

February 5th, 2024

CAL FIRE Resource Management 135 Ridgway Avenue Santa Rosa, CA 95401 santarosareviewteam@fire.ca.gov

RE: PHI Responses to 1-23-00099 SON "Steam Donkey" THP

Below are responses to the PHI recommendations for 1-23-00099 SON "Steam Donkey". The RPF responses are highlighted in **Bold text**.

#### CALFIRE Recommendations

1. Under Map Point #19, THP page 45, please state the culvert size.

#### Please see revised pages 42-51.

2. For LTO reference, please include into the maps within Section II of the THP, a map showing an enlarged area of the exception and in-lieu skid trails proposed for use.

The majority of exception and in-lieu trails are now outside of the THP. There are only 2 in-lieu trails associated with T1 in the north, and are visible on the Yarding Methods Map on revised page 111.

3. Under Item 38, THP page 102, regarding noise and instruction to the LTO, please also include avoidance of hauling and operations during weekends and holidays as stated on THP page 300.

#### Please see revised page 102.

4. As discussed during the PHI, please revise THP Item 38 Section II, to state that the CAL FIRE Inspector shall be notified within approximately 10 days of the harvest mark within the Gualala STA and within the STA along the property line associated with the Sea Ranch.

#### Please see revised page 102.

#### CDFW Recommendations

1. The botanical survey maps in THP Section V depict numbers of coast lily (Lilium maritimum) individuals at each location; however, it is unclear how many individuals will potentially be impacted by the proposed operations. Prior to plan approval, please revise the THP's botanical report to include the total number of coast lily individuals, per occurrence, that are proposed for direct impacts versus protected (a close estimate will suffice). Include what percentage these impacted individuals represent within the occurrence.

The RPF is specifically not proposing protection measures for the coast lily in the THP, so there really are no estimates of individuals per occurrence that are to be protected. It is difficult to anticipate exactly how much of a certain area will need to be disturbed, and which roadsides, skid trails, skid trail outlets, and landings the LTO will prioritize for operations in a THP like this where there are rare plants on many areas of existing infrastructure. Therefore, the number of individuals proposed for direct impacts could be high. As documented numerous times over the last 28 years,



by both the landowner and CDFW (in past THP review) as well as stated in this THP, the species are not provided buffers or protection measures due to their site-specific, proven resilience and proliferation following disturbance. The RPF showed the CDFW Review Team Member a landing during the PHI that was used no earlier than 2017, adjacent to this THP, that has little to no canopy cover, was fully graded during the last operations, used as a log landing, had a slash pile constructed, and had a fire line around the slash pile constructed. Numerous lilies bloomed at this landing in the summer of 2023, and the CDFW agency member was shown these dead lilies from the bloom months prior, which were still present at the landing. This is very similar to the photo reports from the GRT database from 2002 to 2009 (attached to these RPF responses) post-harvest, in this THP footprint. Additionally, after the Del Rancho THP (1-97-376SON) was harvested, between 2002 and 2004, GRI surveyed the intentional buffers they enforced for the coast lily and swamp harebell and submitted those results to CALFIRE. By the time of the 2004 report, it is clear that most of the buffers became overgrown and, in many cases, stopped carrying the rare plants all together. Therefore, the landowner has since been implementing less protection measures in this area of the property since the plants seem to establish and proliferate in disturbed, open areas and diminish, stagnate, and become outcompeted in buffered and shaded areas. In other words, protection, and avoidance of disturbance of the coast lily and swamp harebell does not protect the species presence, and the active disturbance of existing infrastructure is what proliferates and protects the presence of these species. The RPF finds additional information about how many individuals per occurrence will be "impacted" to be irrelevant to the intention of the THP regarding these species. Therefore, "direct impacts" is a potential for all occurrences but is not necessarily expected and is a function of existing infrastructure. Cherry THP (#1-17-049SON), the last THP to use many of the roads needed for the proposed THP, including the above-mentioned landing, states in Section II, Item 38,

Note to LTO about rare plants- There are numerous locations with rare plants in or near this THP. The LTO shall meet with the supervising forester prior to operations to be shown the areas where these plants occur. Ask the supervising forester for a georeferenced map with the plant locations so that you can find the plant STA flagging using Avenza's PDF Maps App. The road segments as shown on the road points work order are areas where rare plants are especially concentrated. These areas are not equipment exclusion zones.

Note that the road segments mentioned in the road points work order only mention that there are rare plants, but do not give any instruction to the LTO, whatsoever, about avoidance or discretion:

THP#	MII St.	age End	IL GIS#	New	Problem	Solution	Repair Type	Culvert Dia,	Cr. Class	Priority	PSD FSD
3	0.100	0.300	6,491	6,491	Other .	Other	THP App. Rd.	ā.	N/A	Medium	0
Comm	ents:	This	segme	nt of ro	ad has rare plants	along the edge.					

2. THP Section II, Item 32 (page 94) states that coast lily populations will be flagged with native plant protection flagging, and that the LTO shall avoid excessive grading in the higher concentration areas, and



as feasible, in other areas. This language is not enforceable because it lacks specificity, and the measures may be inadequate to minimize significant adverse impacts. Prior to plan approval, please revise the coast lily plant protection measures in Section II of the THP (and within the botanical report) to further specify that:

a. The outer extent (footprint) of the coast lily populations will be flagged

prior to operations;

b. No harvest of trees will occur within the population flagging;

c. Trees marked for harvest will be felled away from coast lily populations to the extent feasible;

d. Heavy equipment will be limited to the running surface of the roads and skid trails, otherwise no heavy equipment will be used within 25' of the coast lily;

e. There will be no blading of roadsides or ditches within 25' of the coast lily;

f. If the running surfaces of roads are bladed, no material will be sidecast into coast lily populations;

g. There will be no herbicide used within 25' of the coast lily;

h. Within one year following operations, and while plants are dormant, any slash or debris that may have inadvertently fallen within the coast lily populations will be carefully removed using handwork; and

i. Three to five years following operations, coast lily populations will be surveyed for the introduction of noxious weeds [e.g. jubata grass (Cortaderia jubata), French broom (Genesta monspessulana), which are reported to occur in the THP]. If found, they will be removed and disposed of in a method that isolates the seed and prevents the plant(s) from spreading.

Where the above measures (2a-2i) are not feasible, the plan will be updated to clearly disclose these locations, provide a justification clarifying the lack of feasibility, and provide alternative protection measures meeting the intent of measures 2a-2i to the highest degree feasible. If the measures are updated, the measures and justification will be sent to CDFW (R3Timber@wildlife.ca.gov) for concurrence prior to operations that would utilize the new alternate protection measures.

Again, there are no direct proposed protection measures for the coast lily within the THP, so therefore, there is not a measure to enforce. This is an intentional proposal that the RPF and landowner have based on over 25 years of both documented past disturbance and protection of these species in the THP footprint, that CDFW has acknowledged in the past. The results have been that with protection measures, avoidance, and canopy cover, these species tend to be outcompeted, shaded out, and unable to reproduce and spread. Because of this, not only is a significant adverse impact not expected, but the avoidance and overprotection of these species could cause a significant adverse impact by greatly reducing the species ability to proliferate.

Measure 2a, 2d, 2e and 2f- The occurrences today are mostly on recently or previously graded roads, landings and skid trails. The flagging proposed is hung to only identify locations of the plant for the LTO, so that the LTO can at least consider if grading is necessary for operations in certain



places. If not, the map and pre-operations meeting allows the LTO to give discretion and potentially skip grading in areas. However, if the area (roadside, trail or landing) is needed for operations, disturbance of the soil and plants will likely result in more individuals in the years following operations, compared to avoidance. Therefore, it is proposed that disturbance of the species, should it be needed for operations, is permissible. The occurrences are mainly in the road, trail or landing prism, which will be used during operations, and are also somewhat outside the running surface on the shoulders and along the road edges, but still confined to the previously disturbed soil. The occurrences are heaviest on recently graded and disturbed road surfaces (within the last 15 years). The physical flagging of the outer extent would be a very narrow strip of flagging, focused around the road/trail/landing surface. This is essentially what is being accomplished with the current identification flags and is what was done in the last THP using these roads. The plants do not extend off of the road prism or off of previously graded areas into areas that could be flagged. Previous flagging in which buffers were utilized where populations left the roadway are now filled with salal, grasses, ferns, blackberry, huckleberry and other suffocating shrub species that tend to take over if no additional disturbance is allowed. In addition, as per the Del Rancho THP postharvest surveys, occurrences of coast lily diminished or were eliminated due to competition. With a lack of fire regime to keep competing brush species low and at bay, and allow for what are now known as rare plants to proliferate, the use of logging as a way to mimic disturbances needed in a forest ecosystem allows for this to still occur in the area of the proposed THP.

Measure 2g- Herbicide usage in the form of spraying (foliar application) is not necessary for any of the units near the mapped rare plant populations and will not be used, therefore the protection measure is not necessary. In addition, the photo report has multiple pictures with the explanation that landings that received broad spectrum herbicide spray post-operations were now growing both coast lily and swamp harebell.

Measure 2b and 2c- Falling trees away from the populations or not harvesting trees where there are occurrences do not make sense for operations as there are road and landing trees that would need to come to the road's edge or need to be removed for safety during operations. With the amount of rare plants on existing infrastructure, this is not feasible.

Measure 2h and 2i- It seems unnecessary to check to see if slash or debris has fallen on coast lily populations when coast lilies occur in the road prism, landing prism and skid trail prism today in the THP, which have all previously had slash and debris post-operations. Many lilies have been documented to grow out of burned slash piles and spoils piles where they never existed before operations. If disturbance of previously disturbed areas with rare plants are to be avoided, and then checked for noxious weeds, it is likely that what will actually be affecting the rare plants at that point in time will be the native competing species. The use of previously disturbed areas with heavy equipment allows for the removal of current noxious weeds, the disturbance of the soil and seed bed, and the growth of rare plants. Some of the THP area has not seen operations in over 20 years, and those areas are at risk for either losing the rare plants they still have from the last operation, or have already lost the rare plants due to competition of vegetation without natural or mimicked disturbance.

The protection measures CDFW are recommending not only go against what has been reviewed and approved in past plans, but also is not feasible in the reality of timber operations and forest management with this high of a rate of occurrences. Protection and avoidance of the coast lily in



any capacity at this specific THP is not viewed by both the Forest Manager nor the RPF as a way to proliferate or protect the species.

3. The botanical survey maps in THP Section V depict numbers of swamp harebell (Eastwoodiella californica) individuals at each location, however, it is unclear how many individuals will potentially be impacted by proposed operations. Prior to plan approval, please revise the THP's botanical report to include the total number of swamp harebell individuals, per population, that are proposed for direct impacts versus protected (a close estimate will suffice). Include what percentage these impacted individuals represent within its population occurrence.

Please see the response above regarding coast lily as the same applies to the swamp harebell in this THP. In addition, the swamp harebell occurs in both disturbed areas and can occur in more open riparian areas in the THP. Unlike the coast lily, some populations of swamp harebell are located inside of WLPZs and STZs (where adjacent to the fringed false-hellebore) and therefore will not be disturbed at all.

4. Section II, Item 32 of the THP (page 94) states that some occurrences of swamp harebell are protected by EEZs, WLPZs, and/or within an STZ; however, it is unclear which occurrences will receive these protections. Prior to plan approval, please revise the botanical report and associated maps to disclose this information.

The RPF believes that it is clear for which occurrences will receive these protections by looking at the Rare Plant Location Maps in the THP and at the mapped locations. Swamp harebell is being shown 1.) on roads and skid trails not within a WLPZ (i.e. for a Class II watercourse or wet area) 2.) next to fringed false hellebore receiving STZ buffers as described in Item 32 3.) In Class III watercourse channels and 4.) within the WLPZ of Class II watercourses or near wet areas (which also have WLPZ flagging). The THP states on page 94 and 95 that swamp harebell next to the fringed false hellebore will be inside the STZ for the fringed false hellebore.

5. THP Section II, Item 32 (page 94) states that swamp harebell populations will be flagged with native plant protection flagging and that the LTO shall avoid excessive grading in the higher concentration areas, and as feasible, in other areas. This language is not enforceable because it lacks specificity, and the measures may be inadequate to minimize significant adverse impacts. Prior to plan approval, please revise the swamp harebell plant protection measures in Section II of the THP (and within the botanical report) to further specify that:

a. The outer extent (footprint) of the swamp harebell populations will be flagged prior to operations;

b. No harvest of trees will occur within the population flagging;

c. Trees marked for harvest will be felled away from swamp harebell populations to the extent feasible;

d. Heavy equipment will be limited to the running surface of the roads and skid trails;

e. There will be no blading of roadsides or ditches within 10' of the swamp harebell;



f. If the running surfaces of roads are bladed, no material will be sidecast into swamp harebell populations;

g. There will be no herbicide used within 25' of the swamp harebell;

h. Within one year following operations, and while plants are dormant, any slash or debris that may have inadvertently fallen within the swamp harebell populations will be carefully removed using handwork; and

i. Three to five years following operations, swamp harebell populations will be surveyed for the introduction of noxious weeds [e.g. jubata grass (Cortaderia jubata), French broom (Genesta monspessulana), which are reported to occur in the THP]. If found, they will be removed and disposed of in a method that isolates the seed and prevents the plant(s) from spreading.

Where the above measures (6a-6i) are not feasible, please update the plan to clearly disclose these locations, provide a justification clarifying the lack of feasibility, and provide alternative protection measures meeting the intent of measures 6a-6i to the highest degree feasible. If the measures are updated, the measures and justification will be sent to CDFW (R3Timber@wildlife.ca.gov) for concurrence prior to operations that would utilize the new alternate protection measures.

#### Please see the response above for measures 6a-6i, as the same applies to the swamp harebell.

6. CDFW recommends the botanical report and/or Section IV of the THP include an assessment of the proposed timber operations regarding any potentially significant direct, indirect, and cumulative impacts to bishop pine (Pinus muricata, a Sensitive Natural Community).

The RPF does not believe that there are any impacts to address or assess for this species. Bishop pine is extremely common in the THP area and is mixed into most conifer stands throughout the THP and beyond. This species dominates certain hillslopes and ridgetops, especially the main trending ridge upslope of the plan, and is a component of many other stands. Seeing as the THP also has a redwood forest, which has the same rank, this seems like an unnecessary assessment to make in the THP for one species. There is no threat to bishop pine forests as a community or as a species in the THP and is a species that is often controlled in order to promote other sensitive communities, like redwood forests.

From the California Sensitive Natural Communities List dated Thursday, June 1, 2023:

86.100.00 Redwood forest and woodland Rank: G3 S3

87.240.00 Bishop pine - Monterey pine forest and woodland Rank: G3 S3

7. Revise the THP to specify that bishop pine (mature trees or seedlings) will not be targeted for herbicide.

The landowner would prefer not to explicitly exclude this species from the potential to apply herbicide for the purposes of the Variable Retention unit, as the unit borders the ridge top which has a high concentration of bishop and Monterey pine. To reestablish redwood seedlings, it is possible that some bishop pine, both mature and seedlings may need to be treated during the treatment of tanoak. This is expected to be a minimal and inconsequential amount, as the true competing species in this particular unit is tanoak. The small amount of pine (<10 ft<sup>2</sup> basal area per



acre) present in the unit may need to be controlled in order to reduce and eliminate the potential for seeding in of the pine into the unit. Outside of the unit, bishop pine will still exist and have the potential to cast seed into the unit; therefore, being able to control the pine inside of the unit is imperative for redwood survival and the inevitable competition with pine and tanoak.

#### WQ Recommendations

1. All culverted watercourse crossings shall be sized to accommodate the 100-year recurrence interval flow plus debris, but shall be no smaller than 24 inches in diameter.

#### Please see revised pages 41-51.

2. The THP shall be revised to omit proposed WLPZ operations at map points A, 3, 4, 5, and L1 shall be removed from the THP.

#### Please see revised page 42-51, 54-56, 58, and 75-79.

3. The THP shall be revised to specify that operations shall not take place within 50 feet of the watercourse at Map Point L2.

#### Please see revised page 42-51 and 75-79.

#### CGS Recommendations

#### General Recommendations:

1). Prior to second review, Section V of the THP shall be updated to include published landslide mapping showing proposed THP boundaries. Additionally, Section V of the THP shall be updated to include the GRI unstable area database information for the THP area and to include, reference, and/or discuss the unstable area information from previous THP's. Any additional mitigations associated with this information shall be included in Section II of the THP.

Published maps were consulted prior to and during plan preparation, however, there was very little information or features mapped (besides debris slide slopes) for the majority of the plan so these were not originally included in the plan. Please see additional pages 357.1 to 357.24 for the GRI unstable area database, and additional pages 357.33 to 357.35 for the published maps of the THP area.

2). Prior to second review, the THP shall be revised to include a geologic report with evaluation of the proposed operations on inner gorge slopes by a licensed Professional Geologist, or to show that operations are to be avoided at the identified inner gorge areas. CGS requests time to review the geologic report and additional field review may be necessary.

Operations are to be avoided at the CGS identified inner gorge areas. Although the RPF specifically did not call these slopes inner gorge due to the lack of active stream erosion and undermining at the base of the features, confirmed by the lack of identification of inner gorge slopes in the past plans in the same areas. The RPF agrees that geologically, on a



geologic timescale, the processes of erosion and bank mass wasting in these uplifted marine terrace drainages could result in inner gorge slopes, different from the typical inner gorge slopes described in the Forest Practice Rules. The THP has been revised to remove those areas from the THP footprint. Please see the revised maps on pages 107 to 131.2, as well as most of the revised pages where multiple details about the plan has changed (total acres, silviculture acres etc.).

4). Prior to second review, Section II of the THP shall be revised to include the updated mapping of unstable areas as shown on THP maps that were provided to the review team prior on December 14, 2023 (Figures 5 and 6). Additionally, Item 38 shall be revised to discuss that some unstable areas extend outside of the WLPZ and are flagged with Do Not Cut flagging. Additionally, the RPF shall verify that all mapped unstable areas are flagged in accordance with Item 38 and that no trees are marked for harvest on mapped unstable areas prior to operations.

# Item 38 already contained this statement, and all unstable areas shown on the THP maps have been flagged and not marked for harvest, which was the case during the PHI. Please see the revised THP maps 107 to 131.2.

5). Prior to second review, the THP maps shall be updated to disclose the location of residential structures and developments that are located downslope of the THP.

#### Please see revised page 131 and additional page 131.1.

CGS Specific Recommendations:

1. Map Point 1. Prior to second review, the THP shall be revised to describe that a pipearch culvert that is adequately sized for the calculated 100-year flood flow shall be installed at this location. As well, the 100-year flood flow shown in the map point table (page 42) shall be updated to be consistent with the calculated value shown on page 72 of the THP.

#### Please see revised page 42 and 72.

2. Map Point 2. Prior to second review, the THP shall be updated to disclose the unstable area located downslope of Map Point 2 and to include any past documentation of the landslide. Additionally, Map Point 2 shall be updated to discuss the landslide and any potential impacts to the feature resulting from the proposed operations/mitigations.

## Please see revised page 42 and the report added to Section V (2017 GRT Action Plan for the Sewer Road).

3. Map Point 55. Prior to second review, Section II of the THP shall be updated to describe that the proposed culvert outlet will be located downslope of the fill failure deposit/debris where there is a well-defined watercourse channel (about 10 feet downslope of the existing metal flume outlet).

#### Please see revised page 50.



4. Map Point CGS-1. Prior to second review, the THP shall be revised to disclose the unstable area and describe that operations shall be avoided on the unstable area.

Please see revised maps on pages 107 to 131.2, and Item 38 already discusses slides outside the WLPZ.

If you have any questions or concerns, please feel free to contact me.

Thank you,

Medeli que

Madeline Green Forester, RPF #3069 North Coast Resource Management, Inc. Phone: (707) 489-5195

#### **ERATTA Sheet:**

<b>Original Page #</b>	Replace with Page #
5	5
10-17	10-17
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Additional	Pages
131.1	
131.2	
297.1	
334.1	
357.1 - 357	.35

## **Gualala Redwood Timber, LLC.**



Wildlife		Ph	oto #	950	)
PW			6/	4/20	002
Project			PID		0
Map Pt 0	Road 0		Mi.	0	
		Old	Ne	w	
Creek		Cr Di	st		0
Ref 0	LWD Site		Tag#	0	
Monitoring	0				

Here is a coast lily which has colonized a heavily used landing. Additional individual coast lilies are also present on the landing.

People in Photo:

F:\GRI Photos\Small\950 lilly DCP\_0167.JPG

Wildlife		Photo #	949	
PW		6/4/2002		
Project Del M	ar	PID	0	
Map Pt 0	Road 0	Mi	. 0	
		Old Ne	W	
Creek		Cr Dist	0	
Ref 0	LWD Site	Tag#	0	
Monitoring 0				
This burn pile h	as a coast lilly ir	n it.		

People in Photo:

F:\GRI Photos\Small\949 lilly DCP\_0178.JPG

Gualala Redwood Timber, LLC.

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RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT



Wildlife		Ph	noto #	948
PW		6/-	4/2002	
Project Del N	Mar		PID	0
Map Pt 0	Road 0		Mi.	0
		Old	New	w
Creek		Cr D	ist	0
Ref 0	LWD Site	6	Tag#	0
Monitoring C	)			

This is a coast lily with swamp harebell growing below it. These plants are growing in the center of an old burn pile. This clearcut was tractor piled and burned then sprayed with a broad spectrum herbicide. While no lilies or swamp harebell were observed within this unit prior to harvest, they are now scattered throughout the unit.

People in Photo:

F:\GRI Photos\Small\948 lilly DCP\_0179.JPG

Wildlife		Pho	oto #	951	
PW			6/	4/20	002
Project			PID		0
Map Pt 0	Road 0		Mi.	0	
		Old	Ne	w	
Creek		Cr Di	st		0
Ref 0	LWD Site		Tag#	0	
Monitoring	0				

Here is a coast lily which has colonized a heavily used landing. Additional individual coast lilies are also present on the landing.

#### People in Photo:

F:\GRI Photos\Small\951 lilly DCP\_0170.JPG

Wildlife		Pho	oto #	10	85
PW			8/	6/2	002
Project			PID		0
Map Pt 0	Road 0		Mi.	0	
		Old	Ne	w	
Creek		Cr Dis	st		0
Ref 0	LWD Site		Tag#	0	
Monitoring	0				

Although difficult to discern in this photo, here are coast lilies thriving in a spoils mound.

#### People in Photo:

F:\GRI Photos\Small\1085 DCP\_0180 lily.JPG



Gualala Redwood Timber, LLC.

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RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT

#### 1/8/2024





Wildlife		Pł	noto #	108	33
PW			8/	6/20	002
Project			PID		0
Map Pt 0	Road 0		Mi.	0	
		Old	Ne	w	
Creek		Cr D	list		0
Ref 0	LWD Site	•	Tag#	0	
Monitoring	0				
Here are co roadside op	ast lilies which app ening.	eared	in a		

#### People in Photo:

F:\GRI Photos\Small\1083 DCP\_0176lily.jpg

Wildlife				Pho	oto #	846
PW					9/	1/2001
Project	Midd	llegate			PID	2072
Map Pt	0	Road	1.63114	1	Mi.	0.18
				Old	Nev	N
Creek				Cr Dis	st	0
Ref 0			LWD Site		Tag#	0

#### Monitoring 0

This clearcut was tractor piled and burned, broadcast treated with herbicides then planted. While no coast lilies were observed within this unit prior to harvest, they are scattered throughout the unit now. Bolander's reed grass and swamp harebell are also present in this unit. (also refer to photos #4790 and #4791)

#### People in Photo:

John Bennett

F:\GRI Photos\Small\846 herb lilly Img28.jpg

Wildlife			Photo #	4790
PW			7.	/6/2009
Project M	iddlegate		PID	2072
Map Pt 0	Road	1.631141	Mi	0.18
		0	ld Ne	W
Creek		(	Cr Dist	0
Ref 0	Ľ	WD Site	Tag#	0
Monitoring	0			

Coast Lily is still present in a Middlegate clearcut (ref. photo #846). Competition is beginning to reduce the numbers of lilies.

People in Photo:

F:\GRI Photos\Small\Bigger\4790 IMGP0154.JPG



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RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT



Photo # 4789 Wildlife PW 7/6/2009 Project Middlegate PID 2072 Map Pt 0 Road 1.631141 Mi. 0.18 Old New Cr Dist Creek 0 Ref 0 LWD Site Tag# 0 Monitoring 0 Coast Lily in a Middlegate clearcut

#### People in Photo:

F:\GRI Photos\Small\Bigger\4789 IMGP0153.JPG

Wildlife				P	hoto #	4788	
PW					7/	6/200	9
Project	Mi	ddlegate			PID	207	2
Map Pt	0	Road	1.63114	1	Mi.	0.18	
				Old	Ne	w	
Creek				Crl	Dist	(	0
Ref 0			LWD Site		Tag#	0	
Monitori	ng	0					
Coast Li	ly in	a Middle	gate clear	rcut			

#### People in Photo:

F:\GRI Photos\Small\Bigger\4788 IMGP0152.JPG

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### **GUALALA REDWOODS, INC.**

39951 Old Stage Road P.O. Box 197 Gualala, CA. 95445 Telephone (707) 884-3521 Fax (707) 884-1942

July 2, 2002

Mr. William Snyder California Department of Forestry And Fire Protection 135 Ridgway Ave. Santa Rosa, CA. 95401

Subject: Rare plant monitoring report for THP 1-97-376-SON (Del Rancho THP, GRI)

Dear Mr. Snyder:

A requirement for THP 1-97-376-SON is the monitoring of rare plant retention areas for three years following completion of operations.

On June 24 I conducted the monitoring survey for the 18 retention areas specified in the Del Rancho THP. The survey was seasonally appropriate.

The attached maps show the retention area locations for the following species:

Coast lily (Lilium maritimum). locations "L1"-"L14".

Swamp harebell (Campanula californica). Locations "C1" and "C2".

Maple-leaved checkerbloom (Sidalcea malachroides). Location "S1".

Point Reyes checkerbloom (Sidalcea calycosa). Location "P1".

The following are the results of the survey:

Location	<pre># Mature (flower)</pre>	<pre># Mature (fruit)</pre>	<pre># Mature (browse)</pre>	# Seedling
L1	11	3	13	33
L2			1	2
L3	17		4	73
L4	8		8	42
L5	10		20	2
L6	1		1	2
L7	1		1	
L8	24	18	14	58
L9	1			
L10	SEE NOTE			
L11	13		3	20
L12	5	1	1	
L13	SEE NOTE			
L14	9	1	4	3

#### Coast lily

Note: No coast lilys were observed at locations L10 and L13.

General observations at coast lily locations:

L1- Habitat conditions are relatively unchanged from last year. The amount of salal covering the ground is slightly increased. Number of individuals has increased. Calamagrostis bolanderi is still present.

L2- This area appears unchanged from last year.

L3- This area is slightly brushier than last year. Calamagrostis bolanderi is still present.

L4- This area appears unchanged from last year. Calamagrostis bolanderi is still present.

L5- This area appears unchanged from last year. Calamagrostis bolanderi is still present.

L6- This area is slightly brushier than last year. Calamagrostis bolanderi is still present.

L7- This area appears unchanged from last year. Calamagrostis bolanderi and Campanula californica are still present. L8- This area is much brushier than last year. Calamagrostis bolanderi and Campanula californica are still present.

L9- The ground cover at this location is dense. The single individual may not be able to seed successfully. Calamagrostis bolanderi and Campanula californica are still present.

L10- Two dead stems from previous years plants were located. No individuals from 2002. This area is very brushy. Calamagrostis bolanderi and Campanula californica are still present.

L11- This area appears unchanged from last year. Calamagrostis bolanderi is still present.

L12- This area is much brushier. Very dense salal and evergreen huckleberry. Calamagrostis bolanderi and Campanula californica are still present.

L13- No individuals located in 2002. This area has overgrown with ferns, berries, salal, evergreen huckleberry and wax myrtle. Campanula californica is still present.

L14- This area is much brushier than last year. The area is overgrown with ferns, salal, evergreen huckleberry, azeala and grasses. A clump of residual trees has fallen over the retention area.

#### Swamp harebell

Location C1- Harebell is still present and thriving. The plants were flowering. The habitat is relatively unchanged. The mat has expanded on the eastern edge (30 feet x 30 feet) by spreading onto a tractor skid trail used during the harvest. The mat is approximately 120 feet x 50 feet. Calamagrostis bolanderi is still present.

Location C2- Harebell is still present and thriving. The plants were flowering. The area contains slightly more grass. The mat still fills the retention area. The mat is approximately 80 feet x 45 feet.

#### Maple-leaved checkerbloom

Location S1- This area is much brushier than last year. No checkerblooms were located this year. It appears that the plants have been overgrown.

#### Point Reyes checkerbloom

Location P1- No change from last year. No checkerbloom located this year.

Should you have any questions, you may call me at (707) 884-3469.

Sincerely,

John R. Bennett, RPF #2650 Gualala Redwoods, Inc.

