the potential for crown fire to spread from tree to tree. THP operations will also decrease the continuity of ladder fuels by knocking down hardwoods, brush and limbs of trees left standing during operations. The height of these fuels as well as limbs and tops of the harvested trees will be lopped to reduce the height of flammable material.

Lopping the slash and distributing it on bared soil surfaces reduces the potential for erosion subsequent to the harvest operation. Lopping brings slash close to or in contact with the ground so that it decomposes rapidly and does not become a fire hazard. Slash provides valuable nutrient cycling for the soil and having it cut up in pieces and packed close to the ground keeps it moist and hastens decomposition. The harvest helps mitigate the fire hazard by altering the vegetation arrangement through economical means. Periodic harvesting removes hazardous brush from the mid-canopy and condenses it in a moisture-retaining layer on the forest floor.

Marking prescriptions proposed in this THP focus on increasing vigorous growth in the forest, while considering the balance of wildlife goals, which seek to maintain structurally complex and often defective trees. The harvest aims to retain the best residual crop trees and maintain or improve biological diversity. Most snags on the property will be saved. Snags pose a risk to fire hazard, however they are a desired component of a healthy ecosystem. This plan proposes an operation which balances a variety of objectives from different disciplines to responsibly manage the forest. Short term increases in fire hazard may result immediately after operations as the slash dries, however the short-term increase in hazard will subside as the material decomposes and the health and vigor of the forest will be improved as the stand continues to develop a more complex structure. Within the context of the mosaic of vegetation and access, the management of this property is a positive factor for potential future fire concerns.

The project is located in a "High" Fire Hazard Severity Zone. The RPF is not aware of any existing public and private fuelbreaks and fuel hazard reduction activities near the project area. The "Operations" Map and "Appurtenant Roads" Map at the end of section II of the THP show the location of the rocked and dirt surfaced roads used to access the project area. The harvest operation will continue to maintain and improve road infrastructure to minimize fire risk.

D. Impacts Evaluation

Will the proposed project have a reasonable potential to cause or add to significant cumulative impacts to Fire Risk and Hazard?

Yes (after mitigation)	[ ]
No (after mitigation)	**[X]**
No (no reasonable potential significant effects)	[ ]

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COAST AREA
RESOURCE MANAGEMENT

Determination of Potential for Cumulative Impact

A. Introduction:

The following is a concise summary of the subjects discussed within the context of this assessment. The questions and answers are definitive and intended only to summarize the findings of each specific section of analysis. The answers indicated for each question below account for all mitigations, proposed or required by the Forest Practice Rules.

1. Will the project adversely affect a threatened or endangered species of animal or plant or the habitat of the species?

No. See THP Section II, Item 32 and Biological Assessment within THP Section IV.

2. Will the project interfere significantly with the movement of any resident or migratory fish or wildlife?

No. This THP is in compliance with 14 CCR 916.9.

3. Will the project significantly diminish habitat for fish, wildlife, or plants?

No. See THP Section II, Item 32 and Biological Assessment within THP Section IV.

4. Will the project significantly degrade water quality including temperature, chemical composition, pH, and color?

No. This project is in full compliance with the California Forest Practice Act and the California Forest Practice Rules of which the intent is to protect the beneficial uses of water.

5. Will the project contaminate a domestic water supply?

No. Any surface intake that is used for domestic purposes will be treated as Class I habitat as per 14 CCR 916.9. No uptakes were identified during plan preparation and following the downstream inquiry.