Gulch 16
Summary of the Proposed Timber Harvest Plan

Project Description
Gulch 16 is primarily a single tree selection, with two small demonstration variable retention units, and a non-harvest unit forming the 243 acre harvest area. Along the “Three Chop Ridge” and roads 310 and 330, a shaded fuel break is planned, expanding the area by 42 additional acres, bringing the total to 285 acres.

Location & Topography
The plan is roughly 12 miles East of the city of Fort Bragg, California. The plan is mostly in Gulch 16, a tributary to Chamberlain Creek, Big River. The ridgetop areas lie along “Three Chop Ridge”, and some of these areas lie within the South Fork Noyo watershed. Forest roads 310 and 330 run near the Southern, Western and Northern boundaries, while the Eastern boundaries are formed by terrain. Slopes range from 0% to 95%. Gulch 16 is a bowl draining to the East, with elevations ranging from 660ft down on the Gulch 16 watercourse, to 1440ft at the highest point.

Harvest History and Stand Condition
The stand is of second growth coast redwood, Douglas-fir and tanoak. The stand was effectively clearcut in the 1923-1926 period, most likely in 1924-25. The harvest sequence would have been: underbrush burned off, the trees felled, the slash burned, the trees yarded via steam donkey skyline to the ridgetop railroad, and possibly a post-harvest burn. This appears to have been just prior to when Caspar Lumber Co transitioned to partial cutting. The mixed second growth with a layer of smaller Douglas-fir in areas lead the author to suspect that when the lower portion of the gulch was partially cut in 1943, they may have still used burning and had an ‘escape’ which partially reburned the THP area. The result is an older stand with minimal regeneration, and clumpy redwood distribution with a substantial hardwood component.

The majority of the THP area was burned in the 2008 ‘Indian Springs’ fire. In most of the THP area, this was a light understory burn that removed brush, and allowed for copious tan oak regeneration. In a fraction of the THP area, the majority of the trees were killed by the fire.

While the THP area was prepped for harvest in 2003 and 2011, in each case this area was excluded from the final THP so was not harvested. At one point in management plan review this area had been proposed as a no harvest research area but it lacked pre-fire data that researchers need.

Silviculture
Single Tree Selection - Stands A & B
In much of the harvest area, redwoods are very clumpy, frequently with large areas between clumps. Douglas-fir and tan oak dominate these areas between clumps. There is an opportunity to recruit additional conifers and begin to develop a multi age stand.

The Selection unit has been broadly split into two stands of Site II-III. “Stand A” comprises the Northern half, and has primarily a southern aspect and tanoak dominates between clumps. The North Eastern edge has a diminishment in site quality to Site IV and higher hardwood component. “Stand B” comprises the Southern half, and has a predominantly Northern aspect, with a high Douglas-fir component. In both areas, the 2008 ‘Indian Springs’ fire burned variably but mainly in the understory.

Figure 1: 1923 Matsen Skyline, Caspar Lumber Co. Likely in gulch North of ‘Indian Springs’. From Fritz-Metcalf library, UC Berkeley
To manage stands A and B for long-term selection (multi-age) there is an urgent need for regeneration, and a strong desire to improve redwood distribution beyond the clumps. To achieve this, the current stand will be heavily selected to induce sprouting and provide sufficient light and soil moisture to sustain regeneration. On the cable ground tanoaks (not chinquapin or madrone) between 4-20” shall be cut and “high stumped” (cut at waist to chest height) so that tanoaks can be found post-harvest for immediate post cutting herbicide treatment. In the low site area tanoaks will not be harvested and instead the standing tanoak under 20 inches will be treated by frill. Redwood planting will be done to take advantage of increased light, increased soil moisture and reduced competition to achieve the goal of better stocking distribution. Douglas-fir will be recruited by natural regeneration. On the ridge top tractor ground, felled tanoak will be yarded. Herbicide treatments are not proposed at this time, but mechanical treatment of the brush may occur.

In the Overall, the selection areas will be reduced to about 120 BA( ft²/ac). The initial BA ranged from 186 in D to 251 in B. This will comply with the Option A for the range of site classes present. Inventory data suggests these initial volumes.

<table>
<thead>
<tr>
<th>DBH CLASS</th>
<th>RW VOL</th>
<th>DF VOL</th>
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</thead>
<tbody>
<tr>
<td>10-17&quot;</td>
<td>320,264</td>
<td>154,915</td>
</tr>
<tr>
<td>18-28&quot;</td>
<td>972,081</td>
<td>714,696</td>
</tr>
<tr>
<td>29&quot;+</td>
<td>1,579,234</td>
<td>1,402,770</td>
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<tr>
<td>SUBTOTALS</td>
<td>2,871,579</td>
<td>2,272,381</td>
</tr>
<tr>
<td>Total</td>
<td>5,143,960</td>
<td>56%</td>
</tr>
</tbody>
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Variable Retention – Stands C & D
Two Variable Retention units of 10 acres each are included. Given the age of the stand, the low levels of regeneration, and the desire to conduct tanoak management and replant, there was a strong case for the VR silviculture being applied to the entire THP area. After discussion and consideration of other factors, it was felt that the goals could be reasonably met with the above described mixture of a selection harvest, tanoak felling, herbicide treatment and planting. This created an opportunity to compare and contrast the effectiveness of the VR approach to the Selection approach as a Demonstration in this THP.