## **GUALALA REDWOODS, INC.**

39951 Old Stage Road P.O. Box 197 Gualala, CA. 95445 Telephone (707) 884-3521 Fax (707) 884-1942

June 19, 2003

Mr. William Snyder California Department of Forestry And Fire Protection 135 Ridgway Ave. Santa Rosa, CA. 95401

Subject: Rare plant monitoring report for THP 1-97-376-SON (Del Rancho THP, GRI)

Dear Mr. Snyder:

A requirement for THP 1-97-376-SON is the monitoring of rare plant retention areas for three years following completion of operations.

On June 18, 2003, I conducted the monitoring survey for the 18 retention areas specified in the Del Rancho THP. The survey was seasonally appropriate.

The attached maps show the retention area locations for the following species:

Coast lily (Lilium maritimum). locations "L1"-"L14".

<u>Swamp harebell (Campanula californica)</u>. Locations "C1" and "C2".

Maple-leaved checkerbloom (Sidalcea malachroides). Location "S1".

Point Reyes checkerbloom (Sidalcea calycosa). Location "P1".

The following are the results of the survey:

Location	<pre># Mature (flower)</pre>	<pre># Mature (fruit)</pre>	<pre># Mature (browse)</pre>	# Seedling
L1	5	2	8	32
L2	1			2
L3	27		5	72
<b>L</b> 4	18		10	57
L5	14		8	7
L6	2		1	
L7	2			
L8	35	22	21	34
L9		1	1	
L10	1			
L11	15		2	19
L12	5			
L13		1		
L14	17	1	3	

#### Coast lily

General observations at coast lily locations:

L1- Habitat conditions are relatively unchanged from last year. The amount of salal covering the ground is slightly increased, but the area is still fairly open. Number of mature individuals has decreased. This area appears to be heavily browsed. Calamagrostis bolanderi was not observed during this survey.

L2- This area appears unchanged from last year.

L3- This area is slightly brushier than last year. The manzanita in this area is taller but ground level is still fairly open. Calamagrostis bolanderi is still present.

L4- Approximately one half of this area appears unchanged from last year. The other half is significantly brushier. Calamagrostis bolanderi is still present.

L5- This area appears much brushier from last year. In some cases, last years lily stem could be seen emerging from the dense salal but no vegetative lily from this year's growth could be found. Calamagrostis bolanderi is still present.

L6- This area is slightly brushier than last year. Calamagrostis bolanderi was not observed during this survey. L7- This area appears slightly brushier than last year. Calamagrostis bolanderi and Campanula californica are still present.

L8- This area is relatively unchanged in regards to the brush layer, however the grasses are much thicker than last year. Calamagrostis bolanderi and Campanula californica are still present. This area is located in a PG&E right-of-way. New flagging and paint on trees applied by PG&E representatives seem to indicate this area is targeted for tree removal and/or right-of-way clearing.

L9- The ground cover at the location of the original plant is dense. A second mature individual has emerged approximately 20 feet away from the original plant in an area which is bare of ground cover. Calamagrostis bolanderi and Campanula californica are still present. Three mature lily plants that have not been observed in previous years are now present 50-100 feet west of the retention area along the haul road.

L10- This area is very brushy. A single mature plant was located this season. Calamagrostis bolanderi and Campanula californica are still present.

L11- This area appears slightly brushier than last year. Calamagrostis bolanderi is still present.

L12- This area is pretty much overgrown with very dense salal and evergreen huckleberry. Calamagrostis bolanderi and Campanula californica are still present.

x.

L13- One individual was located in 2003. This area has overgrown with ferns, berries, salal, evergreen huckleberry and wax myrtle. Campanula californica is still present.

L14- This area is much brushier than last year. The area is overgrown with ferns, salal, evergreen huckleberry, azalea and grasses. A clump of residual trees has fallen over the retention area. Calamagrostis bolanderi and Campanula californica are present. There are now 5+ mature lily plants and several mats of swamp harebell located outside the retention area.

#### Swamp harebell

Location C1- Harebell is still present and thriving. The plants were flowering. The habitat is relatively unchanged. The mat has continued to expand outside the retention area by spreading along a tractor skid trail used during the harvest. Several individual mats were observed further along the skid trail system well away from the retention area. Calamagrostis bolanderi is still present.

Location C2- Harebell is still present and thriving. The plants were flowering. The habitat is similar to last year. The mat still fills the retention area and has spread approximately 10 feet to the north and approximately 20 feet to the west, invading a landing used during the harvest. The mat is now approximately 100 feet x 55 feet.

#### Maple-leaved checkerbloom

Location S1- This area is overgrown with brush. No checkerblooms were located this year. It appears that the plants have been overgrown.

#### Point Reyes checkerbloom

Location P1- No change from last year. No checkerbloom located this year.

Should you have any questions, you may call me at (707) 884-3469.

Sincerely,

John R. Bennett, RPF #2650 Gualala Redwoods, Inc.

## **GUALALA REDWOODS, INC.**

39951 Old Stage Road P.O. Box 197 Gualala, CA. 95445 Telephone (707) 884-3521 Fax (707) 884-1942

June 28, 2004

Ms. Leslie Markham California Department of Forestry And Fire Protection 135 Ridgway Ave. Santa Rosa, CA. 95401

Subject: Rare plant monitoring report for THP 1-97-376-SON (Del Rancho THP, GRI)

Dear Ms. Markham:

A requirement for THP 1-97-376-SON is the monitoring of rare plant retention areas for three years following completion of operations.

On June 24, 2004, I conducted the final monitoring survey for the 18 retention areas specified in the Del Rancho THP. The survey was seasonally appropriate.

This survey completes the three year monitoring requirement of the THP. I look forward to reading the assessment and conclusions derived from the data provided. When the Responsible Agency has completed the assessment, please forward a copy to our office.

Should you have any questions, you may call me at (707) 884-3469.

Sincerely,

John R. Bennett, RPF #2650 Gualala Redwoods, Inc. The following maps show the retention area locations for theses species:

Coast lily (Lilium maritimum). locations "L1"-"L14".

Swamp harebell (Campanula californica). Locations "C1" and "C2".

Maple-leaved checkerbloom (Sidalcea malachroides). Location "S1".

Point Reyes checkerbloom (Sidalcea calycosa). Location "P1".

The following are the results of the survey:

Location	# Mature (flower)	# Mature (fruit)	# Mature (browse)	# Seedling
L1	3	13	3	32
L2	1	1	0	1
L3	3	16	6	81
L4	6	15	4	83
L5	10	8	5	15
L6	1	1	2	0
L7	1	0	0	0
L8	0	0	0	0
L9	0	1	0	1
L10	0	1	0	0
L11	5	3	7	16
L12	0	1	6	0
L13	0	0	0	0
L14	1	1	2	0

#### **Coast lily**

General observations at coast lily locations:

L1- Habitat conditions are relatively unchanged from last year. The amount of salal covering the ground is slightly increased, but the area is still fairly open. Calamagrostis bolanderi was observed during this survey.

L2- This area appears unchanged from last year.

L3- This area is slightly brushier than last year. Tall manzanita shades much of the area. Ground level is still fairly open. Calamagrostis bolanderi is still present.

L4- This area appears unchanged from last year. Calamagrostis bolanderi is still present.

L5- Once again, this area appears much brushier from last year. In some cases, last years lily stem could be seen emerging from the dense salal but no vegetative lily from this year's growth could be found. Calamagrostis bolanderi is still present.

L6- This area appears similar to last year. Calamagrostis bolanderi was not observed during this survey.

L7- This area appears slightly brushier than last year. Calamagrostis bolanderi and Campanula californica are still present.

L8- As noted last year, this retention area was located in a PG&E right-of-way. PG&E has cleared the right-of-way. The boundaries of this retention area can no longer be determined. The previously existing trees and brush have been removed and/or slashed to ground level. The slash was left to cover the whole area. Huckleberry, hardwoods, grasses and other herbaceous plants have resprouted to 1-3 feet. In the general area of the

previous retention area; coast lily, Bolander's reed grass and swamp harebell are still present. Because the boundaries could not be determined, no attempt was made to survey the populations.

L9- This area appears similar to last year. Calamagrostis bolanderi and Campanula californica are still present. Lilies are still present 50-100 feet west of the retention area along the haul road.

L10- This area is very brushy. A single mature plant was located this season. Calamagrostis bolanderi and Campanula californica are still present. The Campanula is reduced to a mat approximately 1' x 1' and appears to be losing out to the brush.

L11- This area appears brushier than last year. Tanoak and huckleberry brush have almost completely shaded out what has been the largest concentration of lilies. The majority of plants observed were limp and falling over. Much less vigorous as compared to other retention areas were the lilies are free to grow in the sun. Calamagrostis bolanderi is still present.

L12- This area is pretty much overgrown with very dense salal and evergreen huckleberry. The original area was approximately 60' long with individuals distributed throughout. Now the remaining plants are restricted to an area approximately 3' x 3' where the brush is thinnest. Calamagrostis bolanderi and Campanula californica are still present right along the edge of the road.

L13-This area has completely overgrown with ferns, berries, salal, evergreen huckleberry and wax myrtle. No lilies were observed this year. Campanula californica was also not observed.

L14- This area is completely brushed over. The area is overgrown with ferns, salal, evergreen huckleberry, azalea and grasses. Considerable time was spent surveying but only 4 individual lilies could be located compared to last year's 21. Calamagrostis bolanderi and Campanula californica are still present on the very edge of the retention area near a skid trail used during the harvest. Lily plants and several mats of swamp harebell are still located outside the retention area.

#### Swamp harebell

Location C1- Campanula californica could not be located within the flagged retention area. This area is overgrown with huckleberry, iris, grasses and other herbaceous species. Harebell is still present on the skidtrail used during operations and continues to spread. Several individual mats were observed further along the skid trail system well away from the retention area. Bolander's reed grass is present in the area and common throughout the harvest unit.

Location C2- The flagged retention area is almost completely covered with huckleberry, black berries, wax myrtle, grasses and other herbaceous species. The Campanula population is declining. Isolated individuals are still emerging through the brush and rare open areas. Campanula is still appearing in cleared areas outside of the retention area.

#### Maple-leaved checkerbloom

Location S1- No changes from last year. This area is overgrown with brush. No checkerblooms were located this year. It appears that the plants have been overgrown.

#### Point Reyes checkerbloom

Location P1- No changes from last year. No checkerbloom located this year.

Del Rancho TH? Botanica! - vev



June 30. 1995



Natural Resources Management Corporation

#### CalTREES THP GENERAL INFORMATION

			Le	gal Descripti	on	
Meridian	Township	Range	Section	Acreage	Assessor's Parcel Number	County
MDB&M	-	-	German Land Grant	736		Sonoma
			TOTAL AC	736		

#### **ITEM #7 LOCATION OF TIMBER OPERATIONS**

#### NOTE: Total Acreage only includes the logging area

#### FOREST DISTRICT

b.	Forest Dist	rict	
[ <b>X</b> ]	COAST FOREST DISTRICT	[□]	Tahoe Regional Planning Authority Jurisdiction
[[]]	Southern Sub District of the Coast Forest District	[□]	A County with Special Regulations
[□]	SOUTHERN FOREST DISTRICT	[ <b>X</b> ]	Coastal Zone, no Special Treatment Area (STA)
[□]	High use Sub District of the Southern Forest District	[X]	<ul> <li>STA(s):</li> <li>2 Designated STAs for the Coastal Commission Zone</li> <li>Identify: 1.) Gualala River STA; 2.) Sea Ranch Area</li> <li>STA</li> <li>Type: 1.) B- Sites of significant scenic value; C.</li> <li>Wetlands, lagoons, Streams, estuaries, and marine environments; 2.) A- Scenic View Corridor</li> <li>-Gualala Point Regional Park STA Buffer Zone (Coastal Commission STA)</li> </ul>
[[]]	NORTHERN FOREST DISTRICT	[□]	Other:

c. CALWATER PLANNING WATERSHED					
Name	Watershed identification Number	CALWATER Version			
Big Pepperwood Creek	1113.850201	2.2			
Black Point	1113.850304	2.2			
Mouth of Gualala	1113.850202	2.2			

d.	. WATERSHED (ASP, 303D)				
[ <b>X</b> ]	ASP Watersheds	[ <b>X</b> ]	Non ASP Watersheds		
[[]]	Upstream of ASP Watersheds	[ <b>X</b> ]	303d Watersheds		
[□]	Exempt from ASP Watershed Rules <ul> <li>Reason Exempt:</li> </ul>		Reason listed: Aluminum, Temperature and Sedimentation/Siltation Impaired		

e. L	JSGS QUADRANGLE
Name	Date
McGuire Ridge 7.5 Min Quadrangle	1991
Gualala 7.5 Min Quadrangle	1998
Stewarts Point 7.5 Min Quadrangle	1978
Stewarts Point OE W	1978

2/5/2024 RECEIVE ised COAST AREA OFFICE RESOURCE MANAGEMENT

#### **CaITREES THP ITEM #14 - SILVICULTURE**

#### ITEM #14 - SILVICULTURE

- Check the Silvicultural methods or treatments allowed by the Forest Practice Rules to be applied under this THP.
- If more than one method or treatment will be used identify the boundaries on a map per 14 CCR § 1034(x)(2)
- List the approximate acreage for each method identified.

a.	Evenaged	ACRES	
[[]]	Clearcutting		
			EVENAGED REGENERATION METHODS
[□]	Seed Tree Seed Step		(14 CCR § 913.1 [933.1, 953.1]) (All Districts)
[[]]	Seed Tree Removal Step		NOTE: variation by District in $(a)(4)(4)$ and $(d)(2)$
Hanne -			Shalterwood Removal Stop
[□]	Shelterwood Preparatory Step		Shelter wood Kemoval Step
[□]	Shelterwood Seed Step		and the second
[[]]	Shelterwood Removal Step		
	Un-evenaged		UNEVENAGED REGENERATION METHODS
[X]	Single Tree Selection	550	(14 CCR § 913.2 [933.2, 953.2]) (All Districts)
[[]]	Group Selection		
[□]	Transition		NOTE: variation by District in (a)(2)(A)(1)
-	Intermediate Treatments		A A STATE AND A STATE OF A STATE OF A
[□]	Commercial Thinning		INTERMEDIATE TREATMENTS
[[]]	Sanitation Salvage		(14 CCR § 913.3 [933.3, 953.3])
	Alternative		ALTERNATIVE PRESCRIPTIONS (ALL DISTRICTS)
[□]	Alternative Prescription		(14 CCR § 913.6 [933.6, 953.6])
	Special Prescriptions		and the second second second
[X]	Special Treatment Area Prescription	151	SPECIAL PRESCRIPTIONS
[□]	Rehabilitation of Understocked Area Prescription		(14 CCR § 913.4 [933.4, 953.4])
[[]]	Fuel Break / Defensible Space		
[X]	Variable Retention	33	RPF is required to include specific information when
	Restoration – Aspen, Meadow, & Wet Area		The EPR element forms are provided at the end Indicate
[□]	Ca. Black and Oregon White Oak Woodland Management		the specific acreage for each type of restoration or oak area on these forms.
	Non-regeneration		
[[]]	Conversion		
[[]]	Road Right-of-way	9	NON-REGENERATION HARVESTING
[X]	No Harvest	2	

RECEIVED 02/05/2024 COAST AREA OFFICE **RESOURCE MANAGEMENT** 

#### **CalTREES THP ITEM #14 - SILVICULTURE**

If Selection, Group Selection, Commercial Thinning, Sanitation Salvage or Alternative methods are selected the post-harvest stocking levels must be stated. If Site class varies then state the post-harvest stocking standard to be meet by each applicable Site Class.

NOTE: Location of boundaries of timber-site classes needed for the determination of stocking standards to be applied, down to 20acres minimum or as specified in district rules shall be mapped per 14 CCR § 1034(x)(12)

<i>u</i> .	POST-HARVEST STOR	CRING TO BE MET AT THE COMPLETION OF OPERATIONS
Silvicultural Prescription	Site Class (I, II, III, IV, V)	Post-harvest stocking standard
Single-Tree Selection (485 acres)	ш	<ul> <li>The post-harvest minimum stocking standard to be met shall be 14 CCR 913.2(a)(2)(A)(2): On site II and III lands, at least 75 square feet per acre of basal area shall be retained of Group A species only. This standard shall be met immediately upon completion of timber operations.</li> <li>No group openings shall be located within areas designated as Single Tree Selection.</li> <li>Within 100 feet of the property line, slash created during operations shall be lop and scattered to a maximum of 30" in height from the ground surface. The Plan Submitter, at their discretion, may opt to conduct further work regarding brush and non-merchantable ladder fuels including but not limited to lop and scatter, mastication or crushing with tracked equipment throughout the THP.</li> </ul>
WLPZ Single- Tree Selection (65acres)	ш	<ul> <li>Please see Item 26 for the breakdown of watercourse and WLPZ types for this THP as there are both ASP and non-ASP watersheds.</li> <li>The post-harvest minimum stocking standard to be met shall be 14 CCR 913.2(a)(2)(A)(2): On site II and III lands, at least 75 square feet per acre of basal area shall be retained of Group A species only. This standard shall be met immediately upon completion of timber operations.</li> <li>In order to comply with 916.9 and to provide protection to anadromous salmonids, a Selection silvicultural prescription shall be applied to the WLPZ. Additional specifications for ASP retention standards, large tree recruitment, core zones and protection measures for all WLPZs are described in Item 26 of the THP.</li> </ul>
Special Treatment Area- Coastal Commission Zone -Gualala River STA (Designated) -Sea Ranch Area STA (Designated) -Gualala Point Regional Park STA (Buffer Zone) Single-Tree Selection	TI	<ul> <li>Portions of two designated Coastal Commission Zone STAs are located within the THP. Portions of one buffer zone within the Coastal Commission Zone for the Gualala Point Regional Park is located within the THP.</li> <li>The Selection Method as defined by 14 CCR 913.2 is chosen for the STAs, however the post-harvest minimum stocking standard to be met shall be 14 CCR 921.4 (a): The average residual basal area, (measured in stems 1 in. or larger in diameter) shall be at least 100 square feet per acre on Site II and Site III lands.</li> <li>In addition. the STAs have more than one age class present, and the Selection method was chosen, therefore, leave at least 50% by number of those trees over 12 in. d.b.h. leave trees and established conifer regeneration shall amount to 50% of the pre-existing tree crown canopy cover. All leave trees shall be thrifty coniferous trees which are free from substantial damage caused by Timber Operations and leave trees shall have the characteristics of a "countable tree" described in Sec. 4528(b) PRC. No conifer tree shall be cut which is more than 75 ft. from a 3-point countable tree within the logging area.</li> <li>The Gualala Point Regional Park Buffer Zone STA (200' buffer) is approximately 1 acre, and overlaps the Gualala River STA. There is approximately 0.4 acres of this buffer zone that lies outside of the designated Gualala River STA. The silvicultural prescription described in this section shall apply to all STA areas. For the Gualala Point Regional</li> </ul>

**RESOURCE MANAGEMENT** 

	Ce	TREES THE TIEM #14 - SILVICOLTORE
		<ul> <li>Park Buffer Zone STA, skid trails, roads, and landings will be blocked from view with a screen of trees in areas where disturbance would be visible to a substantial number of viewers from the public. Please note that there are powerlines with cleared vegetation currently present in this area.</li> <li>A report of stocking as described in PRC 4587 shall be filed within six months following completion of work as described in the plan.</li> <li>The STA acreage includes 21 acres of WLPZ within the STA. Because the STA retention is higher than the WLPZ, the acres were counted under STA for the WLPZ, and the STA silvicultural standards shall apply in addition to the standards about for WLPZ Single Tree Selection</li> </ul>
Vasiable Detention		Degeneration Plan for Variable Detention
Aggregate		<ul> <li>YR 1 (33 acres): Retention standards will be met immediately after harvest with aggregate retention measures as allowed for in 14 CCR 913.4 (d)(3)(B). 15% of the pre-harvest area (4.95 acres) will be composed of aggregate retention patches.</li> <li>The objectives of retention are to maintain and improve slope stability, canopy cover, and biological structure within the unit boundaries. Aggregates shall be retained for at least 80 years, except where described below. Harvests outside of retention are intended to regenerate and restore conifer growth, and reduced fire hazard and fuel loading outside of retained areas. Hardwoods such as tanoak occupy much of this area of the THP and are currently inhibiting conifer growth.</li> <li>Hardwoods may be harvested or controlled to reduce tanoak site occupancy to levels found historically, outside of aggregate patches, if determined necessary in order to meet the requirements of 14 CCR 912.7 (d). Site preparation may be used outside of aggregates to improve the efficacy of regeneration establishment but will not be required to meet minimum stocking standards. The units will be artificially regenerated the first or second season (depending on the timing of the hardwood harvesi/control), following harvest operations. The stocking standards of 14 CCR 912.7 (b)(1) will be met within five years following completion of operations. All retained trees/patches will be protected to the extent feasible during timber operations consistent with 14 CCR 913.4 (d)(6). General Description of Aggregate Retention Group Locations (14 CCR 913.4 (d)(6).</li> <li>General Description of Aggregate stal and wall swales, rock outcrops, as well as in-tact forest patches and Class III waterourse ELZs. Aggregates may also be located around unique habitat features of the units uprotecting topographic features such as headwall swales, rock outcrops, as species/should of aggregate patches may be re-entered for intermediate treatments/harvests as the stand grows and requires pro</li></ul>
No-Harvest Areas	Ш	All unstable features shown on the Section II maps are "No Harvest" and
in the vost throad		Equipment Exclusion Zones. All unstable areas are flagged within the WLPZ of either a Class II watercourse or a wet area. Their acreage was

#### **CalTREES THP ITEM #14 - SILVICULTURE**

	Caltrees the item #14 - Silviculture
	calculated independently and removed from the WLPZ areas.
•	Note: While there are small areas of site class IV timberland present within and throughout the THP amongst Site Class III timberland, only the stocking standards for Site Class II/III timberland shall apply for all portions of the THP, EXCEPT for the timing for aggregate retention in the VR. Aggregates shall be retained for 80 years as per Site Class IV timberlands. The Silviculture Map at the end of Section II depicting the silvicultural boundaries of the VR unit indicates the location of applied stocking standards.
с.	EVENAGED REGENERATION SIZE
[□]Yes [ <b>X</b> ] No	Will even-aged regeneration step Units be larger than those specified in the rules? [ ] 20 acres TRACTOR [ ] 30 acres AERIAL or CABLE
	If YES is the RPF proposing:
	[D] An increase to even-aged TRACTOR Units to 30 acres because Erosion Hazards Rating is Low and the slopes are less than 30%
	[D] An increase to any even-aged harvest unit up to 40 acres
	If YES provide substantial evidence that the THP contains measures to accomplish any one of the subsections per 14 CCR § 913.1 [933.1, 953.1](a)(2)(A) – (E) In SECTION III
	Operational Instruction to the LTO, needed to meet subsections (A) – (E) above shall be included in SECTION II NOTE: Oversized Units should be designated on the THP map(s) by size.

**Operational instructions to the LTO:** 

d. TIMBER MARKING					
In the table below indicate the entire or sample area mark.	e area requiring tree	e marking, the metho	od of marking, who comp	bleted the marking and if it was an	
Marking completed in (specify Location(s))	Trees Marked (Harvest / Retained)	Completed By (RPF / Designee)	Area Marked (Entire / Sample area)	RPF Explanation if needed (Optional)	
Single-Tree Selection/WLPZ/STAs	Harvest Mark (blue paint: halo at breast height and stump mark)	RPF and Designee	Entire	All WLPZ is marked prior to the PHI	
Variable Retention- Aggregate	Retention trees are flagged inside of aggregate patches (pink "Do Not Cut" flagging) Retention Mark (orange paint: halo at breast height and stump mark)	RPF and Designee	Entire	All aggregates are flagged in pink "Do Not Cut" flagging Any other trees to be retained, shall be marked with orange paint prior to operations. All other merchantable trees outside of aggregate patches and without orange paint are to be harvested.	

Desirable residual trees and regeneration of commercial species shall not be damaged or destroyed by operations except where unavoidable due to safety concerns. Residual trees may only be removed for safety reasons. A sample mark of 10% of the area, up to a maximum 20 acres per stand type, shall be done prior to the PHI.

[[]]Yes [ <b>X</b> ] No	Is the RPF requesting a waiver of required marking?
	If YES, provide directions explaining how the LTO will determine what trees shall be harvested or retained:
	If more than one silvicultural method or group selection is used, provide instructions to the LTO identifying

#### CalTREES THP ITEM #14 - SILVICULTURE

how boundaries of the different methods or groups have been identified:
-VR unit will be differentiated from the Selection unit using Silviculture (green glo) with orange highlighter
flagging.
-The STA units are flagged with STZ (orange and white stripe) and pink highlighter flagging.
-The WLPZ selection areas are flagged with WLPZ (blue and white stipe) and orange highlighter flagging.

e. FORE	ST PRODUCTS TO BE	HARVESTED:				
[ <b>X</b> ]	Saw Logs	[X]	Poles	[X]	Clean Chips	 1
[X]	Peeler Logs	[X]	Split Wood Products	[X]	Firewood	1
[ <b>X</b> ]	Fuel Wood	[X]	Fuel chips	[[]]	Other	Y
[X]	Burl Wood					

f.	GROUP B SPECIES MANAGEMENT	
1.[X]Yes []] No	Are group B species proposed for management?	
2.[ ]] Yes [X]No	Are group B or non-indigenous A species to be used to meet stocking standards?	
3.[ <b>X</b> ]Yes [□] No	Will group B species need to be reduced to maintain relative site occupancy of group A species?	
If any answer is YES, list the species, describe treatment, and provide LTO felling and slash treatment guidance. See table below		

TABLE FOR LTO TREATMENT GROUP B SPECIES MANAGEMENT				
Species	Treatment Method	Felling Instruction	Slash Treatment Instructions	
Tanoak and Pacific Madrone	Hardwoods may be managed in acc prior to the final completion of time reduced through mechanical, physic postharvest conditions warrant the a license Pest Control Advisory (PCA specific prescriptions(s) at the time be conducted under the guidelines e Pesticide Regulations.	ordance with 14 CCR 912.7 (d), ber operations. Hardwoods may be cal, or chemical means. If upplication of an herbicide(s), a c) will be consulted to provide site- of application. Herbicide used shall stablished by the Department of	Slash Treatment along the property line shall adhere to the prescription described in Section II, Item 30.	

1. [ <b>X</b> ] Yes [□] No	Are follow-up treatments expected to maintain relative site occupancy of group A species?
	[X] Manual Treatments
	- Describe: <u>12" DHB and smaller tanoak may be removed, cut and knocked down by equipment to</u>
	release conifer during or post operations as necessary to maintain conifer site occupancy. Hand crews
	may manually cut, lop, and scatter, tanoak to reduce stocking of hardwood and maintain confer site
	species.
	[X] Herbicide Treatments
	- Describe: A PCA will make recommendations for treating hardwood with herbicide with limiting
1.	diameter to 16" DBH maximum tree size for treatment and concentrating on tanoak species. Retain
	madrone, live oak, and all deciduous species. A Licensed Pesticide Operator will conduct the herbicide
	treatment.
	[X] Both
-	If YES who will be responsible?
2.[X]Yes [1] No	Will a Licensed Pest Control Advisor be involved in the process?
Che	If YES explain when an advisor will be needed:
	If postharvest conditions warrant the application of an herbicide(s), a license Pest Control Advisory (PCA) will
	be consulted to provide site-specific prescriptions(s) at the time of application. Herbicide used shall be
	conducted under the guidelines established by the Department of Pesticide Regulations.

g.	LTO FELLING INSTRUCTIONS PLAN AREA
	Fallers will attempt to fall trees towards skid trails, fall trees away from the residual stand and keep tractor roads away from the residual stand,

#### **CalTREES THP ITEM #14 - SILVICULTURE**

when and where feasible. Fallers shall also fall trees away from Class II and Class III watercourses, and wet areas.

If a tree is inadvertently felled into a watercourse or wet area, the LTO shall remove any accidental depositions from wet areas, Class II, Class III watercourses, including any material that may need to be cleared by hand. The removal of material shall occur on the same day as the deposit occurs.

The LTO shall instruct fallers to be aware of retention trees and sub merchantable stocking intended to be left in a good thrifty condition, and avoid unnecessary damage to snags and if any, and to trees designated for wildlife retention. Retention Trees include trees that were not marked for harvest which exhibit the following characteristics which can be favorable for wildlife habitat:

- 1. Large lateral branches: A branch equal to or greater than 6-in in diameter located just outside of the branch collar.
- 2. Cavities: Trees with cavities greater than 3-in and 10-ft or more above the ground.
- 3. Hollow: trees with "goose pen" boles (basal cavities) extending 3-ft or more above ground level and extend at least 6-in vertically inside the cavity from the topmost point of the entrance hole.
- Evidence of Decay: Extensive decayed wood as evidenced by large and/or extensive fungal fruiting bodies (conk), cavity entrances, and sloughing wood and/or bark.
- 5. <u>Trees with multiple tops, broken tops, or snag tops, all minimum 12-in dbh, with a minimum 6-in dbh at the break or separation into multiple leaders.</u>
- 6. Old growth redwood trees and stand-alone Douglas-fir trees with "wolfy" branching structure, including large, spreading limbs and/or a large crown.
- Redwoods with boles having at least 75% defect, trees with vegetative deformities, high presence of lichens or moss, deeply fissured, cracked bark or loose slabs of flaking bark.
- 8. Trees with known raptor nests.
- 9. Stand-alone granary trees having at least 100 small holes on the tree that are either filled with acorns or capable of containing acorns.