Both VR units are areas of patchier conifer stocking and outside identified slides. For purposes of the demonstration “Stand C” has a southern exposure like “Stand A”, and “Stand D” is more similar to “Stand B”, but with areas of burn damage. “Stand D” has steep streamside slopes, and so the Class II WLPZ has been expanded by 50 feet for additional filtration.

Like the selection areas, tanoaks (not chinquapin or madrone) between 4-20” shall be cut and “high stumped” with the same reforestation treatments described above.

Non-Harvest -Unit E
The Non-harvest area was included. This area is dissimilar to the majority of the THP area, as higher fire intensity resulted in stand mortality from the 2008 Indian Springs fire. Post fire revegetation is predominantly tanoak, chinquapin, ceanothus, and manzanita. There is limited conifer regeneration. There are few options to reestablish conifers 14 years after fire on this steep slope. Tentative plans are to contour across the upper slopes cutting 10-foot wide strips at 50 -foot intervals. Planting and vegetation management would occur within these strips. Without management of the smaller tan oaks, the newly planted conifer will face severe competition. Treating only the upper slopes eventually provide seed trees for the lower slope and will break up the continuity of the fuel. If cable corridors traverse this area, then the swaths may utilize some corridors. It will allow a comparison of delayed management of this unit with the non-management in the Control and demonstrate an option for re-establishing tree cover 14-years post fire.

“Control” – Outside THP
An area Southeast of the THP has been excluded. This area was part of the “Indian Springs” fire and experienced a stand-replacement fire. As a result it is a mixture of oakbrush and small conifer regeneration, much like the Non-harvest area. The expectation is that the future condition of the ‘Control’ area and the Non-harvest area can be compared to evaluated the effectiveness of delayed (2008 to 2022) active management.

“Shaded Fuel Break” – Inside & outside harvest area
A shaded fuel break is proposed for the lower gradient areas of ‘Three Chop Ridge’ near roads 310 and 330. Understory vegetation shall be removed to remove fuel ladders. This area extends out of the harvest area and will overlap some old THPs. This area is strategically identified as part of the desired shaded fuel break network within the JDSF Fire Plan. Tractor roads have been laid out along the downslope edge to provide access and future fire lines.
Research and Demonstration
Every forest management project by default is demonstrating the application of the Forest Management plan. The goal of the demonstration is to compare and contrast the effectiveness of using a combination of tan oak felling and planting in a Variable Retention stand versus a Selection stand in increasing conifer stocking and distribution.

The opportunity is also being taken to compare the effectiveness of delayed planting of the “No harvest” unit with the “Control”. The majority of tan oaks in both areas are small oak sprouts <4” colloquially known as “oak brush”, and so would not be subject to the felling requirement. This means that in practice the tan oak competition would have 14-15 years advance growth on the newly planted conifers and present a severe competition problem. While the two areas can be compared without treatment of “oakbrush”, conducting the treatment would likely lead to far superior growing conditions and survival, and so the option of conducting a ‘frill’ herbicide treatment is included for the no-harvest unit.

There are Six Demonstration areas:

**Stand A** – Northern Selection Cable. Primarily a southerly aspect. Clumpy redwood with hardwoods and Douglas-fir between. Selection with tan oak management and planting. The east side will demonstrate the value of dead shade on dryer slopes.

**Stand B** – Southern Selection Cable. Primarily northerly aspect. Clumpy redwood with more Douglas-fir, substantial hardwoods. Selection with tan oak management and planting.

**Stand C** – Variable Retention in Northern half. Located in area of poor conifer stocking. Southerly aspect. Variable Retention with tan oak management and planting.

**Stand D** – Variable Retention in Southern half. Located in area of poor conifer stocking and portions with heavy burn damage and oakbrush. Northern aspect. Variable Retention with tanoak management and planting.

**Stand E** – Non-harvest: Primarily a stand replacing fire in this area, heavily burned like the Control and portions of Stand D. The stand has varying aspects, mainly Northwest or Northeast. Due to the fire, there are fewer hardwoods in the 4-20” range, but there is advanced ‘oak brush’ (tan oak sprouting). There is no conifer harvest, but limited hardwood/fuels management and planting is proposed.

“Control” – outside THP to Southeast, wholly burned area North of 310/311 split. No management post fire.

Summary:
The RPF expects seedling growth in stands A-D will be good, but noticeably better in stands C and D. All should exceed ‘E’ and ‘Control’, while the non-harvest in those areas will not adversely affect growth.

The RPF believes Stand E will establish that it is “too late” to manage the oak brush effectively, and if the swath cutting is not feasible then the option will be taken not to treat or plant. Waiting 14 years post fire prior to management in this unit will significantly add to the cost. If treatment is pursued, the tanoak and brush may resprout, but at least will be at relative parity with the planted trees. There should be improved conifer distribution as the result of the planting, but planting effectiveness will be substantially reduced with no hardwood management.