The LTO shall also instruct fallers to search for active bird/wildlife nests prior to timber falling operations. If an active bird/wildlife nest is discovered, the LTO shall flag the tree to aid in avoidance. The LTO shall contact the Plan Submitter to determine if additional mitigations will be required.

h.	REGENERATION
[ <b>X</b> ]Yes [□] No	<ul> <li>Will artificial regeneration be required to meet stocking standards?</li> <li>Describe:</li> <li>Artificial regeneration may be needed to meet the Resource Conservation Standards for Minimum Stocking within the VR unit. Minimum stocking standards specified in 14CCR 912.7 (b)(1) will be met within five years after completion of timber operations. The Single-tree Selection and STA units shall meet stocking standards of described in item 14(b) above immediately upon completion of operations.</li> </ul>
	Regeneration Plan         1. Site preparation provisions are covered following this Regeneration Plan in the Site Preparation Addendum.         2. Planting stock will be sourced from seed or clones representing the best-available phenotypic specimens within the local area, and will be appropriate to the local seed zone, species composition and elevation. Seed-tree species shall be any of those 'Group A' species naturally occurring on the site.
	<ol> <li>Planting shall be done manually by hand-crews utilizing appropriate implements and supervised by landowner designees to meet or exceed internal company quality standards.</li> <li>Artificial regeneration may be needed to meet the Resource Conservation Standards for Minimum stocking with the Clearcut units. 14CCR 912.7 (b)(1) will be met within five years after completion of timber operations.</li> </ol>

And a second sec			
h.	SITE PREPARATION		
Definition of site preparation per 14 CCR § 895.1: Site preparation means "any activity" involving mechanical disturbance of soils or burning of vegetation which is performed during or after completion of timber harvesting and is associated with preparation of any portion of a logging area for artificial or natural regeneration.			
1[ <b>X</b> ]Yes [□] No	<ul> <li>Will site preparation be used within the logging area?</li> <li>If YES, provide site preparation plan per 14 CCR § 915.4 [935.4, 955.4]</li> <li>(a) Whether site preparation will be required to meet stocking: Site preparation will not be required to meet stocking, however, it may be employed to improve efficacy of regeneration activities in areas designated for VR silviculture, where ground-based yarding is employed. Heavy equipment used for site preparation shall only operate on slopes less than 30 percent, with no greater than moderate EHR (unless used to construct firelines). Heavy equipment shall not be used for site preparation</li> </ul>		
	CalTREES THP ITEM #14 - SILVICULTURE		
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	<ul> <li>under saturated soil conditions that may produce sediment in quantities sufficient to cause a visible increase in turbidity of downstream waters in receiving Class I, II, III or IV waters; that violates Water Quality Requirements; or when in cannot operate under its own power due to wet conditions.</li> <li>(b) The general methods of site preparation to be used: Mechanical crushing, ripping, and raking will be the methods used, as well as piling of slash and construction of fire lines around piles. Mechanical site preparation, including brush crushing, ripping, raking and piling and fireline contructruction, shall conform to 14 CCR 915.1, CCR 915.3, and CCR 916.3. After post-harvest conditions are evaluated, the final decision will be made regarding the appropriate site preparation method(s) to employ on site.</li> </ul>		
	(c) The types of equipment, if any, to be used for mechanical site preparation and firebreak construction: <u>Site Preparation and Firebreaks may be constructed using hand techniques and/or</u> ground based equipment except where restricted. Restricted areas for ground-based equipment include WLPZ, EEZ, and Unstable Areas. STA's and ELZs have limited equipment use.		
	(d) The Methods for protecting any desirable residual trees in accordance with 14 CCR 917.7: Mechanical: site preparation activities will take place in areas with heavy hardwood stocking and understory brush, the LTO will be given site specific instructions not to damage desirable residual trees within those areas prior to treatment.		
	(e) Explanations and justifications for any exceptions or alternatives to the standard rules: None are proposed.		
	(f) A map identifying the boundaries of site preparation areas, if different from logging area boundaries, and distinguishing areas by type of site preparation activity: Site prep activities may be used where VR is proposed, as indicated on the THP Map(s). Mechanical treatments shall not occur on slopes greater than 30%. Resource Conservation Standards for Minimum Stocking (14 CCR 912.7 (b) (1) and (2)), will not be compromised by this activity.		
	<ul> <li>(g) The name, address, and telephone number of the person responsible for conduct for site preparation activities shall be provided prior to conducting of site preparation activities: The LTO shall be responsible for the following activities: brush crushing, raking, ripping, fire line construction and piling. The burning shall be the responsibility of the landowner.</li> <li>(h) The estimated timing of site preparation operations: Heavy equipment shall not be used for site preparation during the winter period, and also shall not be used under saturated soil conditions that may produce significant sediment discharge or when it cannot operate under its own power due to wet conditions.</li> </ul>		
2[□]Yes [ <b>X</b> ] No	Will site preparation be required to meet stocking?		
	<ul> <li>General method(s) of site preparation: Refer to Site Preparation Addendum, Item B above.</li> <li>Type of equipment to be used for mechanical site preparation and/or firebreak construction: Refer to Site Preparation Addendum, Item C above</li> </ul>		
R 10	Methods to protect desirable residual trees per 14 CCR § 917.7 [937.7, 957.7]:     Refer to Site Preparation Addendum, Itam Fishave		
3.[□]Yes [ <b>X</b> ] No	<ul> <li>Are there any exceptions or alternatives proposed to the standard rules?</li> <li>If YES, provide an explanation and justification for the proposed exceptions:</li> </ul>		
	<ul> <li>Provide a map identifying the boundaries of site preparation areas, if different from the logging area boundaries, and distinguish areas by type of site preparation activity.</li> <li>Refer to Site Preparation Addendum, Item D above</li> <li>Prior to conducting site preparation activities provide the name of the person responsible for site</li> </ul>		
	preparation: <u>The LTO will be responsible for site preparation activities. At this time, we have not identified an LTO for</u>		

## CalTREES THP ITEM #14 - SILVICULTURE

this	project. The LTO responsibilities will be amended into the THP price	or to operations.
14	Name:	
	Address:	
-	Phone #:	
Esti <u>Ref</u>	mated timing of site preparation activities: er to Site Preparation Addendum, Item H above.	

j.	REGENERATION PLAN (rehabilitation of understocked areas or variable retention)		
[ <b>X</b> ]Yes [□] No	Is a regeneration plan needed per 14 CCR § 913.4 [933.4, 953.4](b) or (d)? If YES, please provide a detailed description for Review Team to evaluate how the proposed management prescription will aid in restoring and enhancing the productivity of commercial timberland.		

Regeneration plan: Please see item 14(h) above.

15/2024 RF COAST AREA OFFICE RESOURCE MANAGEMENT

#### ITEM #16 – HARVESTING PRACTICES

	YA	RDING S	YSTEM AND EQUIPME	NT TO I	BE USED
	GROUND BASED (Tractor, skidder, Forwarder)		CABLE		OTHER (Special)
[ <b>X</b> ]	Tractor, including end/long lining	[□] *	Cable, ground lead	[□]	Helicopter
[ <b>X</b> ]	Rubber tire skidder, forwarder	[□] *	Cable, High lead	[□]	Animal
[X]	Feller buncher	[[]]	Cable, skyline	[[]]	Other (describe below)
[X]	Shovel yarding	1.41.67	the second s		

## ITEM #17 - EROSION HAZARD RATING

		EROS	SION HAZARD RATING (EF	IR)	
		Per 14 CCR 914.6 [934.6, 954.6)(c) Waterbreaks Road and/or Trail Gradients Waterbreak Spacing by trail/road gradient			
		10 or less	11-25	26-50	>50
[□]	LOW	300	200	150	100
[X]	MODERATE	200	150	100	75
[□]	HIGH	150	100	75	50
[[]]	EXTREME	100	75	50	50

• If more than one rating is checked, areas must be identified on a THP map down to 20 acres in size.

• COASTAL DISTRICT with a High or extreme EHR(s) must be mapped to 10 acres.

• If ratings checked do not match the EHR Worksheet clarify the discrepancy:

EHR rating discrepancy:

## CalTREES THP ITEMs #19-21 - GROUND BASED EQUIPMENT

	If "YES" provide clear instruction to the LTO in Section II advising LTO how the Alternative is to be implemented to maintain equal protection of the standard rule. In Section III explain how the alternative practice proposed achieves environmental protection at least equal to that what which would result from using measures stated in 14 CCR §§ 914.1-914.8 ,934.1-934.8, 954.1-954.8.
LTO Instructions:	
14 CCR 914.2 [934.2, area.	954.2](a-k) Identifies the Forest Practice Rule requirements for the use of ground based equipment within the harvesting
<ul> <li>(b) Tractor, require the l</li> <li>(c) Tractor r</li> </ul>	or other heavy equipment equipped with a blade, SHALL NOT operate on skid roads or slopes that are so steep as to blade to be used for breaking. oads SHALL be limited in number and width to the minimum necessary for removal of loos.
- Whe cons	n less damage to the resources specified in 14 CCR 914[934, 945] will result, existing tractor roads shall be used instead of tructing new tractor roads.
<ul> <li>(e) Slash ar purposes, o</li> </ul>	In debris from timber operations SHALL not be bunched adjacent to residual trees required for silvicultural or wildlife r placed in a location where they could discharge into a Class I or II watercourse, or Lake.
<ul> <li>(g) where tr</li> <li>(b) Desirable</li> </ul>	actor roads are constructed only those roads shall be used for the skidding of logs to landings e residual trees and seedlings will not be damaged or destroyed by tractor operations.
<ul> <li>(i) where way</li> </ul>	ater breaks cannot effectively disperse surface runoff, other erosion controls shall be installed as needed.
<ul> <li>Slope restri</li> </ul>	ction are identified in subsection (d), (f) [Coastal, Northern], (j) [Southern] The LTO shall be aware of these rule requirements prior to operations
e. [X]Yes [] No	Will new tractor roads be constructed?
f. [[]Yes [X] No	Will tractor road use be limited to existing tractor roads?
ASP NOTE: per 14 C significant sediment d collection and storage flow across or along t with a National Weath	ischarge and (m) Tractor Road Drainage Facility Installation - All tractor roads shall have drainage and/or drainage facilities installed as soon as practical following yarding and prior to either (1) the start of any rain which causes overland he disturbed surface within a WLPZ or within any ELZ or EEZ designated for watercourse or lake protection, or (2) any day er Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.
Will ground based e	quipment be used on:
g.[□]Yes [ <b>X</b> ] No	Unstable areas? (only allowed if unavoidable) If YES, the RPF SHALL develop specific measures to minimize the effect of operations on slope stability. Provide the required justification and explanation in SECTION III and operational instructions to the LTO in SECTION II.
	All unstable areas within the THP are No-Harvest areas located either within and included in the WLPZ and are therefore Equipment Exclusion Zones, or within and included in pink "Do Not Cut" flagging (outside of the WLPZ) and is also an equipment exclusion zone. Trees within unstable areas included within the WLPZ flagging or "Do not cut" flagging are not marked for harvest.
h.[□]Yes [ <b>X</b> ]No	Slopes steeper than 65% if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.
i. [□]Yes [ <b>X</b> ]No	Slopes steeper than 50% where the erosion hazard rating (EHR) is HIGH or EXTREME. if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.
j. [ <b>X</b> ]Yes [□] No [ <b>X</b> ] [□]	Slopes between 50% and 65% with a MODERATE EHR at: (percentage based on average slope on sample areas of 20 acres) Existing tractor roads that do not require reconstruction. [NORTHERN and SOUTHERN only] New tractor roads that have been flagged by an RPF or supervised designee prior to use.

## CaITREES THP ITEMs #19-21 - GROUND BASED EQUIPMENT

designee prior to the pre-harvest inspection, or prior to the start of timber operations if a PHI was not required. if YES, provide site specific instructions to the LTO in SECTION II.
There are areas within the THP in which tractor operations are proposed on skid trails where slopes are between 50% - 65%. The EHR in these areas is Moderate. No new skid trails may be constructed in these areas. Skid trails blocked off with skid trail flagging shall not be used by the timber operator. No winter operations on these exception skid trails unless amended otherwise. Upon completion of use, skid trails shall be waterbarred to Moderate EHR standards and the slope percentage must be considered.
Slopes over 50% which lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake? if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.

Per 14 CCR 1034(x)(15) all exceptions must be located on a map.
If any question above is answered YES then tractor road locations must be flagged on the ground prior to the PHI or the start of timber operations if a PHI is not required.

Revised 2/5/2024

## **CaITREES THP ITEM #23 – WINTER OPERATIONS**

		period? If YES, provide specific measures to be taken during operations per 14 CCR 923.9 [943.9, 963.9](s) In SECTION II
q.	<b>X</b> ]Yes [□] No	If any of the questions above are answered YES then WPOP is required: RPF chooses to prepare a WPOP per 14 CCR 914.7 [934.7, 954.7](b)(1-12)

IF A WINTER OPERATING PLAN (WPOP) IS NOT BEING PROPOSED THEN THIS PAGE MAY BE REMOVED

#### ITEM FF

WINTER PERIOD OPERATING PLAN (WPOP)

Per 14 CCR 914.7 [934.7, 954.7](b) the WPOP shall include the specific measures to be taken during the winter period to avoid or substantially lessen erosion, soil movement into watercourses and soil compaction from timber operations. The winter period operating plan shall address the following subjects:

1)	Erosion Hazard Rating:	The Erosion Hazard Rating for the plan area is Moderate.
2)	Mechanical Site preparation methods:	Mechanical Site Preparation is not proposed during the winter period.
3)	Yarding system: (Constructed skid trails and tractor road watercourse crossings)	Tractor Yarding
4)	Operating Period:	<ul> <li>a) Timber falling may be conducted during the winter period. The felling of trees that have a chance of accidentally entering a Class II watercourse shall be deferred until such time as when equipment is available on-site to remove such trees from the watercourse.</li> <li>b) Cable harvesting: Not applicable to this plan.</li> <li>c) Ground based yarding: Ground based yarding shall be done only during dry rainless periods and shall not be conducted on saturated soils conditions that may produce significant sediment discharge. Significant Sediment Discharge (14 CCR 895.1) means soil erosion that is currently, or may be in the future, discharged (14 CCR 895.1) means soil erosion that is currently, or may be in the future, discharge of watercourses or lakes in quantities that violate Water Quality Requirements or result in significant individual or cumulative adverse impacts to the beneficial uses of water. Ground based operations that produce a Significant Sediment Discharge which causes a visible increase in turbidity to receiving Class I, II, III or IV waters is prohibited. Saturated soil conditions (14 CCR 895.1) means: "soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slury, or (5) inadequate traction without blading wet soil or surfacing materials." Use of tractor roads and watercourse crossings within any WLPZ/ELZ is prohibited during the winter period.</li> <li>Indicators of saturated soil conditions:</li> <li>In varding, this condition may be evidenced by:</li> <li>i) reduced traction by equipment indicated by spinning or churning of wheels or tracks i</li></ul>

Acvised 2/5/2024

## **CaITREES THP ITEM #23 – WINTER OPERATIONS**

	<i>Forest and Ranch Roads</i> , Weaver and Hagans, Rev 2015) and frequent enough to disperse road surface run off so as to avoid gully formation and minimize erosion of the road surface, erosion of the inside ditches, and erosion at the outfalls of drainage facilities and structures.
6) Consideration of form of precipitation: (rain or snow)	Precipitation is expected to occur in the form of rain and dense fog.
7) Ground conditions: (soil moisture conditions, frozen)	Ground Based Yarding and road use shall cease when soils are saturated as defined in Item 4(c) and (d), Operating Period, above.
8) Silvicultural system ground cover:	Silviculture is Single-Tree Selection, Variable Retention and Coastal Commission STA Selection. All harvest areas of the plan are expected to retain a vegetative cover in the form of overstory/understory vegetation, slash, and associated logging debris.
9) Operations within the WLPZ:	Operations within the WLPZ/ELZ during the winter period will be limited to:         a) The felling of trees. Trees shall be felled away from watercourses, in such a manner to facilitate the removal of logs from the WLPZ/ELZ with minimized disturbance to vegetation and ground cover.         b) Long lining of logs.         c)Road Maintenance as defined in Item 4 (g) above.         The in-lieu WLPZ facilities proposed in Item 27 are not proposed for use during the winter period.
10) Equipment limitations:	See Section II, Item 23, 4(b-g), 7, and 9 (b-d) above.
11) Known Unstable Areas:	All unstable areas, as depicted on the THP maps at the end of Section II, are excluded from harvest, and are equipment exclusion zones located within or incorporated in the WLPZ, or flagged within pink "Do Not Cut" flagging.
12) Logging roads and landings:	See item 4(d) above.

The following additional provisions shall apply during the winter period:

Prior to operations past Nov. 15, straw bales/wattles shall be placed along drainage features, as necessary, to serve as sediment traps where natural ground cover is not sufficient to effectively filter and trap sediment. Drainage features may also be rocked as necessary. Additional, site-specific measures such as insloping, outlsoping, installation of waterbreaks, rolling dips etc. shall be applied as necessary to hydrologically disconnect the road from watercourses.

The RPF or designee shall monitor the road system on a regular basis during the winter period to identify potential sources of sediment and ensure preventative measures are functioning.

Accidental depositions of debris within any watercourse channel shall be removed by the LTO immediately.

IN-LIEU WINTER PERIOD OPERATION PLAN		
r. [□]	RPF chooses the in-lieu winter operating plan option as allowed per 14 CCR 914.7 [934.7, 954.7](c)(1-3) Specify the procedures listed in subsections (1) and (2), and list the site specific measures for operations in the WLPZ and unstable areas as required by subsection (3). Not Applicable.	
s. [[]]Yes [[]] No	Will the in-lieu winter operating plan include operations within WLPZ(s) or unstable area(s) during the winter period? If YES, provide site specific measures per 14 CCR 914 [934, 954] to protect the beneficial uses of water in SECTION II as instructions to the LTO. Not Applicable.	
	Hauling and heavy equipment use roads and landings	
t. [□]Yes [ <b>X</b> ] No	Will <u>ROADS</u> be used for log hauling and heavy equipment use during the winter period where there will not be a stable operating surface or surfaced with rock to a depth and quantity sufficient to maintain a stable operating surface? If YES, the required explanation and justification should be provided in SECTION III per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].	

## CaITREES THP ITEM #24 & 25- ROADS AND LANDINGS

	Will any road(s) be abandoned?					
	Road classification: Approximate length Feet:					
	Permanent					
	Seasonal					
	Temporary <u>8,744 feet</u>					
Constant States	Will any watercourse crossing(s) be deactivated?					
<b>3.[X</b> ]Yes [□] No	Will any watercourse crossing(s) be abandoned?					
4.[∐]Yes [ <b>X</b> ] No	If YES, describe specific measures to prevent significant sediment discharge. per 14 CCR 923.8 [943.8, 963.8] et seq. and 923.9 [943.9, 963.9](e) and (p)					
	Road Points #B, 6, 11, 12, 13, 20, 27, 28, 29, 30, 42, 43, and 44 are located on existing temporary roads and have existing temporary crossings. These crossings shall be deactivated prior to the winter period. See Item 24 Road Point Table for a description of these crossings.					
	See the following standards for RP #B, 6, 11, 12, 13, 20, 27, 28, 29, 30, 42, 43, and 44 (watercourse crossings) and the Map Point table for additional specifications:					
	(1) Fills shall be excavated to form a channel that is as close as feasible to the natural Watercourse grade and orientation, and that is wider than the natural channel as observed upstream and downstream of the Logging Road Watercourse crossing to be removed.					
	(2) The excavated material and any resulting cut bank shall be no greater than 65 percent (1.5:1,					
	horizontal to vertical) from the outside edge of the constructed channel to prevent slumping, to minimize					
	soil erosion and sediment transport, and to prevent significant sediment discharge. Exposed soil located					
	between the watercourse crossing and the nearest adjacent drainage facility or hydrologic divide, whichever is closer including cut banks and excavated material shall be stabilized by seeding, mulching,					
	rock armoring, replanting, or other suitable treatment to prevent soil erosion and significant sediment discharge					
	(3) Where it is not feasible to remove a Logging Road Watercourse crossing or its associated fill to the					
	above standards, the plan shall identify how soil erosion and significant sediment discharge will be					
	prevented.					
	(4) All Logging Road Watercourse crossings proposed for removal shall be removed upon completion of use prior to the winter period or as specified in the applicable CDFW 1600 agreement, whichever is					
	earlier, or as otherwise specified in the plan.					
	If Logging road(s) are to be abandoned provide the blockage design Per 14 CCR 923.8 [943.8, 963.8](d)					
. [□]Yes [ <b>X</b> ] No	Is there any exception to flagging or otherwise identifying the location of any road(s) to be constructed?					
No	If YES, address per 14 CCR 923.3 [943.3, 963.3](c)					

	ROAD RECONSTRUCTION						
i. [[]]Yes [ <b>X</b> ] No	Will any roads be RECONSTRUCTED?						
	PROVIDE: The classification and approximate length of each of the following logging road segment categories: 1034(o)         Road classification:       Approximate length Feet:         Permanent						
j. [□]Yes [ <b>X</b> ] No	Will new road reconstruction be wider than single lane with turnouts? If YES, address pursuant to 14 CCR 923 [943, 963](c) & 923.2 [943.2, 963.2](d)(1)						
k. [□]Yes [ <b>X</b> ] No	Will any logging roads be reconstructed within? Class I Watercourse or Lake Class II Watercourse or Lake						
	20						

Map Point	Point Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	

1	1 Controllable Sediment	Moderate, 20 vds	Yes	A Class II-L watercourse and northern bank seep cross an existing permanent road via a double-culverted crossing. Both culverts are 36° steel pipes. The northern
	Discharge Site (CSDS) Class II-L Watercourse Q100= 81.2 cfs	Yes	No	<ul> <li>culvert is set ~6" lower than the southern one, is spaced 2' from the southern culvert, and is the main culvert passing flows under the road. This culvert is completely rusted through, and water is running under the pipe. The channel bottom has a rocky and hard substrate both up and down stream of the crossing. The southern culvert passes water during high flows and is functional/ not rusted through.</li> <li>Remove both culverts and install a 73"x 55" size pipe-arch culvert (with a non-beveled inlet) to watercourse grade.</li> <li>Install a critical dip downgrade of the crossing.</li> <li>Rock armor the fill slope where the inside ditch outlets into the culvert inlet area with 10" D<sub>50</sub> rock.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
2	CSDS	Low, Lvd	Yes	An inside ditch draining a bank seen leads to the inlet of a functional Class II-S
	Bank seep inside ditch; Draining to Class II-S Watercourse	No	No	<ul> <li>watercourse crossing (30" culvert) located on an existing permanent road. The ditch is shallow for ~75' upgrade of the crossing and is saturating the road, due to road rocking maintenance. At the culvert outlet, there is an unstable feature that was identified as a point on a map for THP 1-15-042SON; This road and this crossing was addressed in the 2017 Action Plan: Gualala Redwood Timber LLC (GRT) and Gualala Community Services District (GCSD): Storm Proofing the Sewer Treatment Plant Access Road (included in Section V), in which the culvert was carefully replaced and set in a specific manner due to the slide at the outlet as well as the utilities for the sewer treatment plant buried directly under the culvert inlet. The road was also insloped and intended to drain to the inside ditches in order to keep flows off of the slide. Therefore, the improvement of the inside ditch at this location is imperative in protecting this site.</li> <li>From the 3 orange flags (75' upgrade of crossing), to the culvert inlet, improve the ditch line by excavating the ditch approximately 2' wide and 1-2'deep.</li> <li>Operations at this road point shall be solely confined to the inboard edge of the road, and operations proposed shall improve road drainage and saturation of the road prism above the unstable feature. It is not expected to have any negative impact on the feature and should prevent water from flowing onto the feature from the road's edge.</li> </ul>
2.1	Ditch Crossing	N/A	No	At an intersection of an existing seasonal and permanent road, an 18" CMP crosses
		No	No	the seasonal road for a ditch line that runs along the inside of the permanent road.
	7.	140	NO	<ul> <li>The culvert outlet is crushed and the pipe is caved in part way through.</li> <li>Remove the culvert and replace with an 18" culvert.</li> </ul>
2.2	Ditch Relief	N/A	No	An 18" ditch relief culvert crosses an existing permanent road. The outlet is 50%
	Culvert	No	No	<ul> <li>plugged with sediment.</li> <li>Clean outlet of DRC.</li> </ul>
в	Unstable Area	N/A	No	There is an unstable, steep swale located within the WLPZ of a Class II-L
	Below Road	No	No	<ul> <li>watercourse and below an existing temporary road. This swale leads to the Class II-L watercourse.</li> <li>To prevent concentrated drainage onto the swale, install a waterbar or dip on the western approach to the swale to direct drainage away from/prior to the swale, at the flagged location. The outlet of the waterbar shall be directed to the west of trees closest to the swale.</li> </ul>
6		N/A	Yes	A Class II-S watercourse crosses an existing temporary road via a low water

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Map Point	Controllable Sediment Discharge Site (CSDS), Description	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
	Class II-S Watercourse	No	No	<ul> <li>crossing. Water from a ditch relief culvert (RP #10) is currently running down the southern approach to this crossing.</li> <li>During operations, install a spittler crossing as per Diagram #2 to cross the watercourse.</li> <li>If wet during operations, the spittler crossing shall include a minimum 18" culvert at the base.</li> <li>After operations and prior to the winter period of use, remove the crossing by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
7	CSDS	20 yds,	Yes	A Class II watercourse crosses an existing seasonal road via a 36" CMP. The inlet is
	Class II Watercourse (Non-ASP) Q100= 18.6 cfs	Yes	No	<ul> <li><sup>1</sup>/<sub>2</sub> blocked with sediment, boulders and debris, and water is partially flowing underneath the culvert. The culvert is not set to grade, and there is approximately 10' of backcutting underneath the pipe, and a 2.5' drop to natural channel grade. The culvert is also rusty at the bottom but is not rusted through.</li> <li>Remove the culvert and replace with a 36" diameter culvert to watercourse grade.</li> <li>Install a trash rack at the inlet of the culvert.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
8	Wet area	N/A	No	A wet area crosses an exiting seasonal road via a dip and is functional.
		Yes	No	<ul> <li>If wet during operations, install a temporary small pipe.</li> <li>After operations, remove the pipe and reinstall the dip.</li> </ul>
9	CSDS	20 yds, Low	Yes	A Class II watercourse crosses an existing seasonal road via a 30" CMP. The pipe is rusty and water runs under the culvert. The culvert is not set to grade, and there is a
Class II Watercourse Q100= 9.3 cfs Vater ourse Q100= 9.3 cfs Vater ourse Q100= 9.3 cfs Vater ourse Class II Vater ourse Vater	<ul> <li>~2.5' drop at the outlet.</li> <li>Remove the culvert and replace with a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>			
10	CSDS Ditch Relief	5 yds, Moderate	No	A ditch drains along an existing permanent road and crosses a spur road via an 18" culvert with a rocked inlet. The culvert outlet is 34 plugged with sediment and the
	Culvert	No	No	<ul> <li>ditch is transporting a significant amount water; After the pipe crosses the spur road, water is discharged into the stand on flat topography. The water makes its way back to the road's edge, flows alongside it for a ~20', then eventually makes its way to the southern approach of RP 6. Water flows down the spur road for 100' to RP 6, and there is gully erosion leading to the Class II-S watercourse. There is an existing ditch line with a lower ditch relief culvert along the permanent road on the southern side of the road that would be more appropriate for this system.</li> <li>Remove the cross drain for the spur road.</li> <li>Replace the culvert as per Diagram # 3.</li> <li>Improve and deepen the ditch line on the southern side of the permanent road from RP #10 to the next DRC downgrade where the ditch is currently too shallow.</li> </ul>
11	Class III	N/A	Yes	A Class III watercourse crosses an existing temporary road via a dip.
u	Class III Watercourse	N/A No	Yes	<ul> <li>A Class III watercourse crosses an existing temporary road via a dip.</li> <li>After operations and prior to the winter period of use, remove the crossing by excavating the channel to watercourse grade and reinstalling the dip.</li> <li>Layback side slopes 1.5H:1V (i.e. reinstall dip).</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
11	Class III Watercourse Wet Area	N/A No N/A	Yes No No	<ul> <li>A Class III watercourse crosses an existing temporary road via a dip.</li> <li>After operations and prior to the winter period of use, remove the crossing by excavating the channel to watercourse grade and reinstalling the dip.</li> <li>Layback side slopes 1.5H:1V (i.e. reinstall dip).</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> <li>A wet area crosses an existing temporary road via a waterbar.</li> </ul>

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Map Point	Controllable Sediment Discharge Site (CSDS), Description	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Cale.	Geo Report	
13	Wet Area	N/A	No	A wet area crosses an existing temporary road via a rocked dip with oversized rock
		No	No	<ul> <li>in the road prism.</li> <li>Hauling log trucks across this rocked dip may be difficult and require a smoother running surface; Rock in the road prism may need to be crushed or a layer of road rock will be needed to place on top of the dip.</li> <li>After operations, reinstall and maintain the rocked dip.</li> </ul>
14	CSDS	5 yds,	Yes	A Class III watercourse runs down an existing seasonal road to the inlet of RP #15
	Class III Watercourse Q100: 5 cfs	Yes	No	<ul> <li>(down grade of RP #14), as well as off of the road towards the outlet of RP #15, with no crossing in place. There is minor erosion in the road prism and the fillslope of the road.</li> <li>Install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Monumers</li> </ul>
15	CSDS	10 yds,	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. At the
	Class III Watercourse Q100: 11.1 cfs	Yes	No	<ul> <li>inlet, the culvert is rusty and at the outlet there are rust holes from the outlet to about 10' back.</li> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
16	Bank Seep	N/A	No	A bank seep crosses an existing seasonal road via a waterbar.
		No	No	<ul> <li>If wet during operations, install a small temporary pipe to avoid saturation of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the waterbar at this location, or a rolling dip.</li> </ul>
17	Bank Seep	N/A	No	A wet ditch crosses an existing seasonal road via a waterbar.
		No	No	<ul> <li>If wet during operations, install a small temporary pipe to avoid saturatio of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the waterbar at this location, or a rolling dip.</li> </ul>
18	Bank Seep	N/A	No	A bank seep and wet area cross an existing seasonal road via a waterbar. No erosio
		No	No	<ul> <li>is occurring in the road prism or edge.</li> <li>If wet during operations, install a small temporary pipe to avoid saturation of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the waterbar at this location, or a rolling dip.</li> </ul>
19	Bank Seep	N/A	No	A wet ditch overtops and runs down an existing seasonal road towards a landing
		No	No	<ul> <li>and crosses the road at the head of a Class III watercourse. No erosion is occurring in the road prism or edge.</li> <li>Improve the ditch for 200' upgrade of the crossing.</li> <li>At the crossing, install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
20	Class III	N/A	Yes	A Class III watercourse crosses an existing temporary road via a temporary/pulled
	Watercourse	No	No	<ul> <li>crossing.</li> <li>After operations and prior to the winter period of use, remove the crossin by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
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Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
20.1	CSDS	10 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. The culvert is rusted through and is shotgunned with a 4' drop at the outlet.
	Class III Watercourse Q100: 1.7 cfs	No	No	<ul> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
21	CSDS	5 yds,	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP with a
	Class III Watercourse Q100: 2.7 cfs	No	No	<ul> <li>rocked fill face. The culvert is buried at the outlet. At the inlet, there are rust holes.</li> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
22	CSDS	10 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. The culvert is rusted through and is shotgunned with a 1' drop at the outlet.
	Class III Watercourse Q100: 1.1 cfs	No	No	<ul> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
23	CSDS	7 yds, Moderate	Yes	A Class III watercourse crosses an existing seasonal road with no crossing in place, however there is a large cavity in the road prism near the out-board edge, with water
	Class III Watercourse Q100: 5.3 cfs 1.5:1 outfall gradient	No	No	<ul> <li>running ~10' below the road surface via a soil pipe. The channel directly above the road is poorly defined.</li> <li>Install a rock armored fill crossing as per Diagram #1 using 18" Dso rip rap.</li> <li>In the road prism, excavate to the apparent channel bottom and place larger rip rap for a minimum of 5' prior to adding road rock above.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
24	Class III	N/A	Yes	A wet area crosses an existing seasonal road via a large broad dip with underlain
	Watercourse and Wet Area	No	No	<ul> <li>geotextile fabric. There are waterbars prior to the dip on both approaches.</li> <li>If wet during operations, install a small temporary pipe to avoid saturation of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the dip.</li> <li>Reinstall the waterbars in the same locations at both approaches.</li> </ul>
25	Head of Class	1 yd, Low	No	A Class III watercourse originates below an existing seasonal road at this location,
	III Watercourse and Wet Area	No	No	<ul> <li>and a dip with a moderately eroded outlet drains here. This dip, as well as 2 other dips upgrade of this crossing drain a 300' stretch of road that crosses through a wet area. The outlets of the two upgrade dips are slightly eroded. There is one more dip downgrade of this point as well that drains more of the road.</li> <li>At this location, install a rock armored fill crossing as per Diagram #1 using 12" D<sub>50</sub> rip rap.</li> <li>After operations, maintain/reinstall the two dips upgrade and the one dip downgrade of the crossing.</li> </ul>
26	Head of Class III Watercourse and Wet Area	1 yd, Low No	No No	<ul> <li>A Class III watercourse originates below an existing seasonal road at this location. The approaches to this low point are gentle but still drain to this point, and the road is saturated for ~75'.</li> <li>If wet and saturating the road prism during operations, apply enough road rock to the prism to obtain a stable running surface through this area.</li> </ul>
27		N/A	No	The road drains to the head of a Class III watercourse on an existing temporary road

Map Point	nt Controllable Sediment Discharge Site (CSDS), Description, Watercourse Class	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
		Hydro Calc.	Geo Report	

	Head of Class III Watercourse	No	No	<ul> <li>via a dip.</li> <li>After operations and prior to the winter period of use, reinstall the dip an ensure disconnection on either approach by waterbarring.</li> </ul>
28	Class III Watercourse	N/A No	Yes No	<ul> <li>A Class III watercourse crosses an existing temporary road via a temporary/pulled crossing.</li> <li>After operations and prior to the winter period of use, remove the crossin by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
29	Class II	N/A	Yes	A Class II watercourse crosses an existing temporary road via a temporary/pulled
	Watercourse	No	No	<ul> <li>crossing.</li> <li>During operations, install a spittler crossing as per Diagram #2 to cross the watercourse.</li> <li>If wet during operations, the spittler crossing shall include a minimum 18" culvert at the base.</li> <li>After operations and prior to the winter period of use, remove the crossin by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
30	Class III	N/A	Yes	A Class III watercourse crosses an existing temporary road via a dip.
	Watercourse	No	No	<ul> <li>After operations and prior to the winter period of use, remove the crossi by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
31	CSDS	10 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through.
	Class III Watercourse Q100: 5.1 cfs	Yes	No	<ul> <li>culvert is rusted through.</li> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
32	CSDS	1 yd, Low	No	A bank seep drains to an inside ditch which drains to the inlet of a Class II
	Bank Seep upgrade of Class II Watercourse	No	No	<ul> <li>watercourse. Water from the bank seep currently saturates road and is minorly eroding the road prism.</li> <li>Improve and deepen the ditch from this point to the inlet of the Class II watercourse crossing.</li> <li>Rock armor the outlet of the ditch at the culvert inlet with 10" D<sub>50</sub> rock.</li> <li>Spoils shall be removed from site and placed in a stable location outside of the WLPZ.</li> </ul>
33	CSDS	15 yds, Low	Yes	A Class II watercourse crosses an existing seasonal road via a 36" CMP. The culvert is breaking apart and rusted at the inlet, rusty all the way through, and has
	Class II Watercourse Q100: 51.0 cfs	Yes	No	<ul> <li>rust holes allowing water to run underneath the culvert. The culvert is not set to grade and there is a 4' drop at the outlet. The fillslope beneath the outlet of the culvert is back cutting due to water running beneath the culvert.</li> <li>Remove the culvert and install a 54" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
34	CSDS	15 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through.
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Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
	Class III Watercourse Q100: 2.9 cfs	Yes	No	<ul> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
35	CSDS	12 yds,	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The
	Class III Watercourse Q100: 7.1 cfs	Yes	No	<ul> <li>culvert is rusted through.</li> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
С	CSDS	3 yds,	No	A steep segment of through-cut road with a high watertable and wet areas has seven
	Rolling dins	Low	No	existing rolling dips. Between the 6 <sup>th</sup> and 7 <sup>th</sup> dip at the bottom of the road segment,
	and Wet Area	NO	NO	<ul> <li>additional bank seep water is contributing to the last dip. This is eroding the roal prism down by about 2.5' into a gully. The road is insloped towards this dip.</li> <li>At the location of the three orange flags just upgrade of the dip, excav an inside ditch that is 1.5' wide by 2 feet deep in order to drain the we bank seep to the outlet of the dip without eroding the road prism.</li> <li>Maintain all other 6 dips at their current location.</li> </ul>
36	CSDS	1 yd, Low	No	A wet area crosses an existing seasonal road via a rocked dip with large sandstone
	Wet Area	No	No	<ul> <li>rip rap at the outlet. There is a small nick point where the road prism meets the rap at the edge of the road.</li> <li>Restack and reposition the existing rip rap at this location to ensure the edge of the road is fully armored at the dip.</li> </ul>
37	CSDS	5 yds,	Yes	A Class III watercourse and wet area collect in a ditch and cross an existing
	Class III Watercourse Q100: 14.7 cfs	Yes	No	<ul> <li>seasonal load via an 18° CMP. The curvent is fusced through. Downgrade of this crossing there is another inside ditch with a 24" CMP as a ditch relief culvert that is functional.</li> <li>Remove the culvert at the watercourse crossing and install a 36" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
38	Class III	N/A	No	A Class III watercourse and wet area cross an existing seasonal road via a rocked
	Watercourse and Wet Area	N/A	No	<ul> <li>ford. The ford is functional.</li> <li>If wet during operations, install a small temporary pipe.</li> <li>Maintain rocked ford after operations.</li> </ul>
39	Head of Class	N/A	No	An existing seasonal road crosses over the head of a Class III watercourse via a
	III Watercourse	No	No	<ul> <li>rocked dip. The outlet of the dip has no rock and is minorly eroding.</li> <li>Rock armor the outlet of the dip with 12" D<sub>50</sub> rip rap.</li> </ul>
40	CSDS	2 yds,	No	A Class III watercourse runs down an existing seasonal road for ~45' before
	Class III Watercourse	Low No	No	<ul> <li>crossing the road via an earthen dip. There are no signs of major erosion at the outlet of the dip or in the road prism.</li> <li>Where the Class III watercourse first hits the road, reestablish the dip upgrade of the watercourse.</li> <li>Install an inside ditch for 45' that leads to the dip to keep the water off of the road prism.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
41	Wet Area	N/A	No	A large wet area crosses an existing seasonal road via a dip.

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Map Point	Controllable Sediment Discharge Site (CSDS), Description	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
		No	No	• If wet during operations, install a temporary pipe, or rock the road enough to ensure a stable running surface.
42	Class III	N/A	Yes	A Class III watercourse crosses an existing temporary road via a temporary/pulled
	Watercourse	No	No	<ul> <li>crossing.</li> <li>After operations and prior to the winter period of use, remove the crossing by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
43	Class III Watercourse and Wet Area	N/A	Yes	A Class III watercourse crosses an existing temporary road via a temporary/pulled crossing. • After operations and prior to the winter period of use, remove the crossing
		No	No	<ul> <li>by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
44	Class III	N/A	Yes	A Class III watercourse crosses an existing temporary road via a temporary/pulled
	Watercourse	No	No	<ul> <li>crossing.</li> <li>After operations and prior to the winter period of use, remove the crossing by excavating the channel to watercourse grade.</li> <li>Layback side slopes 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
45	Wet Area	N/A	No	Water sheds off of a hillside and saturates the road for 150' before leaving the road prism again to the east.
		No	No	<ul> <li>At the flagged location, direct the water off the road to the west where there is an existing kick out and large blackberry patch.</li> </ul>
46	Class III	N/A	Yes	A Class III watercourse crosses an existing seasonal road via a large dip.
	Watercourse	No	No	<ul> <li>If wet during operations, install a small temporary pipe.</li> <li>After operations, remove culvert and maintain dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
47	Class III	N/A	No	A Class III watercourse crosses an existing seasonal road via a rock armored fill
	Watercourse	No	No	<ul> <li>crossing. The rock in the road prism is of large cobble size 8-12".</li> <li>Add smaller road rock to create a smooth-running surface.</li> </ul>
48	CSDS	8 yds,	Yes	A Class III watercourse crosses an existing seasonal road via 12" CMP. The outlet
	Class III Watercourse	Yes	No	<ul> <li>The LTO shall locate and clean the outlet if possible.</li> <li>If the culvert is crushed or damaged at the outlet, replace the culvert with an 24" culvert to watercourse grade.</li> </ul>
48.1	2100. 1.5 CIS	N/A	No	A bankseep and saturated road segment drain via a rolling dip on an existing
	Bankseep	No	No	<ul> <li>seasonal road.</li> <li>If wet during operations, install a small temporary pipe to avoid saturation of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the waterbar at this location, or a rolling dip.</li> </ul>

Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
49	CSDS	15 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 30" CMP. The pipe is rusted through at least 5' from the outlet.
	Class III Watercourse Q100: 4.9 cfs	Yes	No	<ul> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip no more than 50' downgrade of the culvert.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
50	CSDS	8 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 30" CMP. The pipe is rusted through the entire length of the culvert
	Class III Watercourse Q100: 6.8 cfs	Yes	No	<ul> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
51	Class III	N/A	No	A Class III watercourse crosses an existing seasonal road with no crossing in place.
	watercourse	No	No	<ul> <li>Install an earthen dip.</li> </ul>
52	CSDS	15 yds,	Yes	A Class II watercourse crosses an existing seasonal road via a 36" CMP. The pipe is
	Class II Watercourse Q100: 28.9 cfs	Yes	No	<ul> <li>rusted through the entire length of the culvert. A 3' long x 4' wide x 1.5' deep hole exists in the road prism over the culvert. A Class III watercourse at RP 53 delivers to the crossing at RP 52 by way of a shallow inside ditch and saturates the road prism.</li> <li>Remove the culvert and install a 36" diameter culvert to watercourse grade.</li> <li>The inside ditch will outlet the Class III watercourse to the inlet of this Class II watercourse. Rock armor the fill face and inside ditch at the southern side of the inlet with 10" D<sub>50</sub> rip rap.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
53	CSDS	5 yds,	Yes	A Class III watercourse runs down an inside ditch, then on the road prism towards RP 52
	Class III Watercourse	No	No	Re-establish the inside ditch to connect to the inlet of RP 52. As stated above, rock armor the inlet and fill face of culvert where the ditch intercepts it.
54	CSDS	10 yds,	Yes	A Class II watercourse crosses an existing seasonal road via a 30" CMP. The culvert is rusted through for 5-10' at the outlet, and the inlet bottom is broken apart.
	Class II Watercourse Q100: 22.0 cfs	Yes	No	<ul> <li>culvert is rusted through for 5-10' at the outlet, and the inlet bottom is broken apa</li> <li>Remove the culvert and install a 36" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
55	CSDS	4 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through at both the inlet and outlet. It is not to watercourse grade
	Class III Watercourse Q100: 0.6 cfs	Yes	No	and has a flume at the outlet (20' long). The culvert is located on an inside turn in the road, the road is outsloped, and there is an old fillslope failure at the outlet. The fillslope at the edge of the road is vertical in some places, but overall is stable, mostly vegetated and has young straight redwood and Douglas-fir trees (6-16" DBH) growing throughout the feature. The road upgrade (east) of the crossing is shedding water off the road onto the feature in various locations prior to the culvert. There is a shallow, overflowing inside ditch that is also allowing water to cross the road rather than flow into the inlet of the crossing.

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Map Point	Controllable Sediment Discharge Site (CSDS), Description.	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Cale.	Geo Report	
				<ul> <li>Remove the culvert and install a 24" diameter culvert. Install the culvert so that the outlet is set to where there is a well-defined channel, about 10'downslope of the current flume outlet. (~35' slope distance from road edge). Setting the culvert to watercourse grade in this location is not feasible due to the unknown depth at which true watercourse grade exists within the deposited material from the fill failure near the outlet.</li> <li>Layback the vertical fillslopes to the extent feasible where remaining after installation; cut into the cutbank to gain appropriate road width if needed.</li> <li>Install a rolling dip 65' upgrade of the culvert, to outlet where "dip" is painted on a tree.</li> <li>Downgrade of the dip, reinstall the inside ditch to approximately 6" deep.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
T1	Class III	N/A	Yes	A Class III watercourse crosses an existing skid trail.
	Tractor Crossing (in WLPZ)	No	No	<ul> <li>After operations and prior to the winter period of use, pull the crossing and excavate the channel to watercourse grade.</li> <li>Layback the banks of the crossing 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18, Soil Stabilization Measurer</li> </ul>
Т2	Class III	N/A	Yes	A Class III watercourse and wet area cross an existing skid trail.
	Tractor Crossing (in WLPZ)	No	No	<ul> <li>After operations and prior to the winter period of use, pull the crossing and excavate the channel to watercourse grade.</li> <li>Layback the banks of the crossing 1.5H:1V.</li> <li>Exposed soil shall be stabilized as per Item 18, Soil Stabilization Measures</li> </ul>
L2	Partial WLPZ	N/A	No	A landing located on either side of an existing seasonal road is partially within the
	Landing	No	No	<ul> <li>WLPZ at its edges, above the confluence of two Class II watercourses. This landing and the areas that may extend into the WLPZ are proposed for use. There are no fillslopes at the edge of the landing as the area is fairly flat.</li> <li>No operations will occur within 50' of the northern Class II watercourse at L2.</li> <li>Once operations are complete, the landing surface shall be shaped to drain water away from the Class II watercourse.</li> <li>No operations will occur at L2 during the winter period.</li> <li>Exposed soil within the WLPZ shall be straw mulched or slash packed as per Item 18, Soil Stabilization Measures</li> </ul>
1248	Class I Direct	N/A, N/A	Yes	Temporary water drafting pit along the Class I South Fork Gualala River.
	Drafting Site	No	No	<ul> <li>It will consist of a shallow pit excavated into the gravel bar no closer than 10 feet from the wetted channel of the stream, and shall not disturb established vegetation.</li> <li>This drafting site has been used in previous plans and is featured in several current plans (1-22-00042 SON, 1-20-0003-SON, 1-19-0197-MEN, 1-15-0042-SON).</li> <li>See Item 26s and Item 26- Drafting Parameters for details.</li> </ul>
2061	Class I Direct Drafting Site	N/A, N/A No	Yes No	<ul> <li>Temporary water drafting pit along the Class I South Fork Gualala River.</li> <li>It will consist of a shallow pit excavated into the gravel bar no closer than 10 feet from the wetted channel of the stream, and shall not disturb established vegetation.</li> <li>This drafting site has been used in previous plans and is featured in several current plans (1-22-00042 SON, 1-20-0003-SON, 1-19-0197-MEN, 1-15-0042-SON).</li> <li>See Item 26s and Item 26- Drafting Parameters for details.</li> </ul>

\*High Immediacy Sites: Must be completed within one year of plan approval. Moderate Immediacy Sites: Must be completed within the first full ye

Moderate Immediacy Sites: Must be completed within the first full year of operation. Low Immediacy Sites: Must be completed during the life of the plan.

Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations	
	Watercourse Class	Hydro Calc.	Geo Report		

No significant existing and potential erosion sites that do not have feasible measures were identified for treatment within the plan area (14 CCR 933.1(e)(4)).

Please refer to the Roads and Features Map for location of these sites.

Prior to upgrading any road segment from seasonal to permanent, within or appurtenant to the plan, the Plan Submitter shall notify the director, through a minor deviation to the THP, which roads will change in classification. This amendment will ensure compliance with 14 CCR 1034(X)(4)(A).

Any amendments filed for shared crossings under a different THP, will also be amended into this THP.

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#### CaITREES THP ITEMs 26 - WATERCOURSES

#### ITEM #26- WATERCOURSE LAKE PROTECTION ZONE (WLPZ) PROTECTION MEASURES

ITEM #26		WATERC	OURSES			
Per 14 CCR 916, 936, 9 operations do not pote riparian-associated spe to cause violation of an anadromous salmonid It is the intent of the B consideration for the c that are made, and the conditions and those n	56 – Intent of Watercours entially cause significant a ecies, and the beneficial fu- ny applicable legal require s and watersheds listed as oard to restore, enhance, quality and beneficial uses e measures that are taken measures.	e and lake Protection [A dverse site-specific and d inctions of riparian zone: ments. This article also p water quality limited ur and maintain the produc of water relative to that or prescribed, be docum	LL DISTRICTS] – The purpose of this article is to ensure that timber cumulative impacts to the beneficial uses of water, native aquatic and s; or result in an unauthorized take of listed aquatic species; or threaten provides protection measures for application in watersheds with listed ader Section 303(d) of the Federal Clean Water Act. ctivity of timberlands while providing appropriate levels of productivity Further, it is the intent of the Board that the evaluations mented in a manner that clearly and accurately represents those existing			
a. [ <b>X</b> ]Yes [□] No	Are there any watercourses or lakes classified as a CLASS I through CLASS IV within or adjacent to the plan area? (Check all that analy)					
	<ul> <li>[□] Class I:</li> <li>[X] Class II:</li> <li>[X] Class III:</li> <li>[□] Class IV:</li> <li>[□] Lakes:</li> <li>[X] Other</li> <li>(Springs, Seeps)</li> </ul>	Within plan area         [□]         [X]         [X]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [□]         [X]         Seeps	Adjacent to plan area [ ] [ X] [ X] [ ] [ ] [ ] [ ] [ ] [ ] [			

#### If YES, to above question list:

- Class of the water feature
- Associated WLPZ or ELZ and width
- Protection measures; determined from 14 CCR 916.5[936.5, 956.5], Table I. and/or 14 CCR 916.9[936.9, 956.9] et seq.
- Specify if Class III or IV watercourses will have a WLPZ or ELZ

<b>b.</b> [ <b>X</b> ]Yes [□] No	Will Class III or IV watercourses be protected with a WLPZ or ELZ?
and the second second	If YES, describe below

LTO instructions:

Slope Class	Class II-L WLPZ Width (feet) Core/Inner Zones	Class II-S WLPZ Width (feet) Core/Inner Zones	Non-ASP Class II WLPZ Width (feet) No Core Zone	Class III ELZ Width (feet)	Wet Area with WLPZ Width (feet)
<30%	30/70=100	15/35 = 50	50	30	25
30-50%	30/70=100	15/60 = 75	75	50	50
>50%	30/70=100	15/85 =100	100	50	50

Watercourse description and protection measures to be applied: (14 CCR 916.5)

Class II Watercourses:

The plan area is located within both ASP watersheds and Non-ASP watersheds.

The northern part of the THP is located within the Big Pepperwood Creek Planning Watershed (an ASP-watershed) and a small portion of the southeaster portion of the plan is located within the Mouth of Gualala River Planning Watershed (an ASP-watershed) in which watercourses drain to the Gualala River and South Fork Gualala River, outside of the THP boundary. There is one Class II-L watercourse (drainage area equal to or greater than 100 acres) outside of but adjacent to the plan, and multiple Class II-S watercourses (drainage area less than 100 acres) located within and adjacent to the plan area. In the very southeastern tip of the THP, a wet area and Class III drain east to the Gualala River. The classification between Class II–S or a Class II-L was determined by mapping the area above

## **CaITREES THP ITEMs 26 – WATERCOURSES**

the confluence of Class I and inspecting the width of the active channel of the Class II at the confluence per 14 CCR 936.9(g)(1)(A) and (B).

The remainder of the plan area is within the Black Point Planning Watershed (Non-ASP-watersheds) in which Class II watercourses drain to the Pacific Ocean outside of the THP boundary.

#### **Class II-S Protection Measures:**

- The enforceable standard for shade canopy retention for Class II-S watercourses is:
- Core zone is 15 feet from the watercourse transition line, operations are limited to actions to allow for full suspension cable yarding per 936.9(e)(1)(D).
- Inner Zone is variable width, slope dependent, ranging from 35 to 85 feet from the core zone; a minimum 50% multi-story canopy shall be retained within this zone.
- The WLPZ is flagged at a slope dependent width of 50, 75, or 100 feet with blue/white striped "Watercourse and Lake Protection Zone" flagging in addition to solid orange flagging for greater visibility.
- The overstory canopy must be composed of at least 25% overstory conifer canopy post-harvest. If the above noted canopy
  levels are lacking in any given area timber is not marked for removal in that area, however it may be marked elsewhere in
  the zone.
- WLPZ identification, flagging, and timber marking shall be completed prior to PHI.
- Harvest trees will be marked with a horizontal blue stripe at breast height with a corresponding base mark below stump level.
- Groups shall not be located in a WLPZ.
- No Salvage logging or hardwood harvest within the WLPZ.

#### Class II (Non-ASP) Protection Measures:

- The enforceable standard for shade canopy retention for Class II watercourses is:
- At least 50% of the total canopy covering the ground shall be left in a well distributed multi-storied stand configuration composed of a diversity of species similar to that found before the start of operations.
- The WLPZ is flagged at a slope dependent width of 50, 75, or 100 feet with blue/white striped "Watercourse and Lake Protection Zone" flagging in addition to solid orange flagging for greater visibility.
- The overstory canopy must be composed of at least 25% overstory conifer canopy post-harvest. If the above noted canopy levels are lacking in any given area timber is not marked for removal in that area, however it may be marked elsewhere in the zone.
- WLPZ identification, flagging, and timber marking were completed prior to the PHI.
- Harvest trees will be marked with a horizontal blue stripe at breast height with a corresponding base mark below stump level.
- Groups shall not be located in a WLPZ.
- No Salvage logging or hardwood harvest within the WLPZ.

#### Class III Watercourses:

There are numerous, unnamed Class III watercourses within the proposed project area. The center lines of the Class III watercourses have been flagged with solid blue flagging.

#### The following are the minimum requirements for timber operations in Class III watercourses per 936.9(h):

(1) Establish a 30 foot wide ELZ on both sides of the watercourse for slopes less than 30% and an additional 20 foot ELZ where side slopes are greater than 30%. The ELZ is measured from the WTL. Within the ELZ:

(a) No new construction of tractor roads permitted;

(b) No ground-based equipment on slopes >50%; and

(c)Ground-based operations are limited to existing stable tractor roads that show no visible evidence of sediment deposition being transported into the adjacent watercourse or to the use of feller- bunchers or shovel yarding.

(2) Retain all pre-existing large wood on the ground within the ELZ that is stabilizing sediment and is necessary to prevent potential discharge into the watercourse.

(3) Retain all pre-existing down wood and debris in the channel zone.

- (4) Retain hardwoods, where feasible, within the ELZ.
- (5) Retain all snags (except as required for safety) within the ELZ.
- (6) Retain all countable trees needed to achieve resource conservation standards in 14 CCR § 932.7 within the ELZ.

(7) Retain all trees in the channel zone which show visible indicators of providing bank or bed stability, excluding sprouting conifers that do not have boles overlapping the channel zone. Visible indicators of stability include roots that permeate the bank or provide channel grade control.

Exceptions pursuant to 14 CCR § 936.9, subsections (e)(1)(A)-(F) are permitted in any ELZ and channel zone.

Additional specific equipment limitations associated with ELZs are described in Item 21. In addition to the ELZ requirements the following apply to Class III watercourses:

- <u>Slash deposited into Class III watercourses shall be removed or stabilized prior to the completion of operations or October</u>
   <u>15</u>, whichever comes first. If slash is stabilized it shall be stabilized (such that the debris does not create the potential for
   <u>diversion of the watercourse or the potential build up of excess sediment in amounts greater than found in the watercourse
   where there is no logging associated debris).
  </u>
- Soil deposited into Class III watercourses shall be removed prior to the completion of operations or October 15<sup>th</sup>, whichever comes first, except as noted in the winter operating plan.
- Per 936.4(c)(3) Soil deposited during timber operations in Class III watercourses other than a temporary crossing shall be removed and debris deposited during timber operations shall be removed or stabilized before the conclusion of timber operations or October 15<sup>th</sup>, whichever comes first.
- Groups shall not be located within the ELZ of Class III watercourses.

#### Wet Areas with WLPZ:

These wet areas can support hydrophilic vegetation, can provide habitat for aquatic species, and can have pool structure (typically at least a couple of feet wide and at least several inches deep). If located outside of Class I or II WLPZs and Class III channel zones, these areas shall be provided with a 25 foot ELZ when slopes are less than 30% and 50 foot ELZ when slopes are greater than 30% and canopy retention zone where 50% total canopy shall be retained. The 50% canopy shall be comprised of at least 25% of the pre-existing overstory conifers. The zone is flagged with blue/white striped "WLPZ" flagging and orange glo.

#### Seeps:

A seep is a feature created by anthropogenic structures (e.g. roads, landings) which intercepts subsurface flow and may create wet ditches, possibly including pools that may support hydrophilic vegetation. No protection is afforded seeps. Typically they may be drained to ensure continued functionality and use of infrastructure. Seeps are only mapped (as road points) if specific work is associated with such sites.