The RPF believes the Control will fare the worst. The oak competition will capture the site for 40-50 years, and only around 2050 will conifers start overtopping the oaks. With no planting or hardwood management, the conifer stocking will be Lower than typical for this site.

Fuels Management and Fire Planning
JDSF’s Fire Protection and Preattack Plan provides guidance for projects that will work towards reducing wildfire risks across the forest.

Forest roads 310 & 330 along ‘Three Chop Ridge’ are part of a planned fuel break system for mainline roads and ridges. Small fuels and brush will be cleared, and trees pruned and spaced out along this road and main ridgeline, creating a shaded fuel break. The fuel break may be 200-300 feet wide depending on topography. Treatments will be adjusted to leave discontinuous canopy of trees.

The plan prescribes 50 ft of slash treatment off of forest roads 310 & 330. Maintenance along these roads will also include removal of brush and downed trees to prevent fuel accumulation and reduce the risk of fire spread across the road.
Recreational and Aesthetic Considerations

The mostly disused Indian Springs Campground is across Road 330 from the THP area. Indian Springs is a “Hike In” camp with no on-site water supply and dilapidated facilities. Typically, the road access is gated off, limiting use of the area. During plan discussions the decision was made not to eliminate the campground at this time. During THP preparation, the only known utilization of the campground area was in conjunction with the THP. A single bicycle rider was observed on Road 310, presumably a loop route up Road 200, over on Road 1000, down on Road 310 to Road 210.

Downstream in Gulch 16, Road 206 is closed, but used as an access route from Road 200 for people who use the end landing as a firing range.

Indian Springs campground will be closed during THP operations, but a 100 foot ‘no harvest’ buffer will be established from the campground, in which trees shall only be removed for the fuel break. From 101-300 feet, only single-tree selection shall be used. Cull logs may be placed to limit parking on this flat open area.

Harvesting System and Roads

The THP will utilize existing road systems for appurtenant roads. As the harvest area has not been logged since the 1920s, there is no road system inside the THP boundaries. In many places the existing roads are on the backside of ridges or low gradient ground and cannot be used for yarding, in other places the logging distances would be well in excess of 2,500 feet without new spur roads.

To facilitate tractor yarding of the ridgetops and cable yarding of the steeper ground, 1.1 miles of temporary roads shall be built, generally along low gradient ridgetops. There are no watercourse crossings involved, but in order to get out to the nose of spur ridges some short full bench excavator construction shall be necessary. The planned road layout has been evaluated by a geologist. Tractor roads have also been predesignated by the RPF. Of the 243 harvest acres, 35acres (14%) are slated for tractor yarding, with 192acres (79%) designated for cable yarding. 16 (7%) acres will not be harvested, and there are the additional 42 shaded fuel break acres.

Watershed and Stream Conditions

The proposed harvest plan is in the upper reaches of Gulch 16. Numerous non-fish bearing streams are found throughout the harvest area. These streams appear to be highly seasonal with little to no water present in the late summer and early fall. Larger streams which support non-fish aquatic life are generally of a low gradient and appear to flow predominantly subsurface if at all during non-winter months. At the base of the gulch, there is a large low gradient area where the creeks go subsurface in normal flows, and meander in rains. This seems related to an ancient slide from the North side. Downstream the THP area, the lower reaches of Gulch 16 are known to have steelhead, and are tributary to Chamberlain Creek. While the THP harvest area was last logged by ridgetop railroad cable skyline in the 1920s, the lower reaches were logged in 1943 and 1976 by tractors to streamside tractor and logging roads. This lower reach is still experiencing impacts from that road network and it’s associated crossings.

Gulch 16 is tributary to West Chamberlain Creek, which meets North Fork Big River near Highway 20. West Chamberlain Creek was the site of a 1950s experiments of in-stream logging slash removal with tractors, while the greater Chamberlain creek drainage was the site of beaver removal. Comparing the stream record data between that period and current times, substantial recovery has happened, and Chamberlain creek hosts both steelhead and coho.

Wildlife and Botanical

New surveys for NSOs started in 2021. The plan contains habitat suitable for the Northern Spotted Owl (Strix occidentalis caurina). Activity Center (AC) MEN 311 is the nearest (AC), roughly 4,000 feet away. Potential MAMU habitat, “Upper Parlin” is adjacent to road 310, and has been surveyed in the past with no marbled murrelet detections.

The botanical surveys for THP area started in 2021. There are older botanical survey efforts, including for the 2012 ‘West Chamberlain’ THP that covered much of the proposed harvest area. While the harvest area was excluded from that plan, we know ‘Redwood Lily’ Lilium Rubescens, a CNPS list 4.2 plant, has been previously found in the harvest area.

Conclusion

The Gulch 16 THP harvest methods, silviculture, and special species protection measures are consistent with the guidelines in the Forest Management Plan.