<b>c.</b> [□]Yes [ <b>X</b> ] No	Is there any tractor road watercourse crossings that require mapping per 14 CCR 1034(x)(7)

## **CaITREES THP ITEMs 26 – WATERCOURSES**

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I. [ <b>X</b> ]Yes [□] No	Will rock be used to stabilize crossing outlets? If YES, per 14 CCR 923.9[943.9, 963.9](k) Rock used to stabilize sized to resist mobilization of soil and significant sediment dis described within the plan as instruction to the LTO in SECTION dimensions to be used.	e outlets of crossings shall be adequately scharge. The range of rock size shall be I II indicate the range of the rock
<b>C</b> .	address the diversion of stream overflow at the crossing. See Section II Maps and Map Point Table for list of crossings a	nd their requirements.
	area? If YES, per 14 CCR 923.9[943.9, 963.9](k) identify the crossing	and provide the methods to mitigate or
<b>K.</b> [ <b>X</b> ]Yes [□] No	Are there any watercourse crossings that are located of Are there any watercourse crossing proposed for construction	located on logging roads within the logging
Per 14 CCR 923.9[943 to prevent diversion obstructed.	3.9, 963.9](k) watercourse crossings and associated fills and appro of stream overflow down the road, and to minimize fill erosion sh	paches SHALL be constructed and maintained would the drainage structure become
	If YES, per 14 CCR 923.9[943.9, 963.9](j) provide instructions t methods to be used for the diversion of overflow at watercou	o the LTO in SECTION II identifying the irse crossings.
j. [□]Yes [ <b>X</b> ] No	Will other methods for diversion of overflow at culvert crossing construction or reconstruction of logging road watercourse cro	gs be utilized ( <u>other than critical dips</u> ) in the ssings which culverts?
	If YES, per 14 CCR 923.9[943.9, 963.9](j) provide the explanati	on and justification in SECTION III.
i. [□]Yes [ <b>X</b> ] No	Is there any exception to flagging or otherwise identifying the I road watercourse crossing prior to the pre-harvest inspection?	ocation of any constructed or reconstructed
	$Q_{100}$ in cfs was found using the Rational Method, with the except of 106 acres. The magnitude and Frequency Method was used to nomograph was used. The cfs calculations can be viewed in a tare sized using the Norman et.al 1985 Culvert sizing nomograph See Section V for culvert calculations.	ption of RP #1, which had a drainage acrage o calculate the cfs for RP #1 and a pipe-arch able in Section V. The rest of the culvert sizes h using their $Q_{100}$ and a HW/D of 0.67.
	Method for sizing crossing:	
	Temporary Crossings B, 6, 11, 12, 13, 20, 27, 28, 29, 30, 42, 43 following use.	, and 44 are proposed for deactivation
	See Maps and Road Point Table for location and descriptions or will require some reconstruction or upgrading. Temporary road	f crossings. The crossings are existing and s shall be deactivated (see Item 24 & 25) and
	Per 14 CCR 923.9(f) permanent watercourse crossings that are accommodate the estimated 100-year flood flow, including d	e constructed or reconstructed SHALL ebris and sediment loads.
	Per 14 CCR 923.9(e) If any watercourse crossing has a culvert diameter of the culvert and the method(s) used to determine	intended for permanent use, the minimum culvert diameter shall be stated in the plan.
1 31 32 1 - 1205	If YES, to the above questions these crossing shall be shown of	n a map in section II
	Are there any watercourse crossings to be ABANDONED or DE/	ACTIVATED?
	Are there any NEW RECONSTRUCTED logging road watercourse	ercourse crossings requiring mapping?
intended for perman SHALL be specified in	ent use, the minimum diameter of the culvert and the method(s) the plan,	used to determine the culvert diameter

COAST AREA OFFICE RESOURCE MANAGEMENT

# Notification Information List Pursuant to Fish and Wildlife Code Section 1611

There are **37** proposed THP related instream activities that require a CDFW Agreement. The specific requirements of the approved CDFW agreement, specifically the Project Description and Conditions or PDC, shall be amended to the plan to govern operations at these locations. This THP is being used as the CEQA review mechanism for the CDFW 1600 series agreement for the following sites specific to this THP. The 1600 sites are listed in the Road Points Table located in Item 24 of Section II and are shown on the THP Roads and Features Maps at the end of Section II.

(THP) #: To be determined

(THP) Name: Steam Donkey THP

IMPORTANT: In order to facilitate processing of Streambed Alteration Notifications via Fish and Wildlife Code (FWC) Section 1611, the Department of Fish and Wildlife (Department) recommends all information requested below be attached in Item 26(d) of Timber Harvesting Plans (THP's) in Sections II or III, as appropriate. In accordance with CDFW Section 1611, the Department is not required to process the notification until the THP has been received by the Department.

Please provide the following information for notification of Lake or Streambed Alteration Activities in accordance with the "Guidelines for Lake or Streambed Alteration Notification via Timber Harvesting Plans".

# Basic data, including all the following: a. The name, address, and telephone number of the

Applicant: Gualala Redwood Timber, LLC. P.O. Box 197 Gualala, CA 95445 (707)894-4245

Operator: Unknown, to be amended to the plan. Contractor: Unknown, to be amended to the plan

Contact Person: John Bennett, RPF, Forest Manager c/o Gualala Redwood Timber, LLC. P.O. Box 197 Gualala, CA 95445 (707)894-4245

Property Owner(s): Gualala Redwood Timber, LLC. P.O. Box 197 Gualala, CA 95445 (707)894-4245

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b. The name of each lake and the name and watercourse classification of each stream the lake or streambed alteration activities will affect, including the nearest downstream watercourse or water body.

Sites within the plan area are associated with watercourses which are tributaries to the Gualala River, the South Fork Gualala River, and the Pacific Ocean.

c. The township, range and section numbers and the latitude and longitude of each lake and stream encroachment.

Map Point Number	Township, Range, Section	Longitude	Latitude	APN
1	German Landgrant	-123.513	38.763	122-040-009
2	German Landgrant	-123.514	38.765	122-040-009
6	German Landgrant	-123.509	38.761	122-040-012
7	German Landgrant	-123.507	38.758	122-040-012
9	German Landgrant	-123.503	38.756	122-040-012
11	German Landgrant	-123.503	38.759	122-040-012
14	German Landgrant	-123.498	38.761	122-040-012
15	German Landgrant	-123.498	38.761	122-040-012
20	German Landgrant	-123.494	38.797	122-040-009
20.1	German Landgrant	-123.488	38.767	122-040-009
21	German Landgrant	-123.490	38.768	122-040-009
22	German Landgrant	-123.492	38.769	122-040-009
23	German Landgrant	-123.493	38.769	122-040-009
24	German Landgrant	-123.489	38.752	122-040-012
28	German Landgrant	-123.493	38.749	122-040-012
29	German Landgrant	-123.493	38.749	122-040-012
30	German Landgrant	-123.493	38.746	122-040-012
31	German Landgrant	-123.493	38.746	122-040-012
33	German Landgrant	-123.488	38.747	122-040-012
34	German Landgrant	-123,488	38.745	122-040-012
35	German Landgrant	-123.488	38.744	122-040-012
37	German Landgrant	-123.485	38.745	122-040-012
42	German Landgrant	-123.473	38.737	122-300-011
43	German Landgrant	-123.472	38.737	122-300-011
44	German Landgrant	-123.471	38.737	122-300-011
46	German Landgrant	-123.464	38.735	122-070-002
48	German Landgrant	-123.468	38.735	122-300-011
49	German Landgrant	-123.472	38.735	122-300-011
50	German Landgrant	-123.473	38.735	122-300-011
52	German Landgrant	-123.469	38.734	122-300-011
53	German Landgrant	-123.469	38.734	122-300-011

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54	German Landgrant	-123.473	38.735	122-300-011
55	German Landgrant	-123.502	38.765	122-040-009
T1	German Landgrant	-123.51	38.763	122-040-009
T2	German Landgrant	-123.505	38.764	122-040-009
1248	Section 25 T11N R15W	-123.485	38.769	122-010-003
2061	Section 21 T10N R14W	-123.420	38.704	122-070-017

d. A single map or diagram clearly showing all of the following:

i. All lake and stream encroachments, with a number or other appropriate identifying label.

ii. All roads, with a number or other appropriate identifying label

ii. All watercourse classifications (i.e., Class I, II, or III).

iii. Access from a named public road.

iv. A north arrow and scale.

Refer to the THP Roads and Features Maps and diagrams at the end of Section II.

e. A description of the types of lake or stream encroachments the applicant intends to construct, install, use or remove (e.g., a corrugated metal pipe, "Humboldt" crossing, impoundment for water diversion, water drafting sites, bank stabilization, rocked ford, bridge, etc.), and whether they will be temporary or permanent. If multiple lake or stream encroachments are proposed, the applicant should include a table that describes each type of encroachment (e.g., permanent culvert, temporary bridge, rock revetment, etc.), watercourse classification, culvert size and encroachment map reference number.

Map Point Number	Type of Activity	Permanent or Temporary	Culvert Size (Diameter in inches)	Watercourse Classification
1	Culvert Replacement	Permanent	73"x55" pipe- arch culvert	Class II-L
2	Improve Ditch to CII	Permanent	NA	Ditch to Class II-S
6	Temporary Crossing	Temporary	NA	CII
7	Culvert Replacement	Permanent	36"	Class II
9	Culvert Replacement	Permanent	30"	Class II
11	Dip	Permanent	NA	CIII
14	Install Culvert	Permanent	24"	CIII
15	Culvert Replacement	Permanent	30"	Class III

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20	Temporary Crossing	Temporary	NA	CIII
20.1	Culvert Replacement	Permanent	24"	Class III
21	Culvert Replacement	Permanent	24"	Class III
22	Culvert Replacement	Permanent	24"	Class III
23	Install RAF	Permanent	NA	Class III
24	Temporary Crossing	Temporary	NA	CIII
28	Temporary Crossing	Temporary	NA	CIII
29	Temporary Crossing	Temporary	NA	CIII
30	Temporary Crossing	Temporary	NA	CIII
31	Culvert Replacement	Permanent	24"	Class III
33	Culvert Replacement	Permanent	54"	Class II
34	Culvert Replacement	Permanent	24"	Class III
35	Culvert Replacement	Permanent	24"	Class III
37	Culvert Replacement	Permanent	36"	Class III
42	Temporary Crossing	Temporary	NA	CIII
43	Temporary Crossing	Temporary	NA	CIII
44	Temporary Crossing	Temporary	NA	CIII
46	Temporary Crossing	Temporary	NA	CIII
48	Culvert Replacement	Permanent	24"	Class III
49	Culvert Replacement	Permanent	30"	Class III
50	Culvert Replacement	Permanent	30"	Class III
52	Culvert Replacement	Permanent	36"	Class III

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53	Ditch Improvement	Permanent	NA	Class III
54	Culvert Replacement	Permanent	36"	Class III
55	Culvert Replacement	Permanent	24"	Class III
T1	Temporary Tractor Crossing	Temporary	NA	CIII & Wet Area
Т2	Temporary Tractor Crossing	Temporary	NA	CIII & Wet Area
Т3	Temporary Tractor Crossing	Temporary	NA	CIII Within CII WLPZ
1248	Water Drafting- Direct	Temporary	NA	Class I
2061	Water Drafting- Direct	Temporary	NA	Class I

f. A description of the fish and wildlife and botanical resources the work could adversely affect, including riparian resources and special status species (i.e., species listed under the California Endangered Species Act ("CESA") and/or the federal Endangered Species Act ("ESA"), species fully protected under state law, and/or species of special concern). If the work could adversely affect any listed species, the applicant should indicate whether consultation under CESA or ESA has commenced and if so, the current status of the consultation. Applicant should also provide the biological opinion, as applicable.

The proposed activities are part of Timber Harvest Plan (THP), a document reviewed by those standards established within the Forest Practice Act – a process functionally equivalent to that of an EIR, with CalFire acting as the lead agency. Coho salmon, Chinook salmon and steelhead trout have been observed downstream of the proposed activity sites. Northern spotted owls have been observed within the Big Pepperwood Creek and Mouth of Gualala River planning watersheds. Mitigations proposed in the THP are designed to avoid significant adverse impacts to these species. A floristic survey has been completed and is located in Section V. Please refer to the THP Sections 2, Item 32 for additional information concerning wildlife and botanical resource issues.

g. Indicate if the work takes place in, adjacent to, or near a river that has been designated as "wild and scenic" under state or federal law.

The proposed activities do not take place adjacent to or near a wild or scenic river.

Information about each lake and stream encroachment, including the following:
 a. Construction plans, including specific details, cross sections, and dimensions.

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See descriptions in the Road Points Table under Item #24 of THP.

b. If water will be present and diversion of flow around the work site is necessary, the volume of water to be diverted and the method of diversion.

It is expected the activities will be dry at time of operations and water diversions will not be necessary for this permit.

c. If water drafting is proposed, provide drafting site information (i.e. estimated volume, drafting rate, timing, etc.). Indicate if the activity will be done pursuant to a water right application or permit.

Water Drafting is proposed at the Gualala River at RP# 1248 and 2061, as depicted on the Appurtenant Roads Map. Water drafting shall adhere to the CONDITIONS for WATER DRAFTING stated in the Streambed Alteration Agreement.

d. The materials (e.g., soil, sand, gravel, ¼-to ½-ton rip-rap, large wood, etc.) and volumes that will be used for and/or removed from the lake or stream encroachment, the dimensions of the area to be excavated and the dimensions of the area to be filled.

Map Point Number	Material Removed (Volume)	Material Installed (Volume)	Comments
1	20 yds	20 yds	NA
2	NA	NA	Temporary Crossing
6	NA	NA	Temporary Crossing
7	20 yds	20 yds	Culvert Replacement
9	20 yds	20 yds	Culvert Replacement
11	2 yds	0 yds	Dip
14	5 yds	5 yds	Install Culvert
15	10 yds	10 yds	Culvert Replacement
20	NA	NA	Temporary Crossing
20.1	10 yds	10 yds	Culvert Replacement
21	5 yds	5 yds	Culvert Replacement
22	10 yds	10 yds	Culvert Replacement
23	7 yds	7 yds	Rock Armored Fill Crossing
24	NA	NA	Temporary Crossing
28	NA	NA	Temporary Crossing
29	NA	NA	Temporary Crossing
30	NA	NA	Temporary Crossing
31	10 yds	10 yds	Culvert Replacement
33	15 yds	15 yds	Culvert Replacement
34	15 yds	15 yds	Culvert Replacement
35	12 yds	12 yds	Culvert Replacement
37	5 yds	5 yds	Culvert Replacement

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42	NA	NA	Temporary Crossing	
43	NA	NA NA Temporary Crossing		
44	NA	NA	Temporary Crossing	
46	NA	NA	Temporary Crossing	
48	8 yds	8 yds	Culvert Replacement	
49	15 yds	15 yds	Culvert Replacement	
50	8 yds	8 yds	Culvert Replacement	
52	15 yds	15 yds	Culvert Replacement	
53	5 yds	5 yds	Ditch Improvement	
54	10 yds	10 yds	Culvert Replacement	
55	2 yds	2 yds	Culvert Replacement	
T1	NA	NA	Tractor Crossing	
T2	NA	NA	Tractor Crossing	
1248	NA	NA	Water Drafting	
2061	NA	NA	Water Drafting	

#### e. Specify the type of equipment to be used.

Tractors, excavators, trucks, grader, crawler tractor and backhoes.

f. Proposed work periods including the date or conditions requiring temporary crossing removal.

April 1 through November 15.

g. The species composition and density of vegetation to be removed or disturbed as a result of lake or streambed alteration activities. Indicate if sensitive plant surveys have been completed within areas which will be affected by lake or stream encroachments. Include any plans to restore the affected riparian or hydrophytic vegetation.

The small amounts of herbaceous and aquatic vegetation disturbed during operations will be limited to the vegetation within and around the specified crossings. Disturbance will be isolated to the various site locations. Conifer and hardwood trees, annual grasses, forbs along with minor amounts of riparian vegetation may potentially be disturbed during operations. A floristic survey has been completed for project sites and is included in Section V of the THP. Protection measures are located in Section II of the THP.

h. Mode of impact to fish, wildlife and botanical resources (i.e., changes in sediment and/or flow delivery rates, dewatered or impounded watercourses, destabilized stream banks, erosion causing sediment deposition, changes to or elimination of riparian vegetation, reduced canopy effects on microclimate and/or water temperature, etc.)

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Direct disturbance will be limited to the project vicinities. Sediment production occurring at these sites will be the primary mode of impact to wildlife resources. Significant changes in flow, stream volume, bank stability, reduced riparian vegetation, canopy reduction and water temperature increase are not anticipated in association with the crossing upgrade activities.

i. Measures included to protect fish, wildlife and botanical resources (i.e., avoidance measures, sediment control measures, construction time periods, methods to divert water around or away from the work site, special measures necessary to protect special-status species, a post-work action plan including measures to minimize soil erosion, re-vegetation, etc.).

Crossings work will be conducted when there is no surface flow. If water is present, a temporary coffer dam will be constructed, and water diverted around the project site using a pump. Bare mineral soil will be stabilized as per Section II, Item 18 "Soil Stabilization Measure" of the THP.

j. Calculations or other data used to size culverts.

See Cfs Calculations and Culvert and Rock Sizing Information Below

k. For bridge installations: indicate if the abutments or road approaches will encroach into the floodplain or channel; provide the calculations or data used to determine bridge height and flow capacity; describe the type of abutments and scour protections with dimensions; provide any engineering reports or plans; etc.

N/A

1. Describe any torrent, debris or landslide conditions at each encroachment.

Refer to Road Points Table, Roads and Features Maps, and Yarding Methods Maps in Section II of the THP.

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	Location:	Steam Donkey	THP	Gualala, CA						·
Ratio	onal Method	for 100-year flood	flow (A < 200 acre	es)			Q100=CiA	C=runoff Coefficient	A=area (acres)	
			3.16	2.87	2.59	2.21		i= precipitation	100 yr return in/hr	
	Crossing	Runoff coefficient	100-year Return-Period Precipitation (in/hr)	50-year Return-Period Precipitation (in/hr)	25-year Return- Period Precipitation (in/hr)	10-year Return-Period Precipitation (in/hr)	Area (acres)	100-yr flood flow (cfs)	Minimum Culvert or Rock Size Required	Alternativ Culvert Si Selected
No.		с	P	P*	P	P	A	Q100		
	7	0.35	3.2	2.9	2.6	2.2	16.6	18.6	36	-
	9	0.35	3.2	2.9	2.6	2.2	8.2	9.3	27	30
	14	0.35	3.2	2.9	2.6	2.2	4.4	5.0	18	24
	15	0.35	3.2	2.9	2.6	2.2	9.8	11.1	27	30
	20.1	0.35	3.2	2.9	2.6	2.2	1.5	1.7	18	24
	21	0.35	3.2	2.9	2.6	2.2	2.4	2.7	18	24
	22	0.35	3.2	2.9	2.6	2.2	1	1.1	18	24
	23	0.35	3.2	2.9	2.6	2.2	4.7	5.3	18" D50	
	31	0.35	3.2	2.9	2.6	2.2	4.5	5.1	21	24
	33	0.35	3.2	2.9	2.6	2.2	45	51.0	54	
	34	0.35	3.2	2.9	2.6	2.2	2.6	2.9	18	24
	35	0.35	3.2	2.9	2.6	2.2	6.3	7.1	24	
	37	0.35	3.2	2.9	2.6	2.2	13	14.7	33	36
	48	0.35	3.2	2.9	2.6	2.2	1.28	1.5	18	24
	49	0.35	3.2	2.9	2.6	2.2	43	4.9	18	30
	50	0.35	3.2	2.9	2.6	2.2	6	6.8	24	30
	52	0.35	3.2	2.9	2.6	2.2	25.5	28.9	36	
	54	0.35	3.2	2.9	2.6	2.2	19.4	22.0	36	
	55	0.35	3.2	29	2.6	22	0.5	0.6	18	24

Magnitude and Frequency Method for 100-year flood flow (A > 100 acres)

No.	Crossing	Area (acres) A	Area (mi <sup>2</sup> ) A	Avg. Annual Precipitation (in/yr) P	100-yr flood flow Q100 (cfs)	50-yr flood flow Q50 (cfs)	Magnitude & Frequency Q <sub>100</sub> equations	Minimum Culvert Size Required
	1	106	0.17	41.6	81.2	64.0	North Coast Q100= (48.5*A^0.866)* (p^0.556)	73"x55" pipe-arch culvert

 
 If questions, contact Mr.Vopat at 530-24-4748

 Template prepare by: Michael Wopat California Geological Survey 6105 Airport Road Redding, CA 98002

Steam Donkey THP

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Cfs Calculations

			100 year flood	Headwall to pipe diameter ratio	What does the pipe inlet look like?	100 yr	100 yr
1	Map Point #	area (ac)	(cfs)			Culvert Size (in)	area (ft2)
1	1	106	81.2		Mitred/bevel >	66	23.7
1				0.67	Projected pipe >	72	28.3
1		1	1		Mitred/bevel >	66	23.7
T				0.75	Projected pipe >	88	23.7
T		1			Mitred/hevel >	54	15.9
T		1.00		0.9	Projected pine ->	60	19.6
T					Mitred/hevel >	51	14.2
T			1	1 1	Projected pipe >	54	15.9
- T	7	17	18.6		Mitred/bevel ->	36	7.1
1		1		0.67	Projected pipe >	42	9.6
- T		1.1			Mitred/bevel->	33	5.9
1		T		0.75	Projected pipe >	36	71
T					Mitred/bevel >	33	59
E				0.9		33	50
1		1		0.0	Mitred/bevel >	30	49
1				1 1	Projected pine >	30	4.0
1	9	8	93		Mitred/hevel >	27	4.0
1			0.0	0.67	Projected pine >	27	4.0
1		-		0.07	Mitradibaval >	27	4.0
1		-		0.75	Projected pipe	27	4.0
- 1		-		0.75	Mitradibaual >	21	4.0
- 1		-			Mitredibever	29	3.1
+		-		0.9	Projected pipe ->	24	3.1
+		-		-	Mitred/bevel >	21	2.4
+				1	Projected pipe ->	24	3.1
. H	14	4	5.0	-	Mitred/bevel ->	18	1.8
4÷		-		0.67	Projected pipe ->	18	1.8
4					Mitred/bevel ->	18	1.8
- +		-		0.75 Pro	Projected pipe ->	18	1.8
-		-			Mitred/bevel ->	18	1.8
- +		-		0.9	Projected pipe ->	18	1.8
-					Mitred/bevel ->	18	1.8
- +		1		1	Projected pipe ->	18	1.8
- 1-	15	10	11.1		Mitred/bevel ->	27	4.0
				0.67	Projected pipe ->	30	4.9
1					Mitred/bevel >	27	4.0
1				0.75	Projected pipe ->	30	4.9
1					Mitred/bevel >	24	3.1
		1		0.9	Projected pipe >	27	4.0
1					Mitred/bevel ->	24	3.1
1		1	-	1	Projected pipe ->	24	3.1
1	20.1	2	1.7		Mitred/bevel >	18	1.8
1			and the second sec	0.67	Projected pipe ->	18	1.8
1.1		1	1. · · · · · · · · · · · · · · · · · · ·		Mitred/bevel >	18	1.8
- E		1		0.75	Projected pipe >	18	1.8
1		1			Mitred/bevel ->	18	1.8
1				0.9	Projected pipe >	18	1.8
T					Mitred/beyel >	18	1.8
1		1	and the second second	1 1	Projected pipe >	18	1.8
DT	21	2	2.7		Mitred/bevel >	18	1.0
		1 1	and the second s	0.67	Projected pine >	12	1.0
2 1		1		0.01	Mitred/hevel	18	1.0
1		1		0.75	Drojected pine	40	1.0
1		1		0.15	Mitrad baral	10	1.0
-		1		0.0	Drojected pipe	10	1.0
. 1		1		0.9	Mitradibaval >	10	1.0
		1		1 1	Decidented cine >	10	1.8

		100 year flood	Headwall to pipe diameter ratio	What does the pipe inlet look like?	100 yr	100 yr
Man Point #	area (ac)	(cfs)	1		Culvert Size (in)	area (#2)
22	1	11		Mitred/hevel >	18	1.5
			0.67	Projected pine	18	15
	1		0.01	Mitred/bevel >	18	11
	1		0.75	Projected pipe >	10	1.0
	1		0.75	Mitrad/bayal	10	1.0
	1		0.0	Projected pipe >	40	1.0
	1		0.0	Mitrad/bayal	10	1.0
	-		· ·	Designated pipe	10	4.0
23	5	5.2		Mitrad/basel >	10	2.0
23		2.0	0.67	Projected pipe >	21	21
	1		0.07	Mitradibaval >	21	2.
	1			Mill edibevel ->	21	2.4
			0.75	Projected pipe ->	21	2.4
	1			Mitred/bevel >	18	1.8
			0.9	Projected pipe ->	18	1.8
				Mitred/bevel >	18	1.2
	-		1 .	Designated size >	10	1.0
24			1	Projected pipe 3	18	1.8
31		5.1		Mitred/bevel >	21	24
	-		0.67	Projected pipe >	21	2.4
	-			Mitred/bevel >	21	2.4
	-		0.75	Projected pipe ->	21	2.4
				Mitred/bevel ->	18	1.8
			0.9	Projected pipe ->	18	1.8
	-		-	Mitred/bevel >	18	1.8
			1	Projected pipe ->	18	1.8
33	45	51.0	-	Mitred/bevel ->	54	15.9
			0.67	Projected pipe ->	60	19.6
	-		1 2 2 2 2	Mitred/bevel ->	48	12.6
			0.75	Projected pipe >	54	15.9
				Mitred/bevel ->	48	12.6
			0.9	Projected pipe >	48	12.6
	1.	-		Mitred/bevel >	48	12.6
			1	Projected pipe >	48	12.6
34	3	2.9		Mitred/bevel ->	18	1.8
			0.67	Projected pipe ->	18	1.8
				Mitred/bevel ->	18	1.8
	1.1		0.75	Projected pipe >	18	1.8
	4			Mitred/bevel ->	18	1.8
	1		0.9	Projected pipe ->	18	1.8
				Mitred/bevel >	18	1.8
			1 1	Projected pipe >	18	1.8
35	6	7.1		Mitred/bevel >	24	3.1
	1		0.67	Projected nine >	24	31
	1			Mitred/bevel ->	24	31
	1		0.75	Projected pine >	24	31
				Mitredihevel	21	24
			0.9	Projected pine .>	21	2.4
	-		0.3	Mitred/bevel	21	2.4
	1		1 1	Drojected pine	21	24
37	13	14.7		Mitred/bevel >	22	5.0
	15	14,1	0.67	Projected pipe	33	5.9
	1		0.07	Mitradibaval >	30	5.9
	-		0.75	Dreiseted size	30	4.9
	-		0.75	Projected pipe >	33	5,9
	-			Mitred/Devel >	2/	4.0
	-		0.9	Projected pipe >	30	4.9
	-		-	Mitred/bevel >	27	4.0
			1 1	Projected pipe >	27	1 40

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_		100 year flood	diameter ratio	inlet look like?	100 yr	100 yr
Map Point #	area (ac)	(cfs)			Culvert Size (in)	area (ft2
48	1	1.5		Mitred/bevel >	18	13
	1		0.67	Projected pipe >	18	1.
				Mitred/bevel ->	18	1.
			0.75	Projected pipe >	18	1.
				Mitred/bevel >	18	1.
			0.9	Projected pipe >	18	1.
				Mitred/bevel >	18	1.
			1	Projected pipe >	18	1.
49	4	4.9		Mitred/bevel ->	18	1.
			0.67	Projected pipe ->	18	1.
				Mitred/bevel >	18	1.
			0.75	Projected pipe ->	18	1.
				Mitred/bevel ->	18	1.
			0.9	Projected pipe >	18	1.
				Mitred/bevel ->	18	1.
			1	Projected pipe >	18	1.
50	6	6.8		Mitred/bevel ->	24	3.
		1	0.67	Projected pipe >	24	3.
	1			Mitred/bevel ->	21	2
	0		0.75	Projected pipe ->	24	3.
				Mitred/bevel ->	21	2
			0.9	Projected pipe >	21	2
				Mitred/bevel ->	18	1.
			1	Projected pipe >	18	1.
52	26	28.9		Mitred/bevel ->	36	7.
			0.67	Projected pipe ->	48	12
				Mitred/bevel >	42	9.
			0.75	Projected pipe ->	42	9.
				Mitred/bevel >	36	7.
			0.9	Projected pipe ->	36	7.
				Mitred/bevel >	33	5.
			1	Projected pipe >	36	7.
55	1	0.6		Mitred/bevel >	18	1.
			0.67	Projected pipe ->	18	1.
				Mitred/bevel >	18	1.
			0.75	Projected pipe >	18	1.
			in the second second	Mitred/bevel >	18	1.1
			0.9	Projected pipe >	18	1.
				Mitred/bevel >	18	1.7
			1	Projected pipe ->	18	1

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Steam Donkey THP Map Point #1: Pipe-arch Culvert Sizing Chart

Map Point #1: 81.2 cfs



Revised 2/5/2024

## CalTREES THP ITEMs 27 - WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

## **ITEM #27- WLPZ IN-LIEU OR ALTERNATIVE PRACTICES**

ITEM #27	WLPZ IN-LIEU OR ALTERNATIVES					
Per 14 CCR 916.1[93	6.1, 956.1] (In-Lieu Practices) – In rule sections where provision is made for site specific osed by the BPE approved by the Director and included in the THP in lieu of a standard rule					
the RPF shall:						
Reference the	standard rule					
Explain and de	escribe each proposed practice					
<ul> <li>Explain how it</li> </ul>	differs from the standard practice,					
<ul> <li>Explain and ju</li> </ul>	stify how the protection provided by the proposed practice is a t least equal to the					
protection pro	ovided by the standard rule.					
<ul> <li>Identify the sp</li> </ul>	becific location where it shall be applied. 14 CCR 1034(x)(15) and (16)					
Per 14 CCR 916.6[93 lakes may be develo conditions are comp forth in 14 CCR 916. The alternative prese	6.6, 956.6] (Alternatives) – Alternative prescription for the protection of watercourses and ped by the RPF or proposed by the Director on a site specific basis provided the following lied with and the alternative prescription will achieve compliance with the standards set 3[936.3, 956.3] and 916.4[936.4, 956.4](b) cription shall include in the THP information per 14 CCR 916.6[936.6, 956.6]a)(1)-(3)					
a. [ <b>X</b> ]Yes [□] No	Are there any site-specific practices proposed in-lieu of, or as an alternative, to the					
	promotion of the construction of use of tractor roads listed below?					
	Per 14 CCR 916.3[936.3, 956.3(c) Timber operators shall not construct or use tractor roads in a Class I, II, III, IV watercourses, wet meadows and other wet areas unless explained and justified in the plan by the RPF.					
	Prenared tractor crossing described in 14 CCR 914 8(934 8, 954 8)(b)					
	<ul> <li>Class III watercourse crossings dry at the time of use</li> </ul>					
	<ul> <li>At new and existing tractor road crossings approved as part of a Fish and Game Code Process (F&amp;GC 1600 et seg.)</li> </ul>					
	If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)					
	See Explanation and Justification in Section III.					
	See the Yarding Methods Maps for WLPZ skid trail use locations. WLPZ landing L2 is located within the WLPZ of a Class II watercourse (non-ASP) which drains directly into the Pacific Ocean. There are no WLPZ skid trails associated with this landing. WLPZ skid trails exist near T1 and are flagged and mapped.					
	WLPZ Skid trail use: WLPZ skid trail use is proposed for mapped skid trails only. Avoid side cast and blading material from the trail. Skid logs with blade lifted to avoid disturbing soils. These trails are flagged in the field with yellow "Skid Trail" flagging. Following use, prior to the Winter Period: water bar to high EHR standards and treat exposed soil as					
	per Item 18, Soil Stabilization Measures.					
	WLPZ landing use: RPF or Supervised designee familiar with WLPZ landings and their locations shall meet with the LTO and instruct the LTO on limitations of equipment operations near watercourses. Specifically minimizing disturbance close to the watercourse channel and spreading and compacting slash following operations. See L2 in the Road Points Table in Item 24, as well in the WLPZ Facilities Table in Item 27.					

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## CaITREES THP ITEMs 27 - WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

WLPZ Tractor Crossings: T1 & T2 are tractor crossings that cross a Class III watercourse located within a WLPZ of another watercourse. These points are described in the Road Points table in Item 24, as well as in the WLPZ Facilities Table in Item 27. Their locations can be found on the Yarding Methods and Roads and Features Map at the end of Section II. T2 is expected to be wet during operations.
Are there any site-specific practices proposed in-lieu of, or as an alternative, to the retention of non-commercial vegetation bordering and covering meadows and wet areas? 14 CCR 916.3[936.3, 956.3(d) If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Directional felling of trees within any WLPZ away from the watercourse or lake? 14 CCR 916.3[936.3, 956.3(e) If YES, provide operational information to the LTO under each item selected YES, in
Are there any site-specific practices proposed in-lieu of, or as an alternative, to the standard WLPZ(s) width(s) identified in 14 CCR 916.5[936.5, 956.5], Table I? If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
Are there any site-specific practices proposed in-lieu of, or as an alternative, to the protection of Class IV watercourse(s)? 14 CCR 916.4[936.4,956.4](c) and 916.5[936.5, 956.5], Table I If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
Are there any site-specific practices proposed in-lieu of, or as an alternative, to the exclusion of heavy equipment from the WLPZ except at those locations listed below? Per 14 CCR 916.4[936.4, 956.4(d)&(f) – Heavy equipment shall not be used in timber falling, yarding, or site preparation within the WLPZ unless such use is explained and justified in the THP and approved by the Director. Except at:

- Prepared tractor crossing described in 14 CCR 914.8[934.8, 954.8](b)
- Class III watercourse crossings dry at the time of use
- Existing road crossings
- New tractor and road crossings approved as part of a Fish and Game Code Process (F&GC 1600 et seq.)

If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)

See Explanation and Justification in Section III.

See the Yarding Methods Maps for WLPZ skid trail use locations. WLPZ landing L2 is located within the WLPZ of a Class II watercourse (non-ASP) which drains directly into the Pacific Ocean. There are no WLPZ skid trails associated with this landing. WLPZ skid trails exist near T1 and are flagged and mapped.

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## CaITREES THP ITEMs 27 - WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

	WLPZ Skid trail use: WLPZ skid trail use is proposed for mapped skid trails only. Avoid side cast and blading material from the trail. Skid logs with blade lifted to avoid disturbing soils. These trails are flagged in the field with yellow "Skid Trail" flagging. Following use, prior to the Winter Period: water bar to high EHR standards and treat exposed soil as per Item 18, Soil Stabilization Measures.
	WLPZ landing use: RPF or Supervised designee familiar with WLPZ landings and their locations shall meet with the LTO and instruct the LTO on limitations of equipment operations near watercourses. Specifically minimizing disturbance close to the watercourse channel and spreading and compacting slash following operations. See L2 in the Road Points Table in Item 24, as well in the WLPZ Facilities Table in Item 27.
	WLPZ Tractor Crossings: T1 & T2 are tractor crossings that cross a Class III watercourse located within a WLPZ of another watercourse. These points are described in the Road Points table in Item 24, as well as in the WLPZ Facilities Table in Item 27. Their locations can be found on the Yarding Methods and Roads and Features Map at the end of Section II. T2 is expected to be wet during operations.
g. [□]Yes [ <b>X</b> ] No	Are there any site-specific practices proposed in-lieu of, or as an alternative, to the establishment of ELZ(s) for Class III watercourses unless side slopes are, 30% and EHR is low? 14 CCR 916.4[936.4, 956.4](c)(1) If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
<b>h.</b> [□]Yes [ <b>X</b> ] No	Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Retention of at least 50% of the overstory canopy in the WLPZ? 14 CCR 916.5[936.5, 956.5](e)"G" If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
i. [□]Yes [ <b>X</b> ] No	Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Retention of at least 50% of the understory in the WLPZ? 14 CCR 916.5[936.5, 956.5](e)"G" If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)
j. [□]Yes [ <b>X</b> ] No	Are there any additional in-lieu or alternative practices proposed for watercourse or lake protection? If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Proved the explanation and justification in SECTION III, (see table below)

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Map reference point	Standard rule	Describe each proposed practice	Explain how proposed practice differs from the standard practice	How is the proposed practice equal to the standard rule?
WLPZ Skid Trail	<ul> <li>Per 14 CCR 916.3[936.3, 956.3(c) Timber operators shall not construct or use tractor roads in a Class I, II, III, IV watercourses, wet meadows and other wet areas unless explained and justified in the plan by the RPF. Except at: <ul> <li>Prepared tractor crossing described in 14 CCR 914.8[934.8, 954.8](b)</li> <li>Class III watercourse crossings dry at the time of use</li> <li>At new and existing tractor road crossings approved as part of a Fish and Game Code Process (F&amp;GC 1600 et seq.)</li> </ul> </li> </ul>	Existing skid trails within the WLPZ of Class II-S and Class II Watercourses are proposed for use.	As it pertains to WLPZ Skid trails the standard rule (14 CCR 916.3 (c)) states that timber operator shall not use tractor roads or landings within the WLPZ of a Class II watercourse unless explained and justified within the plan by the RPF and approved by the director.	The existing WLPZ Skid Trails are located within the WLPZ of a Class II-S and wet area in the northwestern part of the THP near T1. The skid trails are in good condition, on gentle slopes, and fill slopes along the edge of the skid trails are stable. Once operations are complete, exposed soil within the WLPZ shall be stabilized as per Item 18 and 27 Soil Stabilization Measures. No operations will occur on any WLPZ Skid Trail during the winter period. Abiding by the standard rule is not feasible because the WLPZ tractor roads: 1) allow for access into areas that would be inaccessible if operations as proposed were not allowed, 2) allows for less ground disturbance as the timber operators will utilize the existing infrastructure (landings and tractor roads) and 3) cable yarding is not feasible at this location due to poor deflection, relatively small area and blind leads. The protection provided in the THP is equal to the standard rule and provides for the protection of the beneficial uses of water. The Yarding Methods Map, located at the end of Section II, depicts the location of the WLPZ Skid Trails.
L2	Per 14 CCR 916.3[936.3, 956.3(c) Timber operators shall not construct or use tractor roads in a Class I, II, III, IV watercourses, wet	Existing WLPZ landing on existing seasonal road within the	As it pertains to L2 the standard rule (14 CCR 916.3 (c)) states that timber operator shall not use tractor	This existing partial WLPZ landing is located along existing seasonal road within the WLPZs of two Class II watercourses (non-ASP). The landing is

# CaITREES THP ITEMs 27 - WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

#### meadows and other wet areas unless explained WLPZ for Class roads or landings within the on both sides of the road, and may and justified in the plan by the RPF. II (non-ASP) WLPZ of a Class II intercept both of the WLPZ's at the Except at: watercourses. watercourse unless explained edges. The landing is flat and does not Prepared tractor crossing described in and justified within the plan have fillslopes. No operations shall occur 14 CCR 914.8[934.8, 954.8](b) by the RPF and approved by on the landing area within 50' of the northern Class II. Once operations are Class III watercourse crossings dry at the director. • complete, exposed soil within the WLPZ the time of use shall be stabilized as per Item 18 and 27 At new and existing tractor road Soil Stabilization Measures. No crossings approved as part of a Fish operations will occur at L2 during the and Game Code Process (F&GC winter period. Abiding by the standard 1600 et seq.) rule is not feasible because the WLPZ landings and tractor roads: 1) allow for access into areas that would be inaccessible if operations as proposed were not allowed, 2) allows for less ground disturbance as the timber operators will utilize the existing infrastructure (landings and tractor roads) 29 and 3) cable varding is not feasible at this location due to poor deflection and blind leads. The protection provided in the THP is equal to the standard rule and provides for the protection of the beneficial uses of water. The Yarding Methods Maps, located at the end of Section II, depicts the location of L2. T1-T2 Per 14 CCR 916.3[936.3, 956.3(c) Timber A Class III As it pertains to T1 and T2 T1 and T2 are located within the WLPZ watercourse operators shall not construct or use tractor the standard rule (14 CCR but are Class III watercourse crossings. roads in a Class I, II, III, IV watercourses, wet crosses a WLPZ 916.3 (c)) states that timber T1 will be dry during the time of meadows and other wet areas unless explained skid trail. operator shall not use tractor operations, and the use of the WLPZ skid and justified in the plan by the RPF. roads or landings within the trail and crossing will allow for the CIII Except at: WLPZ of a Class II crossing location to be improved at this Revised Prepared tractor crossing described in 14 watercourse unless explained site. T2 has a wet area located above, and . CCR 914.8[934.8, 954.8](b) and justified within the plan may be wet during operations. As per Class III watercourse crossings dry at the by the RPF and approved by item 26, a minimum 4" culvert shall be time of use the director. used at the crossing if wet during 2/5/2024 At new and existing tractor road crossings operations. The Yarding Methods Map at approved as part of a Fish and Game the end of Section II depicts the location Code Process (F&GC 1600 et seq.) for T1 and T2.

### CaITREES THP ITEMs 27 - WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

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## CalTREES THP ITEMs #32-35 BIOLOGICAL RESOURCES

gracilis is also occurring on or adjacent to existing mainline and seasonal roads where there is reduced canopy and constant road maintenance, therefore the same treatment shall apply.

The THP also has the rare species fringed false-hellebore (*Veratrum fimbriatum*), which was discovered during surveys in wet areas and watercourse channels, as well as meadows. Some occurrences of swamp harebell are located near the Veratrum and are included in the STZ buffers for the *Veratrum*.

In the course of preparing this plan, plant and animal species that are not rare, threatened, endangered, or sensitive species were given consideration and review. Special habitat elements shall be maintained across the landscape to maintain forest ecosystems by providing complexity, which supports wildlife diversity. All feasible steps are being taken to retain special habitat features. For example all snags, except as required in 14 CCR 939.1(b), shall be retained. In addition, to provide habitat structure, all existing downed large woody debris and cull logs shall remain on site. Also, conifer and hardwoods with pre-eminent wildlife value, such as large wolfy limbs, bole defects, nesting cavities, basal hollows, and broken or snag tops, shall be left to provide habitat and mast for food supplies. These include trees that meet the definition of "decadent and deformed trees of value to wildlife" as defined in 14 CCR 895.1. If an occupied, non-listed raptor nest is located the nest tree and screening trees shall be protected and if the nest is unoccupied the nest tree shall be retained. Riparian zones and springs shall have special protection given (see Item #26) to provide for habitat and water sources. Should a listed species (plant and/or animal) be found within or adjacent to the THP area, the RPF will complete and submit a Native Species Occurrence form to the CNDDB to document any positive detection of rare, threatened, or endangered species.

#### ITEM # 33 - SNAGS

ITEM #33	SNAGS
Per 14 CCR 919, 93 as specified by the Within the logging 14 CCR 919.1, 939	39, 959 – Timber operations shall be planned and conducted to maintain suitable habitat for wildlife species e provisions of Article 9 of the Forest Practice Rules. g area all snags shall be retained to provide wildlife habitat with the exception of snags for safety reasons Per .1, 959.1(a)-(f)
a. [ <b>X</b> ]Yes [□] No	Are there any snags which must be felled for fire protection or safety reasons?
<b>b.</b> [□]Yes [ <b>X</b> ] No	Will snags over 20 feet in height and 16 inches dbh be felled within 100 feet of a main ridge that is suitable for fire suppression? If YES, ridge shall be delineated on a THP map.
<b>c. [X</b> ]Yes [□] No	<ul> <li>Will snags over 20 feet in height and 16 inches dbh be felled within 100 feet of all public roads, permanent roads, landings and railroads? (select all that apply)</li> <li>[□] Public road(s)</li> <li>[X] Permanent road(s)</li> <li>[X] Landing(s)</li> <li>[□] Railroad(s)</li> </ul>
<b>d.[X</b> ]Yes [□] No	Will snags be felled where federal and state safety laws and regulations require the felling of snags?
e. [□]Yes [ <b>X</b> ] No	Will snags be felled within 100 feet of structures maintained for human habitation?
f. [□]Yes [ <b>X</b> ] No	Will merchantable snags be felled in any location as provided for in the plan?
g. [ <b>X</b> ]Yes [□] No	Will snags be felled as required to control insect or disease concerns?

## ITEM # 34 – LATE SUCCESSIONAL FOREST STANDS

ITEM #34 LATE SUCCESSIONAL FOREST STANDS				
a. [🗆]Yes [ <b>X</b> ] No	Are any Late Successional Forest stands proposed for harvest?			
				1.11.11.1.1.1.1

# CalTREES THP ITEMs #36-38 - CULTURAL RESOURCES / GROWTH AND YIELD / SPECIAL INSTRUCTIONS

	avoided to the extent feasible throughout the plan area. The rare fringed false-hellebore (Veratrum fimbriatum) is located within WLPZs or within STZ and the pink botanical flagging buffering the species within the harvest units (not crossing roads). These are equipment exclusion zones and trees have been marked to fall away from the populations.
Note to LTO regarding Noise	The RPF has disclosed that impacts due to noise are possible given the close proximity of the proposed timber operations to the community of Sea Ranch. Specific mitigations have been proposed by the RPF and described in Section IV of the THP. Mitigations for noise impacts that the LTO shall adhere to include: - the limitation of log truck traffic and log hauling to the hours of 7AM – 4:30PM
	<ul> <li>Work on roads and landings within 200 feet of the property line shall also adhere to the hours of 7AM 4:30 PM</li> <li>Hauling and operations shall be avoided during weekends and holidays.</li> <li>Log trucks shall not use jake brakes within 200 feet of the property line and beyond (off-property).</li> </ul>
Coastal Commission STA Marking	A CAL FIRE Inspector shall be notified within approximately 10 days of the harvest mark within the Gualala River STA and the Sea Ranch STA.

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COAST AREA OFFICE RESOURCE MANAGEMENT

















































RESOURCE MANAGEMENT







The Hely silt loam (30-50% slopes) is found on mountainous uplands with smooth rolling slopes. The soil is derived from sandstone and is moderately shallow to bedrock. Permeability is moderate, surface runoff is rapid, and the hazard of erosion is moderate. The soil is used for timber production and supports conifer species, but when cleared can be used for limited grazing.

The **Empire loam (30-50% slopes)** is found on ridgetops, terraces, and uplands. The soil is derived from sandstone and is moderately deep to bedrock. Permeability is moderate, surface runoff is rapid, and the hazard of erosion is high. The soil is used for timber production and supports conifer species or for limited grazing.

The **Caspar sandy loam (15-30% slopes)** is found on short, abrupt slopes at about 300 feet of elevation. The soil is derived from sandstone and is deep to bedrock. Permeability is moderate, surface runoff is medium to rapid, and the hazard of erosion is moderate to high. The soil is used for timber production and supports redwood and Douglas-fir.

The Kneeland loam (9-15% slopes) is found on moderate slopes at about 500 feet of elevation. The soil is derived from sandstone and is moderately shallow to bedrock. Permeability is moderate, surface runoff is medium, and the hazard of erosion is moderate. The soil is used for livestock grazing, hay production, or for growing row crops.

The **Rohnerville loam (9-15% slopes)** is found on gently sloping hillsides adjacent to abrupt changes in slope. The soil is derived from sandstone and is moderately deep to bedrock. Permeability is moderately slow, surface runoff is medium, and the hazard of erosion is moderate. The soil is primarily used for livestock grazing.

Soil Name, and Timber Site Index (where applicable)	Acreage	Percent Area
Noyo coarse sandy loam (0-15% slopes)	6	> 1%
Josephine loam (50-75% slopes) Site Index: RW 110 (IV), DF 110 – 130 (IV)	47	6%
Hugo loam (30-50% slopes) Site Index: RW 110 (IV), DF 126 (IV)	273	33%
Mendocino sandy clay loam (30-50% slopes) Site Index: RW 110 (IV), DF 120 – 140 (III/IV)	7	> 1%
Caspar sandy loam (30-50% slopes) Site Index: RW 110 (IV), DF 126 (IV)	126	15%
Hely silt loam (30-50% slopes) Site Index: RW 110 (IV), DF 120 – 140 (III/IV)	134	16%
Empire loam (30-50% slopes) Site Index: RW 110 (IV), DF 120 – 140 (III/IV)	43	5%
Caspar sandy loam (15-30% slopes Site Index: RW 110 (IV), DF 126 (IV)	139	17%
Kneeland loam (9-15% slopes)	6	> 1%
Rohnerville loam (9-15% slopes)	43	5%
Total	824	100%

The erosion hazard rating for the plan area is Moderate, and there are no operations proposed on slopes over 65%. An Estimated Surface Erosion Hazard form is included in Section V.

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The timber site productivity of these soils on the plan area is moderate. The majority of the plan area is classified as Site III Timberland with small portions of poorer site productivity where it is classified as Site IV Timberland. Although there is a presence of Site IV timberland, the THP still follows the stocking standards for Site II/ III timberland.

#### WATERSHED AND STREAM CONDITIONS:

The plan area is located within the Big Pepperwood Creek (1113.850201), Mouth of Gualala River (1113.850202) and Black Point (1113.850304) planning watersheds. The Gualala River and The South Fork Gualala River are adjacent to the plan and are within the Big Pepperwood Creek and Mouth of Gualala watersheds (both ASP), and receive drainage from the plan area, which constitutes the ASP watershed portion of the THP. The majority of the THP is located within the Black Point Watershed and drains to Class II and III watercourses that drain directly to the Pacific Ocean. The watercourses on the plan area were ground-truthed, classified and assessed for erosion, channel stability, canopy cover, LWD and aquatic habitat. The watercourse conditions within the plan area are generally healthy with ample streamside vegetation, stable channels with some, but not excessive sedimentation or downcutting. There are some unstable bank mass wasting events within watercourse drainages, but multiple drainages adjacent to the plan identified as inner gorge by CGS are excluded from the THP boundary. Some of these are related to historic skidding and logging practices, but most are related to long term geologic processes and sea level rise and fall. These channels naturally experience erosion but may experience more than average due to the tectonic activity occurring on-site. Most of the plan area and drainages are located within the Black Point Watershed, which drains directly to the Pacific Ocean. There are no cumulative significant adverse watershed or stream conditions within the THP or Watershed Assessment Area discussed in Section IV of this THP.

The Gualala River watershed was listed on the 2001 303(d) list by the State of California as required by Section 303(d) of the Clean Water Act. This list describes water bodies that do not fully support all beneficial uses or are not meeting water quality objectives. It also describes the pollutant(s) for each water body that limit(s) its use or prevent(s) attainment of its water quality objectives. As required by Section 303(d), a TMDL must be developed for water bodies on the 303(d) list. For the Gualala River watershed, the listing was the result of water quality problems related to elevated sedimentation throughout the watershed.

The primary adverse impacts associated with excessive sediment in the Gualala River pertain to the anadromous salmonid fishery. The salmonid populations present in the Gualala River are in severe decline. The populations of steelhead trout (*O. mykiss*) in this watershed are listed as threatened under the federal Endangered Species Act. Coho salmon (*Oncorhynchus kisutch*) are listed as endangered under the federal Endangered Species Act.

The Gualala River TMDL is based on the Gualala River Watershed Technical Support Document for the Sediment (TSD), (California Regional Water Quality Control Board, August 2001). The beneficial uses and water quality objectives for the Gualala River are contained in the *Water Quality Control Plan for the North Coast Region* (Basin Plan) as amended in 1996 (Regional Water Board 1996). The beneficial uses impaired by excessive sediment in the Gualala River are primarily those associated with the Gualala River's salmonid fishery, specifically: Commercial or Sport Fishing (COMM); Cold Freshwater Habitat (COLD); Estuarine Habitat (EST); Migration of Aquatic Organisms (MIGR); and Spawning, Reproduction, and/or Early Development (SPWN).

Management-related activities have contributed to an increase in sediment delivery to the Gualala River watershed above acceptable background levels. Existing salmonid habitat is limited by various erosion-influenced factors, including infrequent and shallow pools, few backwater pools and other overwintering habitat, embedded cobble, and elevated fines in potential spawning gravels. In addition, the limited availability of large woody debris and the lack of other forms of shelter (particularly from high winter flows) in the channels of the Gualala River watershed contribute to the problems associated with sedimentation. As per 14 CCR 916.4 a field evaluation was conducted of all watercourses within the vicinity of the project area and additional information concerning the watershed and stream conditions is contained within the Watershed Assessment portion of the Cumulative Impacts Assessment (Section IV).

In addition to water quality objectives, the Basin Plan includes two prohibitions that are specific to logging, construction, and other nonpoint source activities. These prohibitions are as follows:

- 1. The discharge of soil, silt, bark, and sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited; and
- 2. The placing or disposal of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities which could be deleterious to fish, wildlife, or other beneficial uses is prohibited.

These prohibitions are observed and practiced as per the Forest Practice Rules best management practices for the protection of the beneficial uses of water during Timber Harvest Plan layout and implementation, including logging and hauling operations.

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#### VEGETATION AND STAND CONDITION:

Vegetation on site consists of mainly Redwood (Sequoia sempervirens), Douglas-fir (Psuedostuga menziesii), Monterey pine (Pinus radiata), bishop pine (Pinus muricata), grand fir (Abies grandis), western hemlock (Tsuga heterophylla) tanoak (Notholithocarpus densifloris), California bay-laurel (Umbellularia californica) and madrone (Arbutus menziesii), with coyote brush, white-thorn ceanothus, blackberry, blue-blossom ceanothus, salal, and seasonal and perennial grasses also present. The exact species composition of a given stand depends on elevation, aspect, soils, stand history, and proximity to watercourses.

The area currently exhibits a mosaic of stand types which have been managed under a variety of silvicultures in the past. The upper slopes of the THP near the broad flat ridge have been primarily managed via clear-cutting and selection. These areas are heavy to Bishop pine and have lower merchantable species stocking overall. The lower slope where most of the THP resides has been managed in the past under primarily selection silviculture. Redwood generally dominates the stands, with certain areas heavier to fir species. Most stands exhibit a generally unbalanced and uneven aged stand structure, while others have been historically managed under an evenaged regime or have not been managed in the last 30-50 years. Stands are variable with trees in a range of ages and diameters. Current stocking levels are generally consistent and high. There are also patchy stands of conifer interspersed with varying levels of hardwood species in the proposed variable retention unit, as well as other smaller areas that were not broken out into their own silviculture. Timber site class III dominates the plan area, with many smaller areas of Site Class IV or borderline III/IV areas.

Timber quality and form are highly variable depending upon microsite. The timber growing in the swales and draws shows better height growth and form as compared to the timber growing on the ridge tops or hillslopes directly exposed to the ocean winds. Timber near ridge tops exhibit thin crowns, are shorter, and commonly have dead tops or many reiterated tops.

A principle defect in the fir, especially in the older fir, is due to the presence of conk (*Phellinus pini*), a fungus that infects the heartwood of live trees. Conk is particularly evident on trees growing on the drier, more exposed, less productive ridge tops sites. Where conk fungus fruiting bodies are observed on at least 40% of the trees stem length, it is likely the entire tree is cull and contains no merchantable material. Brown root and butt rot or velvet-top fungus (*Phaelous schweinitzii*) has also been discovered in the stand. It is most often associated with mature Douglas-fir. Although this rot contributes to the defect in the stand, the amount of defect it causes is not significant.

SOD (Sudden Oak Death) has been discovered and recorded in areas within and adjacent to the plan. The plan contains requirements to prevent its spread.

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nutrient input. The ASP Rules assure protection and enhancement of public trust resources (fisheries, water quality, wildlife).

(4) In addition, it is an objective of this THP to upgrade existing forest roads and watercourse crossings which will in turn reduce soil erosion and reduce the amount of sediment being introduced into the watershed. By upgrading watercourse crossings, waterbarring, sloping and correctly draining roads and skid trails overall sediment yields will be reduced.

The project is to be carried out in accordance with the California Forest Practice Act, Forest Practice Rules, and other applicable agency Rules and regulations. Potential impacts specifically identified are mitigated to less-than-significant levels by additional measures other than what is prescribed in the Forest Practice Rules.

#### II. ALTERNATIVES CONSIDERED IN THE ANALYSIS

The RPF considered seven alternatives for inclusion in the THP:

- (1) The project as proposed.
- (2) No project.
- (3) Alternative harvest approaches.
- (4) Alternative project location.
- (5) Conservation easement or public land purchase.
- (6) Alternative land uses.
- (7) Alternative timing of project.

# III. ALTERNATIVES SELECTED FOR DETAILED EXAMINATION

#### (1) Project as Proposed:

The 736-acre project as proposed, which includes 550 acres of single-tree Selection (65 acres of WLPZ single-tree selection and 485 acres of single-tree selection), 33 acres of aggregate style Variable Retention, 2 acres of no harvest (unstable areas), and 151 acres of Coastal Commission Zone STAs (three separate STAs within the THP footprint), meets the purposes, needs and objectives set forth above.

All WLPZ areas included in the plan will be harvested under single tree selection silviculture, and both ASP and non-ASP watersheds exist within and downstream of the THP. The areas proposed for selection silviculture are well-stocked with multiple age classes present, and a selective harvest will create scattered gaps in the canopy so that a new cohort/age class of conifers may establish. All unstable areas mapped are no-harvest and equipment exclusion zones. Inner gorges identified by CGS are excluded from the THP footprint.

The plan area consists of 95% single-tree selection including the WLPZ and STAs. The STAs that are pre-existing within the THP will follow the outlined operations for selection in the Coastal Zone STAs. Variable retention was chosen as the optimal prescription for approximately 4.5% of the plan area in an effort to improve timberland production and forest health where conifer is inundated with tanoak and huckleberry. Variable retention emulates natural disturbance regimes by replacing portions of a stand and allocating retention areas to optimize forest health.

These silvicultures were selected by the RPF to best achieve long-term productivity, low environmental impact, and adherence with regulations while using their best professional evaluation of the health of the timber, the condition of the regeneration, the age of the timber, the stocking condition and basal area of the timber, the site class of the area, the erosion hazard rating of the area, site stability, aesthetic issues, wildlife habitat concerns, and cumulative impacts. The RPF has concluded that after considering the current stand configuration the proposed silvicultural treatments are the ones best suited for the project area.

Forest roads, skid roads, and landings are located to minimize the amount of sediment generation that could impact watercourses. The harvests in all units will occur on slopes ranging from 5-65%. The plan's silvicultural prescriptions are designed to improve forest stocking and health over time, while protecting and restoring salmonid habitat within the watercourse protection zones. The timber harvest will generate income for the company and supply raw materials to local mills. Operations in accordance with the provisions of THP will not result in significant effects to environmental resources.

This parcel is zoned for timber production (TPZ). TPZ lands are exclusively dedicated to the growing and harvesting of timber for commercial purposes and compatible uses. Under 14 CCR 897(a), there is a legal presumption that "timber harvesting is expected to and will occur on such lands". Moreover 14 CCR 898, which has the force of law, provides that on TPZ lands the harvesting of

Section III- Steam Donkey Timber Harvest Plan

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the variability in stand conditions and the level of stand stocking across the proposed project area, rehab was deemed to be a suboptimal silviculture for this THP.

The Fuelbreak/defensible space silvicultural treatment is an alternative that was considered for this harvest plan. Fuelbreak treatments result in the removal of some trees and vegetation to create or maintain a shaded fuelbreak or defensible space in an area to reduce the potential for wildfires and the damage that they could cause. The residual stocking using this silviculture is lower than the standards for selection, which could lead to more light hitting the forest floor, resulting in more understory brush growth and heightened ladder fuel loading over time. While this treatment type could be beneficial in some portions of the plan area, the RPF has chosen to utilize other silvicultural prescriptions combined with enhanced slash treatments within 100 feet of the property line shared by the Sea Ranch.

The RPF weighed all possible silvicultural treatments and ultimately selected those that would best achieve long-term productivity, low environmental impact, and adherence with regulations. The RPF also used her best professional evaluation of the health of the timber, the condition of the regeneration, the age of the timber, the stocking condition and basal area of the timber, the site class of the area, the erosion hazard rating of the area, site stability, aesthetic issues, wildlife habitat concerns, and cumulative impacts when selecting the silvicultural treatments of the THP. The RPF has concluded that after considering the current stand configuration the proposed silvicultural treatments are the ones best suited for the project area.

#### Other Yarding Methods:

Various yarding methods were considered by the RPF during preparation of the THP -- tractor/ground-based, cable (ground and aerial), and helicopter. Tractor yarding was chosen as the least damaging alternative for removing logs.

Tractor yarding was chosen as an optimal yarding option in areas of the THP that have relatively gentle slopes and moderate EHR. Most of the skid trails are located on slopes less than 40%. There is an existing network of stable skid trails that can be reused that feed into the existing road system. Operational limitations for ground-based yarding required by the FPRs, including the ASP Rules, have been incorporated into the plan and ensure no significant adverse or cumulative effect on watershed resources.

Cable yarding for the entire THP was considered, however due to the topography of the THP (flat broad ridges) and the fact that most of the THP is on a slope facing the Pacific Ocean with possibly no tail holds with proper deflection, cable yarding was not chosen as the main yarding method for the THP.

Helicopter yarding is a feasible option. However, it would greatly increase noise levels at the yarding and landing sites. Many residences exist adjacent to the THP area, and numerous noise complaints would be expected to be received due to this type of operation. Helicopters require unusually large landings of up to one and a half acres for safely delivering and loading logs, which would increase the area affected by soil disturbance and reduce the shade canopy in the vicinity of the landings. Other impacts of helicopter yarding include those to safety of wildlife and their habitats. While most all timber harvesting operations present dangers to workers harvesting trees, as well as to workers yarding and loading logs, helicopter yarding presents a markedly greater risk to human health and safety because of the high potential for falling debris. In addition, many of the dangers of helicopter yarding to workers – logs knocking into other trees and their branches while being picked up and carried, logs falling altogether while being carried, and the "blowdown" from helicopters taking off that disturbs the forest canopy and sends debris flying – potentially can harm birds and their nests, and displace birds. Moreover, and in any event, at present there are only a few known helicopter logging contractors that are willing to work on smaller total volume projects such as this one. The largest helicopters available would be needed to lift the larger second growth logs, and these contract helicopters are more difficult to find. In addition, many helicopter firms have stopped logging in favor of other more lucrative lift projects and fire suppression work. As a result, logger availability is becoming more of an issue with this harvest method.

#### Size Reduction of the Harvest Area:

This is a feasible alternative, but it would not further reduce potential adverse impacts or cumulative effects. With proper implementation of the CA Forest Practice Rules, there should be no measurable project or cumulative impacts to watershed, biological, or soil resources, regardless of harvest area size. Additionally, roughly 195 acres of the THP area fall within ASP watersheds, meaning these acres are subject to ASP Rules which have increased watercourse protections and retention standards for riparian buffer zones. Furthermore, the proposed THP area is smaller than the landowner's parcel. The THP area has been specifically chosen to avoid potentially hazardous unstable areas, and will retain valuable biological resources. THPs are valid for

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time. Such postponement would also delay implementation of the management techniques that will lead to a reduction in hazardous fuel loading, and a reduction in the total sediment deliveries to downstream resources.

Altering the timing of operations such that some other area of the property is entered and harvested now, so that this area can be entered at a later point in time, would not have the effect of addressing current issues regarding both roads and forest stand conditions. Rather, it might result in lowering the area's mean annual growth and reduce the property's overall growth to achieving MSP, contrary to the mandate of the Forest Practice Act and the Forest Practice Rules. Accordingly, this alternative was not considered further because it is inconsistent with the requirement to maximize sustained productivity of timber stands while complying with all applicable laws and regulations, and meeting the purposes, needs and objectives of the THP.

# IV. COMPARISON OF PROJECT ALTERNATIVES

#### The project as described in the THP is preferred over the project alternatives for the following reasons:

#### No Project:

The owner of the parcel upon which the Steam Donkey THP is proposed is affiliated with Redwood Empire Sawmills which owns and operates local sawmills inland from the Gualala holdings, and has made significant investments in that milling infrastructure, which needs to remain working in order to recover facility improvement and maintenance costs. The landowner acquired the land that constitutes the Steam Donkey THP area for the exclusive purpose of growing and harvesting timber to achieve MSP (as *required* by the Forest Practice Act and Forest Practice Rules) and reducing dependence on purchasing logs in the open market; such purchases result not only in foregone economic benefits for the local community, but also greater environmental impacts. Such adverse impacts include, but are not limited to, the transportation/import externalities (e.g., increased GHG emissions from trucks) and the less stringent environmental regulation of timber harvesting in Oregon, Washington, and all states other than California. This project – which will "locally source" timber -- is one of many needed to allow the landowner to operate a viable business that benefits Mendocino and Sonoma Counties and their North Coast communities and, that, at the same time, provides the revenue needed to continually provide for the stewardship and maintenance of timberlands – and their sustained productivity -as mandated by the Forest Practice Act and Forest Practice Rules, as well.

#### Alternative Harvest Approaches:

Other harvest approaches as discussed are neither feasible nor necessary given the THP's robust impact avoidance and compliance with the CA Forest Practice Rules. The RPF has exercised professional judgment and has demonstrated proper justification for the silvicultural prescriptions chosen.

Single-tree selection in various forms and retentions cover essentially 95% of the THP, which for the landowner and the THP area is a better option than many of the other alternatives. Maintaining unevenaged silviculture throughout the property where stands are already exhibiting 3 age classes and have suitable conifer stocking levels, and are productive areas makes more sense for the landowner than converting to evenaged stands on a rotation. There are other parts of the property and THP that make more sense to treat as an even aged or special prescription due to the fact that there are not enough age classes present, the area is not productive and has lower conifer stocking. The variable retention silvicultural method is suitable for stands that have desirable ecosystem characteristics that can be retained, in this case using aggregated retention. An even lesser intensity of harvest would not be financially viable and would not allow productive restoration of the stand. Helicopter yarding would be cost prohibitive, present human safety concerns, and may not be possible, in any event, because of the limited availability and/or the willingness of such companies to take on the work. The THP review process allows the agencies charged with protecting fish and wildlife and water quality to make recommendations about the proposed silviculture, varding method, and plan size to protect valuable resources within a sustainable and productive harvest. The THP review process also allows the public the opportunity to comment on those same aspects of the proposed plan. In addition to the financial impacts already noted, a lighter harvest than that proposed would not fulfill the intent of the ASP Rules to restore habitat for anadromous salmonids by creating a diverse forest structure and promoting the growth of the largest trees. Nor, for that matter, would it meet the requirements to manage timberlands for MSP. No other alternative harvest approaches than those chosen were shown to be superior or otherwise warranted and, therefore, the discussed alternative harvest approaches were rejected.

#### Alternative Project Location:

Because this THP's potential impacts are being avoided or addressed by requirements of the CA Forest Practice Rules, such that impacts are less-than-significant, relocating the project to an alternative location would not avoid possible significant adverse environmental impacts. Not operating on the THP area would require operations to occur elsewhere on the property where greater impacts would occur because of the presence of unstable features, steep slopes, and adjacency to private residences. In addition, operating on an alternative location would be less suitable for achieving MSP across the GRT property.

#### Public Acquisition (conservation easement or public purchase):

This would avoid any potential impacts of this THP (as noted above, any potential impacts of the THP have been addressed by requirements of the CA Forest Practice Rules such that impacts are less-than-significant). However, it is not feasible because the likelihood of either occurring in the near or even distant future is remote and speculative. It is very unlikely that an agreement on

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#### SECTION II ITEMS

#### ITEM 14 (B) - SILVICULTURAL METHODS

The silvicultural prescriptions for this THP include *Coastal Commission Special Treatment Area, Variable Retention, Single Tree* Selection and WLPZ-Selection. The current stand conditions and post-harvest stocking levels for the Variable retention unit are described below.

#### Variable Retention

Harvest with variable retention is intended for one unit totaling 35 acres with approximately 5.25 acres of retention. The proposed variable retention area is dominated by small to medium sized tanoak with scattered larger and mid-sized conifers such as redwood, Douglas-fir and Bishop pine. Ages of the dominant and co-dominant conifer overstory component are generally 40-60+ years old. Generally, trees of all merchantable DBH sizes are targeted for removal outside of the aggregate units. Within the aggregates, trees of all size classes present in the pre-harvest stand will remain. The timber stand, which has developed since the last harvest and is characterized primarily by an irregular aged stand with scattered large and medium-sized redwood and fir, and light scattered pine species, with heavily stocked tanoak of varying sizes.

13 15% Aggregate – 4.95 act
3

Objectives of Aggregated Variable Retention

- maintain patches of undisturbed forest and hydrologic habitat into the new stand.
- contribute to maintenance of geologic slope stability.
- avoid operational problems by retaining problem trees and areas.
- retention of trees adjacent to wet areas and Class III's
- maintain trees with high biologic value.

#### Stand elements to be retained to meet objectives identified above:

The plan proposes to use aggregate retention in Unit 1, retaining intact forest patches. No harvest of trees within the aggregated retention areas is proposed during the initial entry unless a tree needs to be felled for safety reasons. The aggregate patches are "No-harvest" and will be flagged with pink "Do Not Cut" flagging, however aggregates may be used for skidding and/or equipment ingress and egress if needed to properly operate the unit. MSP will be met pursuant to 14 CCR 913.11(c).

Below is a table for the pre and post-harvest basal area by species within the unit; the second table breaks these basal areas down into diameter classes by species. These estimates are based on inventory and ocular estimates.

# Unit 1

Acreage:	33 acres			
Unit:	1	Silviculture:	Variable Retention- Aggregate	
Species	Species Composition (%)	Pre- Harvest Basal Area (ft²/ac.)	Desired Post- Harvest Basal Area (ft²/ac.)	Approximate Basal Area Removed (ft²/ac.)

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Total	100%	105	35	70
Hardwoods	50%	60	15	45
Pine	5%	5	5	0
Douglas-fir	10%	20	5	15
Redwood	35%	20	10	10

Diameter Class	Redwood (pre)	Redwood (post)	Douglas-fir (pre)	Douglas-fir (post)	Pine (pre)	Pine (post)	Hardwoods (pre)	Hardwoods (pos
(dbh, in.)	****				10.)~~~~~~~~~~		enerse beneficipiene ne ne ne ne ne he paraine	בעי היו אין
2-6	2	1	1	1	1	1	10	1
8-12	4	3	4	1	2	2	20	6
14-18	6	2	7	1	1	1	20	4
20-24	3	2	4	1	1	1	7	2
26-30	2	1	1	0	0	0	2	1
32-36	3	1	2	1	0	0	1	1
38-42	0	D	1	0	0	0	0	0
44-46	0	Ó	0	0	0	0	0	D
46+	о	0	0	0	0	0	0	0
Total	20	10	20	5	5	5	60	15

#### **Regeneration Plan:**

#### Site Preparation

Tanoaks and other small to medium sized hardwoods may be either cut, removed and piled for burning, cut and left within the unit, or treated with herbicides or some combination of these treatments in order to ensure that group B species do not occupy more area than group A species post-harvest, as compared to pre-harvest conditions, as well as to ensure the stand is prepared for regeneration of conifer species. Planting of conifer post-harvest will also ensure Group A occupancy.

#### Method of Regeneration

Conifer tree seedlings (redwood and Douglas-fir) shall be hand planted (13'x13') the first or second winter season following completion of timber operations in these units, where natural regeneration is not present or sufficient. In-growth through natural regeneration is also anticipated from nearby aggregates, and by the sprouting of redwood stumps.

### ADDITIONAL ITEM 14 (B) POST-HARVEST STOCKING REGARDING VR UNITS

<u>Standard Rule: 913.4 (d)(1):</u> In the plan, the RPF shall describe in sufficient detail to provide for review and evaluation: the trees and elements retained, the objectives intended to be achieved by retention, the distribution and quantity of retained trees, the intended time period of retention, and any potential future conditions or events the RPF believes would allow harvest of retained trees. The RPF may explain and justify, and the Director may approve a plan which **indicates up to 50% of retained trees are intended for harvest during future Intermediate Treatments** of the regenerated portion of the harvest area where such harvest(s) are consistent with stated Variable Retention objectives.

Standard Rule 913.4 (d)(3)(k):

(3) The following retention standards shall be met:

(K) Trees shall be retained for at least 50 years unless a shorter period of time is described in the plan, explained and justified by the RPF, and approved by the Director.

Explanation: Aggregate retention groups shall be at least ¼ acre and larger. These groups shall be located and distributed throughout the units protecting topographic features such as headwall swales, rock outcrops, as well as intact forest patches and Class III watercourse ELZs. Aggregates may also be located around unique habitat features of the unit such as springs/seeps, old growth trees, nest trees, large woody debris and/or snags, where present. Aggregates shall be flagged prior to operations. Aggregates are not to be entered during this harvest, but it is proposed that during the time of intermediate treatment of the logged portion of the VR, up to 50% of the trees in the retained patches may be harvested.

Justification: The area inside of aggregate patches may, at the time of intermediate treatments of the regenerated portion, may be entered and up to 50% of the retained trees within the patches may be harvested or treated to reduce fire hazard and fuel loading

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where present. Reforestation work in subsequent entries and sustainable harvesting methods being implemented as outlined in the THP. The stocking standards of 14 CCR 912.7 (b)(1) will be met within five years following completion of operations. All retained trees/patches will be protected to the extent feasible during timber operations consistent with 14 CCR 913.4 (d)(6). Harvests outside of retention are intended to regenerate and restore conifer growth, and reduced fire hazard and fuel loading. While aggregate units will currently contribute to slope stability and provide ground cover, these areas still tend to be overstocked with smaller hardwoods/ tanoak and are currently inhibiting conifer growth and reducing stand health. If no treatments were to occur for another 60 years, it is likely that many conifers and conifer establishment within some of the aggregates will be outcompeted by hardwoods and limited regeneration will occur.

#### ITEM 27(a) & (f): WLPZ FACILITIES- Roads, Landings, and Skid Trails.

Standard Rule: 14 CCR 916.3 (c) Prohibits the construction or reconstruction of roads, construction or use of tractor roads or landings in Class I, II, III, or IV watercourses, WLPZs, marshes, wet meadows, and other wet areas except at prepared tractor road crossings, crossings of Class III watercourses, which are dry at time of timber operations, at existing road crossings and at new tractor and road crossings approved by Department of Fish and Game. In lieu of that rule, existing landings and skid trails that are within the WLPZ of Class II-S and Class II watercourses are proposed for use.

Explanation: There is one landing located along a road partially within the WLPZ of a Class II (non-ASP) watercourse, there is one Class III tractor crossing (T2) that may be wet during operations located inside of the WLPZ of a Class II-S watercourse and wet area, and 2 segments of WLPZ skid trails near T1. Map point T1 is a Class III watercourse tractor crossing within the WLPZ, and has associated skid trails proposed for use (see Section II, Item 27 In-Lieu Practices Table.). The landing and crossing for Item 27(a) and (f) are labeled as map points L2 and T2 in the Road Point Table in Section II Item 24.

The landing is on an existing seasonal road, in good condition and does not have any significant existing associated erosion issues. T2 is an existing tractor crossing on a Class III watercourse, within the WLPZ of a Class II-S, with a wet area located above the trail crossing. Because of the wet area located above the trail, the crossing may be wet during the time of operations. In the case that it is wet, a minimum 4" culvert shall be used at the crossing, as stated in Item 26. This crossing is stable and in good condition and would benefit from being restored to natural channel gradient after operations. WLPZ landings, roads and skid trails are shown on the THP Roads and Features Maps and Yarding Methods Maps in Section II.

Justification: The proposed practices differ from the standard practice as portions of existing roads, landings and skid trails that are within the WLPZ of wet areas, Class II-S (ASP) and Class II (non ASP) watercourses are proposed for use. The landings and associated skid trails described above as **map points L2**, **T2 and trails** are existing facilities that have been used in previous operations. These facilities have all been examined and show little to no adverse impacts from this past use. **The following measures will provide protection equal to the standard rule to the beneficial uses of water:** 

- \* Operations on these trails and landings shall be limited to dry rainless periods when soils are not saturated. The definition of saturated soils is as set forth in 14 CCR 895.1 and listed in item #18.
- \* Operations on these trails shall not occur between November 15th April 1st.
- \* To minimize soil disturbance within the WLPZ that could produce sediment runoff, the trails shall be water barred to high erosion hazard rating standards and the water bars shall be directed into clumps of vegetation when possible.
- \* To minimize soil disturbance within the WLPZ that could produce sediment, these portions of WLPZ landings shall be seeded and/or mulched and drained with rolling dips and/or waterbars.
- \* T2 tractor crossing, whether a culvert is needed during operations or not, shall be removed prior to the winter period of use by excavating the channel to watercourse grade, laying back the banks 1.5H:1V, and treating the exposed soil as per Item 18.

# ITEM #36, CULTURAL RESOURCES INFORMATION

Name of current Archaeological Surveyor(s): Dylan Roberts

() Archaeological Survey conducted by Professional Archaeologist

 (x) Archaeological Survey conducted by person with current CALFIRE Archaeological Training CALFIRE Archaeological Training Course # 188

Date Training Course was completed: 10/14/22

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#### Archaeological Records Check Information:

A record check was conducted through the Information Center on 8/15/22. The results of the record check are contained in the THP's Confidential Archaeology Report.

#### Native American Consultation Information:

Native American groups on the CALFIRE Native American contact List were sent notification letters (with maps) on 4/18/23. One reply was received from the Kashia Band of Pomo Indians, and resulted in a site visit on 6/13/23. Their comments were incorporated into the THP/ CAA prior to submittal.

#### Survey Strategy:

Cursory Survey - The majority of the project area was surveyed using the cursory survey strategy, completed during THP layout activities such as flagging of watercourse centerlines and Watercourse and Lake Protection Zones, project area boundaries, special treatment zones, and during timber cruising and sample timber marking efforts.

Intuitive Survey - Intuitive Reconnaissance was completed for those areas considered as "high probability".

Complete Survey- Confidential Information

#### Time spent conducting archaeological field survey and dates the survey was conducted:

Cursory Reconnaissance: >50 qualified person hours

- September 7, 16, 21, 22, & 28, 2022
- October 18 & 27, 2022
- November 17 & 29, 2022
- December 6, 9, & 16, 2022

Intuitive Reconnaissance: 10+ qualified person hours

November 7, 2022

Complete Reconnaissance: confidential

#### Survey coverage intensity:

The THP area is generally densely forested. The terrain is gentle to moderate and has steeper rockier areas along the western boundary.

*Cursory Survey* efforts were implemented across the entirety of the plan area. Surveying occured during plan reconnaissance and layout. Plan layout consisted of flagging watercourses, wet areas, roads, special treatment zones, boundaries, and travel along roads and skid trails, as well as some timber cruising and marking. There is a high amount of coverage of this type of survey in the plan area.

*Intuitive Survey* efforts (detailed survey with wide traverses) were focused on those "high probability" areas within the THP. There is a moderate amount of coverage of this type of survey in the plan area.

Complete Survey efforts- Confidential.

#### Survey Results:

Survey results are contained in the THP's Confidential Archaeology Report. Disclosure is confidential under CEQA Guideline 15120(d) and Government Code Section 6254. Mitigations to protect Archaeological Sites (if any exist) are developed with the guidance of the State Archaeologist and/or Native American representative.

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# STATE OF CALIFORNIA BOARD OF FORESTRY CUMULATIVE IMPACTS ASSESSMENT

#### Introduction & Plan Overview

The Steam Donkey THP is 736 acres, located south of Gualala, CA mostly in the Black Point CalWater Planning Watershed. This watershed drains to the Pacific Ocean and is a Non-ASP (Anadromous Salmonid Protection) Watershed. The other two watersheds that the remainder of the plan area is within drain to the main stem of the Gualala River (Big Pepperwood Creek Watershed) and to the South Fork Gualala River (both Big Pepperwood Creek and Mouth of Gualala River Watersheds). The Gulala River Watershed is 303(d) listed for Aluminum, Temperature and Sedimentation/Siltation Impairment. The Gualala River also has a TMDL (Sediment Total Maximum Daily Load) originally prepared in December 2001 and adopted by the North Coast Regional Water Quality Control Board in November 2004. The TMDL is currently being amended into the North Coast Regional Water Quality Control Board Basin Plan (Basin Plan) as required by the Clean Water Act.

The project footprint was most recently harvested using the selection regeneration method in 2010, and before that in 2000. None of the project area has been harvested in the last 10 years. In 2017, a THP utilizing the clear-cut silvicultural method was harvested in various patches along the eastern, upslope THP boundary.

There are 10 soil types within the project area, many of which are sandy-loam soils. The underlying bedrock which is exposed in certain areas throughout the THP is mainly an Eocene marine sedimentary and metasedimentary rock type, with some older Upper Cretaceous marine sedimentary rocks in the southern portion of the THP. The San Andreas Fault is located to the east of the THP in the South Fork Gualala River, and associated sub-faults track through the project area.

There is one Northern Spotted Owl within the Biological Assessment Area (BAA) but is over 0.43 miles from the plan area. Other habitat exists within the BAA for listed species and the THP includes measures to promote this habitat. There are no special habitat elements, other than the adjacency of the Pacific Ocean and the proximity to the Gualala River. The Gualala River is an important feature to species within the BAA and is down stream of the project area.

The Gualala Point Regional Park is located within 300' of the northern portion of the THP and has a public campground.

The most northern haul routes (2 roads) connect to the road that this park is located on, but prior to the campground and does not pass the campground. There is 1 other haul route outside of the plan submitter's property prior to California State Route 1 for the project, which will be used under a right-of-way agreement. The fourth haul route is appurtenant to the edge of CA Route 1.

Much of the harvest plan is not visible from CA Route 1 due to the screening of the Sea Ranch Community and property (forested areas), the low topographic relief of the project, and the current dense forested condition, but would be the point from which the most significant amount of people would see it from. Therefore, and additionally, the silvicultural methods chosen for 95% of the THP (Single-Tree Selection, Coastal Commission Special Treatment Areas, and No-harvest) are not expected to be visible from the highway.

The THP is to recoup carbon emissions and carbon lost from the harvest in 9-30 years.

There is a moderate to high amount of fuel loading within and surrounding the project area, and the area has not been entered in any substantial way for the last 13 years (other than road maintenance). The Sea Ranch Community is located to the west of the Plan Submitter's property. There are various spaced-out parcels with homes distributed along the length of the project area which can be seen on the map on page 131. Some areas of the THP are closer to a clustering of homes, and some areas are against moderately open grassland and some denser forested areas. Because of this, noise may be heard from the proposed operations when in proximity to operations near the property line.

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The Black Point Planning Watershed is composed of a coast redwood, mixed whitewood (Douglasfir, grand fir, western hemlock, bishop pine and Monterrey pine), and a hardwood forest (tanoak, canyon live oak, madrone). It also contains portions of coastal bluff and grassland along the western margin (coastline). The Mouth of Gulala and Big Pepperwood Watersheds are composed of mostly coat redwood, Douglas-fir and mixed hardwood forests. The rivers and floodplains in both of these watersheds contain high volumes of second and old growth redwood trees across many landowners. The plan submitter is one of these landowners. These two watersheds have a large amount of the Plan submitter's property within them, but there are some small, non-industrial landowners, many of which have harvested timber in the past and have a filed and approved Non-Industrial Timber Management Plan that could be harvested in the future as well. Harvest documents have been filed in the last 10 years for 1.) Big Pepperwood Creek: 818 of 6,527 acres, or 12.5% of the watershed is under plan or has been harvested 2.) Black Point: 139 of 4,618 acres, or 3% of the watershed is under plan or has been harvested and 3.) Mouth of Gualala River: 956 of 5,301 acres, or 18% of the watershed is under plan or has been harvested. The total WAA acreage is approximately 16,446 acres. Over the past 10 years the WAA has been managed through 1, 241.32 acres of uneven aged management (approximately 7.5%) and 671.54 acres of even aged management (approximately 4%). There is one future project located within the Big Pepperwood Creek Planning Watershed within the plan submitter's property referred to as "Coppertop THP".

When considering baseline conditions, past projects and future projects, there may be an existing continuing significant adverse impact to **H. Wildfire Risk and Hazard** and **I. Other (Noise)** from past land use activities in regard to existing fuel loading, the project, and residential building and expansion, as well as a lack of harvesting near the property line in the recent past. Within the Wildfire Risk and Hazard Assessment Area there is moderate to heavy fuel loading of forested areas from a lack of past projects in combination with the increasing amount of residents west of the project area through residential expansion, in combination with operations and the creation of slash. Within the Noise Assessment Area, there are many residential properties that may be affected by the noise of the proposed project due to their abundance and proximity to the project area, in combination with lack of recent past timber operations near the property line.

*H. Wildfire Risk and Hazard* - The Forest Practice Rules addresses slash from operations, however with the current conditions and potential impacts, a mitigation is proposed within the THP above and beyond the rules to reduce the significant adverse cumulative effects of Wildfire Risk and Hazard to that of an insignificant effect. Without additional slash treatment along the western property line of the Plan Submitter, which is the closest proximity of the project area to the multitude of residents, the area could have an increased risk of wildfire spreading or wildfire intensity. Ignition sources outside of the Plan Submitter's property have the ability to spread onto the proposed THP area. To improve conditions and ensure there is no risk or impact to Wildfire Risk and Hazard for any landowner in the area, this THP proposes the **mitigation** of requiring an additional slash treatment along the property line for a width of 100' into the THP. This is above and beyond the FPRs.

*I. Other (Noise)*- The RPF identifies noise as a resource that may be impacted by the proposed project in combination with past projects. The THP also proposes a **mitigation** for noise of restricting work and trucking hours between 7am and 4:30pm within 200' of the property line, and log trucks shall not use jake breaks within 200' of the property line. With this consideration, there shall be no significant cumulative impact to noise within the assessment area.

This analysis, along with the mitigation measures in the THP, and operational compliance with the THP and applicable Forest Practice Rules, supports the plan preparer's statement that after mitigation, the THP will not have a significant adverse impact on resource subjects.

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to encourage the growth of the younger age classes as the next cohort of trees to move into the codominant and dominant positions, eventually. The fuelbreak prescription would create slightly more fire resilience overall, but the addition of the slash treatment for the most important zone of fire protection (100' from property line) allows for a combination of thinning and slash treatment while being able to manage the stand in the future in an uneven-aged, selective manner.

With the implementation of this mitigation measure (which is above and beyond the CA FPRs) no significant cumulative impacts related to wildfire risk and hazard are expected to occur as a result of the proposed project.

(I):OTHER- NOISE - The RPF has disclosed that impacts due to noise are possible given the close proximity of the proposed timber operations to the community of the Sea Ranch. Specific mitigations have been proposed by the RPF and described in Section II and Section IV of the THP. Mitigations for noise impacts include:

-The limitation of log truck traffic and log hauling to the hours of 7AM - 4:30PM

- Work on roads and landings within 200 feet of the property line shall also adhere to the hours of 7AM to 4:30 PM

-Log trucks shall not use jake brakes within 200 feet of the property line.

-Hauling and operations will be avoided during weekends and holidays

With the implementation of these mitigation measures (which are above and beyond the CA FPRs) no significant cumulative impacts related to noise are expected to occur as a result of the proposed project.

# Resource Subject Assessment Areas

# A. Watershed

The watershed assessment area (WAA) includes the following planning watershed(s):

Black Point CalWatershed (V2.2, 1113.850304, 4,618 acres); a tributary to the Pacific Ocean (Non-ASP). The plan area occupies 555 acres or 12% of the Watershed.

**Big Pepperwood Creek CalWatershed (V2.2, 1113.850201, 6,527 acres);** a direct tributary to the South Fork Gualala River (ASP). The plan area occupies 176 acres or 2.7% of the Watershed.

Mouth of Gualala CalWatershed (V2.2, 1113.850202, 5,301 acres); a tributary to the South Fork of the Gualala River (ASP). The plan area occupies 5 acres or 0.1% of the Watershed.

The total WAA acreage is approximately 16,446 acres. The plan area and the planning watersheds (which is the watershed assessment area (WAA)) are portrayed on the WAA and BAA maps.

# Rationale:

This assessment area is consistent with the January 7, 1992 CDF recommended guidelines to RPFs which states: "The watershed assessment area for assessing cumulative watershed effects should be selected to include an area of manageable size (usually an order 3 or 4 watershed) relative to the THP that maximizes the opportunity to detect an impact".

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# A. Watershed Resources: Assessment

General WAA Description

Operations from this THP have the most potential to affect water quality within the *Black Point Watershed*, as most of the THP acreage lies in this watershed (75% of THP). The Big Pepperwood Creek watershed also has a fair amount of THP acreage located within it (24% of THP), however the Mouth of Gualala watershed only receives drainage from about 5 acres of the THP (~1% of THP). These planning watersheds include a variety of topographic aspects, a variety of slope inclinations from steep to flat, but have an overall gentle topography with broad flat ridges. The main trending ridgeline within the WAA runs north to south and has sub-drainages that flow east-west. There is a variety of soil types from very stable to moderately unstable and are mainly marine sedimentary derived soils. There are also many outcroppings of sandstone units that create small cliffs within the entire German Rancho Land-grant (Pacific Plate; west of San Andreas Fault). Watercourses within and adjacent to the THP range from Class II-L (ASP) to Class II (non-ASP) to Class III watercourses. There are no Class I or IV watercourses within the THP. Multiple drainages identified by CGS as an inner gorge are excluded from but adjacent to the THP. The main stem Gualala River is over 200' from the THP.

Trees within the watershed assessment area range from 0-100 years (and some older second growth) and consist of a variety of different age classes. Canopy cover within the watershed assessment area varies throughout but generally consists of heavy canopy cover ranging from 80-100% in areas previously managed under uneven aged silviculture (The entire THP footprint). The WAA includes a long stretch of the South Fork Gualala River floodplain in which there is heavy stocking of large redwoods creating 90-100% canopy closure, even in harvested areas. Even aged silviculture within the WAA resulted in relatively small openings with canopy covers ranging from 20-70% throughout the WAA. These openings are all at different stages of ingrowth, therefore older clearcut areas have a significant amount of young redwood creating low level canopy closure, but not as much overstory canopy as uneven aged stands. Tree species include (in order of % composition) redwood, Douglas-fir, grand fir, bishop pine and western hemlock. A breakdown of the percentage of the watershed harvested by silviculture is also included in the THP harvest history tables that follows within this section. Precipitation within the watersheds averages around 40 inches per year, which comes mainly in the form of rain. Much of the year the area has coastal fog that provides moisture to the redwood forests from leaf drip and absorption, and reduces evaporation by providing cover from solar radiation.

The largest amount of the THP footprint was previously and most recently harvested under THP #1-10-007 SON with primarily Selection silviculture and tractor operations, which is outside of the 10-year analysis. Prior to this project, the THP area was harvested in 2005 under Selection silviculture and tractor operations; before that, the project areas was covered by two separate projects in 2000, using Selection silviculture and tractor operations.

Upslope and bordering the Steam Donkey THP to the east within the Black Point watershed is a recently harvested THP (1-17-049-SON) comprised of Clearcut and Selection silviculture. Currently, the ownership of the plan submitter also includes newer THPs within the WAA, which are current and future projects within the watersheds (Big Pepperwood and Mouth of Gualala): 1-23-00073- MEN, "Coppertop THP" (not yet submitted), 1-22-00042 SON, and 1-22-00043-SON

The following cumulative effects analysis reference the following documents: The Gualala River Watershed Council (GRWC) Monitoring Plan Report 2000-2005 (GRWCMPR) and from the North Coast Watershed Assessment Program (NCWAP March 2003). The GRWCMPR is the most comprehensive analysis available and summarizes the data that has been collected as part of the Gualala River Watershed Monitoring Program Plan and includes a Quality Assurance Project Plan (QAPP) vetted by the California Department of Fish and Wildlife and the North Coast Regional Water Quality Control Board. It is part of the ongoing development of a Watershed Management and Enhancement Plan (WMEP) for the Gualala River Watershed. This monitoring plan was funded by

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in order to offset any sediment impacts that result from their timber harvesting activities. GRI/GRT has improved 55% of their road system at their own cost of \$4,000,000 not including grant money. This has prevented at least 300,000 cubic yards of sediment from being delivered into watercourses through work completed on company lands in the Gualala River Watershed from the period 2003 to 2023. The average cost of road upgrading has been \$17,900 per mile. GRT has a goal of assessing their remaining road system over the next ten years and upgrading all roads to a storm-proofed condition over the next twenty years as money is available. In addition, roads are inspected annually and most road erosion sites that develop during the winter that are found and are accessible are repaired immediately so that small problems do not develop into big problems. Under miscellaneous addendums in Section V is a listing of "Completed Road Work" projects for each watershed. In these "Competed Road Work" addendums "Yards Stabilized" were only provided if a qualified person addressed the site, and many of the stabilization sites were repaired but actual quantitative sediment savings has not or is yet to be documented.

### Sediment Effects Baseline Conditions

The WAA and THP area contains the following baseline conditions regarding sediment effects. Effects of past activities can be seen today within the WAA, where sediment was once delivered to the watercourse in mass wasting, skid trails, and watercourse crossings, however these effects are seen on a minimal scale within and downstream of the project area:

- Roads The existing road network within the project area contains primarily upslope seasonal roads with rolling dips, culverted crossings, and rocked crossings. These roads were likely built during historic logging operations. Roads within the plan area receive high amounts of water in the winter and spring months due to a higher water table. Despite this, the roads within the project area and WAA generally have sufficient drainage facility and there are no major issues related to road drainage. There are no unstable areas associated with the roads in the project, due to the low topographic relief of the project area. There is a high density of roads within the project area, however many of them are on gentle or flat slopes and have minimal maintenance issues.
- Yarding The entire THP area was previously logged using ground-based equipment, with the exception of steeper portions of Salal Creek, which were previously operated as a cable or tractor long-line area. Therefore, there is an existing network of skid trails, the majority of which are stable and in good condition. There are historic skid trails located within WLPZs of Class II watercourses and in all watercourse channels, but none of these facilities are proposed for use. Some of the tractor/skid trail crossings that were used in previous operations were not fully excavated to watercourse grade and currently present a potential sediment source. Waterbarring of existing skid trails is fairly consistent with modern day FPRs as much of the area has been entered since the year 2000. The existing network of skid trails includes some segments on slopes greater than 65% within Moderate Erosion Hazard Rating areas. There is one landing in the project area within a WLPZ- L2 is located on an existing seasonal road between two Class II watercourses. This landing is stable and does not have a current sediment delivery potential. The initial harvest of the WAA and subsequent entries prior to the FPRs resulted in many skid trails constructed in line with the drainages of watercourses. Although these trails have not been used in any recent past projects due to the enforcement of the FPRs, the effects within the watershed are still present as watercourses continue to find their way back to their original and natural course. This resulted in filling of channels and pools, aggradation, and requires down-cutting, and bank cutting in order to flush the perched sediment.

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 Unstable Features – The RPF has identified several unstable features within the THP area. Most of these are located adjacent to watercourses and are a result of either natural erosional and tectonic (San Andreas Fault) processes, bedrock layers, or historical logging within and adjacent to watercourses. Historically, these features have likely contributed to active sedimentation, especially those that experienced heavy equipment and soil and earth displacement. Multiple drainages adjacent to and outside of the THP have slopes identified by CGS as inner gorge. Section V includes GRI database information on unstable features per watershed, as well as published geologic maps of the THP area.

# Sediment Effects- Past Activities

The assessment area (WAA) has a long history of human habitation. The main

activities that may have contributed to past adverse impacts of the Watershed Assessment Area, specifically to sediment effects, are the development of the town of Gualala, road and watercourse crossing construction, timber harvesting, milling and lumber production, agricultural production, livestock grazing, wildland burning, residential building. Logging practices occurring prior to the Forest Practice Act likely impacted the entire Gualala River watershed, including the THP area; effects of these activities are present within the project area. Past logging practices consisted primarily oxen logging, steam donkey logging, and finally tractor logging. All practices contributed sediment into stream channels. Activities in the last 10 years were limited to road maintenance within the project area. Additional recent past activities include power line and highway maintenance.

 <u>Wildland Burning</u>: Early landowners appear to have burned the slopes periodically following

the initial logging in an attempt to enhance livestock carrying capacity. The wildland burning, which occurred from before the turn of the century until the early 1950s, had a definite negative impact on the beneficial uses of water across the assessment area. Annual burning was conducted to increase the amount of grazing habitat and improve the quality of the grazing habitat. Burning during this period was also used in conjunction with clear cutting in the watershed assessment area. This burning reduced protective ground cover exposing large areas of soil to increased erosion potential. Conifer shade canopy along the watercourses of the assessment area must have been reduced as a result of repeated burning, thus leading to higher summer water temperatures. Reduced canopy levels across the timbered portions of the assessment area would have resulted in reduced water use by vegetation and a potential for increased peak flows. The removal of canopy cover on a large scale followed by wildland burning and therefore the removal of organic material and root strength increases the amount of runoff, mass wasting and rain drop impact which led to excessive sedimentation.

The practice of broadcast control burning may still be practiced within the watershed to a certain degree to control fuel loads and vegetative cover and for site preparation activities. Fires are usually set in early winter when burning conditions are suitable for low intensity-controlled burns. Wildland burning, however, is not conducted on the same scale as it was in the past and is not used to increase grazing habitat.

<u>Agriculture/Grazing</u>: The watershed assessment area has a long history of agricultural use.

Farming and livestock grazing were dominant uses in the past and continue today. Homesteads existed where permanent water, natural open areas and level ground allowed for subsistence farming. Commercial sheep and cattle grazing was the dominant land use on the project area and throughout much of the WAA until the 1960's. Predation by coyotes and other predators have made this an uneconomic land use. Past grazing by livestock resulted in the destruction of streamside vegetation and minor gully erosion along trails. These impacts will likely be limited as the amount of grazing has been diminished.

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\*These acreages represent approximate plan acreages within the Watershed Assessment Area (WAA), and not total THP acreages. This information is supplied by CDF through their online database. The WAA map displaying the ten-year harvest history can be found at the end of Section IV of this THP.

The total WAA acreage is approximately 16,446 acres. Over the past 10 years the WAA has been managed (harvested or has an approved document) on 1,912.86 acres (approximately 11.6% of the WAA). This management has been through 1,241.32 acres of uneven aged management (approximately 7.5% of the WAA) and 671.54 acres of even aged management (approximately 4% of the WAA). By watershed, the breakdown is as follows: Big Pepperwood Creek Watershed (~5% uneven aged management; ~8% even aged management); Mouth of Gualala Watershed (~14% uneven aged management; ~4% even aged management); and Black Point Watershed (~0.5% uneven aged management; ~3% even aged management).

Sediment Effects-Reasonably Foreseeable Probable Future Projects

Timber production is the principal land use within the Assessment Area, and this is not expected to change in the foreseeable future. Gualala Redwood's portion of the assessment area will continue to be managed for sustained timber production and the enrichment of all forest resource attributes. The present or future THPs in proximity to the Steam Donkey THP are the recently approved THPs 1-23-00073-MEN, 1-22-00042-SON and 1-22-00043-SON, as well as a newly prepared plan "Coppertop THP" within the Big Pepperwood Creek and Mouth Of Gualala watersheds. Within the Big Pepperwood Creek and Mouth Of Gualala watersheds. Within the Big Pepperwood Creek watershed, there is one NTMP with active NTOs in the last 10 years (1-08NTMP-009; NTO 4), as well as areas of the NTMP that have not yet been operated on. In the Mouth of Gualala Watershed, there are two active NTMPS, however there have not been NTOs filed in the last 10 years. Areas of NTMPs without NTOs can be considered future projects as well.

The Gualala Redwoods property is managed under the California Forest Practice Rules Option C. Additional plans are currently being prepared under Option C, located throughout the property, those THPs will be submitted in the future and it should be assumed that additional plans will be filed over the next 10 years within the assessment area.

Until THP field work and layout begins, Gualala Redwood is not able to predict with any degree of certainty that an actual THP for a specific area will be written, submitted and approved. Future harvesting projects are often contemplated or appear to be feasible based on assumed ground conditions, stand age and composition, and other information, including information from the landowners Geographic Information System (GIS). Until actual field work begins, the location of the THP on the ground, its area layout (including its size and shape), its foreseeable impacts or associated protection measures are unknown. At this time, the RPF knows of no additional THP's where fieldwork has begun on Gualala Redwood ownership within the planning watershed. While most of this acreage will be in the form of THPs, other projects will likely include road construction, reconstruction and maintenance. Appurtenant roadwork, such as road upgrades, installing rolling dips and out sloping, will be done concurrent with THP work. Also, given the history of land use in the assessment area, it is safe to assume that agricultural uses and timber harvesting will continue to occur in other parts of the assessment area that are not under Gualala Redwood ownership. The timing and nature of any additional future projects is difficult to predict, due to constantly changing economic conditions.

Other non-harvest forest management activities can be expected to occur on GRT's ownership as future projects will or may include:

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majority of these stands becoming harvestable at approximately the same time in many cases. This pattern results in decades with higher harvest rates over an area followed by decades in which little to no harvesting occurs, so potential impacts can be periodic in nature.

At the present rate of harvest and because of harvest unit adjacency rules it is likely that many of the stands on the landowner's property will not be harvested until they are many decades older than the rules require for minimum stand age using even-aged management. Much of the ownership will continue to be managed using unevenaged selection silviculture, and older stands of mature timber will continue to exist because of a number of restrictions and considerations including watercourse protection rules, geological hazard set-asides, northern spotted owl habitat protection, as well as other plant and animal retention areas being left across the ownership.

Other activities in the WAA, outside of GRT ownership, will likely continue including development, agriculture, grazing, recreation, tourism, trespass, and illegal crop cultivation. These all have the ability to contribute to sedimentation, but with regulations are not expected to be at a significant level in the future.

# Sediment Effects- Proposed THP

- Silviculture (14 CCR 913): THP Item #14 describes the silvicultural methods proposed in this THP as Single-Tree Selection, Special Treatment Area Prescription, Variable Retention and No Harvest. The majority of the plan is single-tree selection and STA prescription (95%), which is a higher retention single-tree selection of 100 ft<sup>2</sup> of conifer basal area per acre. These uneven aged silvicultures will retain and maintain a high degree of overstory and understory cover along WLPZ corridors, upland areas adjacent to tributaries, and on steep slopes and landslide features. Expected high levels of post-harvest vegetative cover throughout the plan area will help to reduce the potential for deleterious amounts of sediment entering into watercourses in the form of excessive surface runoff and rain drop impact. There is one Variable Retention unit (33 acres) located on the upper slopes of the THP close to the long trending ridge to the east of the THP. This 33-acre unit has 15% of its acreage (4.95 acres) flagged in No-Harvest aggregate patches. These are focused around Class III watercourse channels. Therefore, the remainder of the unit is available for harvesting all merchantable conifers that are not wildlife trees. This unit currently has an overstocking and dominance of tanoak trees. After the harvest of this unit, tanoak and brush species may be controlled to assist in redwood regeneration, but not all vegetation will be removed or treated. Slash and brush or tree species not creating competition for young redwoods will remain in the stand post-harvest. Runoff and sedimentation from this unit after harvest is expected to be minimal since there will still be canopy cover from uncut trees, canopy cover from the aggregate patches, streamside vegetation, and the unit has no overly steep areas and generally has a gentle slope.
- Road Improvements (14 CCR 923; 14 CCR 916.9): THP Item #24/25 describes road treatments that will be implemented to reduce the potential for generation of sediment near watercourses. Required road rules have been applied to this plan and include specific requirements for Anadromous Species Protection for the two ASP watersheds in the WAA. Crossing upgrades include sizing new or replacing culverts to meet a 100-year flood event, which controls and limits the amount of potential sediment that could discharge if the crossing fails. Maintenance, like adding rock armoring or cleaning the existing infrastructure secures bare mineral soil to the site and allows for

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proper functioning of facilities. Temporary crossings include removal and returning to a natural condition after operations, plus treatment of bare mineral soil, which eliminates the potential sediment at the crossing. Temporary roads are not to be used by standard 4x4 vehicles after operations. Road drainage has also been assessed and includes upgrades to limit the amount of water that collects, drains on, and erodes the road prism. There is no new road construction. This THP proposes the following activities aimed at road improvement:

-Existing watercourse crossing upgrades: 24 proposed in this THP.

-Road drainage facility improvements: 24 proposed in this THP.

-Hydrologic disconnection of logging roads

-Proposed road construction: none.

-Existing Temporary road: 8,744 feet

-Existing Temporary watercourse crossings: 10 proposed in this THP.

Total volume of sediment discharge controlled through implementation of proposed THP road improvement activities is ~260 cubic yards.

• Yarding Methods (14 CCR 914.2 & 914.6): THP Item #16 describes the yarding methods to be employed during harvest operations. The THP proposes ground-based tractor operations. Existing skid trails exist throughout the THP, however new trails may be used in some of the flatter portions of the THP where old trails may be indistinguishable. After operations, skid trails will follow waterbarring requirements for Moderate EHR to prevent and reduce the concentration, flow, and erosion of water down trails. A waterbar is required to be placed prior to a watercourse where they are crossed to hydrologically disconnect the trail or road from the watercourse. The reuse of these skid trails and reinstallation/addition of drainage facilities is expected to keep sedimentation to a level less than significant. The majority of the THP has gentle slopes with existing skid trails that required little construction. There are two tractor crossings on skid trails proposed for use that are within a WLPZ. Both of the crossings are for Class III watercourses located within the WLPZ of a Class II or wet area. These crossings are in good condition and most of the way dipped out. Use of skid trails and tractor crossings will improve current drainage issues by waterbarring and putting crossings back to natural stream grade with laid back banks, slash-packed banks and erosion control.

• Unstable Features: There are no operations proposed on unstable features as the identified features are located within the WLPZ or within "Do Not Cut" flagging. The flagging wraps around the top of features (active scarp) by 25'. While marking timber in the WLPZ, all of these mapped areas (which were already identified by the RPF) were completely avoided, and no trees were marked. When the LTO harvests the WLPZ, they will stay out of the WLPZ buffer with heavy-equipment and only cut trees that are marked for harvest. Inner gorge slopes near the THP are not included in the THP boundary.

• Soil Stabilization Measures (14 CCR 923.5 & 916.7): THP Item #18 includes soil stabilization measures for logging roads, tractor roads, and WLPZs/ELZs/EEZs, with specific requirements for Anadromous Species Protection special road use and maintenance provisions will be applied to wet weather conditions during the non-winter period; self-maintaining drainage features, such as rolling dips and out-sloping, will be used in appropriate places. Covering bare mineral soil disturbed through

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operations prior to winter storms prevents fine sediment from washing off-site and reaching a higher order stream.

• Winter Period Operating Plan (14 CCR 914.7): THP Item #23 includes numerous provisions that are proposed to minimize the mobilization of sediment during the winter period. This THP includes the following measures:

-No ground-based equipment operations during saturated soil conditions. -No log hauling during saturated soil conditions.

-No watercourse crossing installation or proposed road construction during the Winter Period.

-No site preparation activities during the Winter Period.

-No Temporary road usage during the Winter Period

-No WLPZ skid trail or landing usage during the Winter Period

# Sediment Effects Conclusion

The existing conditions within the WAA regarding sediment effects may have been impacted from past projects prior to the FPRs, and there may be a continuing impact. Future projects are not expected to have an impact on sediment effects in the WAA. The THP area is generally in good condition regarding sediment effects. An evaluation of interactions of proposed project activities with the impacts of Past Projects and Reasonably Foreseeable Probable Future Projects on sediment effects reveals that there are no significant cumulative impacts, and that current conditions will be improved through the project implementation.

#### Water Temperature Effects

The Gualala River has been 303d listed as impaired for Temperature (Feb. 4, 2003). The range of the calculated mean weekly average temperatures (MWAT) recorded in most of the major watercourses within these watersheds are included within the Stream Reports for the watershed. Temperature ranges indicate temperatures in excess of preferred rearing temperatures for coho and steelhead on the Gualala River. Seasonal daily maximum temperatures in excess of the upper lethal temperature for rearing coho and steelhead are also noted. Big Pepperwood, Little Pepperwood and Groshong Creeks have some of the most favorable temperature ranges for salmonids on the GRT ownership, and these are the tributaries where spawning and rearing are likely to occur within the Big Pepperwood planning watershed. Although Big Pepperwood and Groshong were listed along with the rest of the river as 303d impaired they were not included in the original list of tributaries recommended for listing. NCWAP states, "Overall watershed-wide riparian shade canopy has improved since the 1960s, but still falls short of the 1942 levels of canopy density and coverage." The 1942 levels showed 95% canopy coverage. It is also noted that overstory canopy cover in the lower reaches of the watershed are the highest (this happens to be the area of GRT ownership). It should be noted that while summer water temperatures along the main river (which is transporting

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better than similar sized old growth watersheds. Although the D50 data set falls below the 38mm level as determined by Knopp 1993 for healthy watercourses the Gualala is a depositional reach that falls at 1% or less. Data collected from the Knopp study is mostly taken from watercourses with a 2% or greater grade. You would expect to find more fine sediment falling out of suspension as the watercourse gradient decreases.

# Gravel Embeddedness- Baseline Conditions

The THP area contains the following baseline conditions regarding gravel embeddedness:

• Fine Sediment - Embeddedness within the THP area is estimated as low to moderate where most of the pool tail-outs had cobbles that were embedded less than 50%. (CDFW South Fork Gualala River Stream Inventory Report, 2003). The THP does not contain Class I habitat. The closest the THP is to the Gualala River is 200' upslope, with no watercourses draining from the plan area to the Gualala River. As was previously stated roads, yarding, and unstable features all have the potential to contribute to fine sediment delivery within the plan area. Please refer to the description of Sediment Effects above.

# Gravel Embeddedness- Past Activities

The assessment area (WAA) has a long history of human habitation. The main activities that could have contributed to past adverse impacts of the Watershed Assessment Area in regard to gravel embeddedness and excessive fine sediment are the same as those discussed above in the sediment effects section. It includes wildland burning, agriculture/grazing, development, road building, and timber harvesting. Sedimentation of watercourses led to the embedding of gravels and therefore a reduction in the quality of habitat for spawning anadromous salmonids. Effects of past activities can be seen today within the WAA, where sediment was once delivered to the watercourse in mass wasting, skid trails, and watercourse crossings.

### Gravel Embeddedness Reasonably Foreseeable Probable Future Projects

It is anticipated that the past activities in the WAA will continue to occur, but under modern day regulations. As discussed above in the sediment effects section above, the FPRs and other county and state regulations for roads and timber harvesting ensure that there is not a significant impact in the future.

# Gravel Embeddedness- Proposed THP

Excessive sediment delivery to streams can increase the rates of gravel embeddedness.

The following THP activities shall not adversely affect and shall maintain the existing watercourse condition described in the baseline conditions above:

- Silviculture Single-Tree Selection, STA, Variable Retention, and No Harvest regeneration methods will regulate erosion upslope of and adjacent to watercourses, maintain streamside vegetation, and prevent sedimentation and pool filling. The Variable Retention unit maintains canopy and streamside vegetation around the Class III watercourses through aggregated patches of no-harvest- 15% of the 33-acre unit will be retained, and much of the area outside of patches will still have ground cover in the form of brush, slash, and wildlife trees, or large oaks that will not be removed from the stand.
- Road Improvements Watercourse crossing upgrades and drainage facility maintenance decreases sedimentation and large-scale bank mass wasting events. This THP will be replacing multiple culverts that have rusted-out bottoms and are at risk of undermining and erosion of the slope beneath the culvert.
- Yarding Methods (14 CCR 923; 916) use of existing skid trails that are stable and in good condition and appropriate waterbarring of these skid trails reduces the risk of

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Salal Creek, have a relatively gentle channel gradient. The gentle gradient inhibits rapid flushing of sediment downstream and has led to some stream aggradation, but not at a significant level.

# Aggrading - Past Activities

The assessment area (WAA) has a long history of human habitation. The main

activities that could have contributed to past adverse impacts of the Watershed Assessment Area in regard to aggrading and excessive fine sediment are the same as those discussed above in the sediment effects section. It includes wildland burning, agriculture/grazing, development, road building, and timber harvesting. Sedimentation of watercourses led to a rise in the elevation of the channel bottoms at times, and historic era skidding of logs down large watercourse channels may have changed the morphology of the channels and their gradients. Effects of past activities can be seen today within the WAA, where sediment was once delivered to the watercourse in mass wasting, skid trails, and watercourse crossings, but aggradation is not known to be continuing today or has effects at a significant level today.

# Aggrading Reasonably Foreseeable Probable Future Projects

As described above, the main activities that have been conducted within the Watershed Assessment Area are road building, timber harvesting, development, and to a lesser extent wildland burning, agriculture, trespass, and illegal cannabis cultivation. It is anticipated that these activities will continue. As discussed above in the sediment effects section above, the FPRs and other county and state regulations for roads and timber harvesting ensure that there is not a significant impact in the future.

# Aggrading- Proposed THP

Excessive sediment delivery to streams can increase the rates of aggradation, especially in lower gradient watercourses.

The following THP activities shall not adversely affect and shall maintain the existing watercourse condition described in the baseline conditions above:

- Silviculture Single-Tree Selection, STA, and No Harvest regeneration methods regulate erosion upslope of watercourses, maintain an evenly distributed canopy, maintain streamside vegetation, and therefore prevent sedimentation and pool filling. The Variable Retention unit maintains canopy and streamside vegetation around the Class III watercourses through aggregated patches of no-harvest-15% of the 33-acre unit will be retained, and much of the area outside of patches will still have ground cover in the form of brush, slash, and wildlife trees, or large oaks that will not be removed from the stand.
- Road Improvements Watercourse crossing upgrades and drainage facility maintenance decreases sedimentation and large-scale bank mass wasting events that may lead to aggradation.
- Yarding Methods (14 CCR 923; 916; Mitigation) use of existing skid trails that are stable and in good condition and appropriate waterbarring of these skid trails reduces the risk of erosion and sediment delivery to downstream watercourses. The majority of skid trails in the THP are on slopes with gentle gradients.
- Soil Stabilization Measures soil stabilization reduces rates of erosion and sediment delivery to downstream watercourses on timber harvest activities that expose bare mineral soil near watercourses.
- Winter Period Operating Plan prevents the use of heavy equipment on saturated soils which prevents erosion and sediment delivery to downstream watercourses. This also limits the use of temporary roads and trails within the WLPZ during the winter period, regardless of saturation levels.

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which in combination with storm events could have had impacts to peak flow and scour in the past.

• <u>Timber Harvesting</u>: With intensive and expansive timber harvest in the past, there may have been a lack of canopy on a large scale at various times followed by wildland burning that could have contributed to increased runoff and in combination with storm events, could have increase peak flow, the duration of peak flow, and scour in the past.

# Scouring - Reasonably Foreseeable Probable Future Projects

As described above, the main activities that have been conducted within the Watershed Assessment Area are timber harvesting, wildland burning, agriculture and ranching, development. It is anticipated that these activities will continue into the future. Harvesting is the main factor in the future that could affect scouring due to peak flow or large flow events, however with the FPRs, there is not expected to be a significant adverse impact on peak flow in combination with storm events because large scale clear-cutting followed by burning or conversion to grassland is not a permitted activity today.

# Scouring - Proposed THP

- Silviculture (14 CCR 913): Adherence to FPRs and provisions in the THP are designed to maximize tree retention near streams and subsequently the filtering capability of the forest near watercourses, while minimizing sediment deposition. Vegetation retention across the landscape, utilizing the silvicultures proposed in this THP (Single- Tree Selection, STA, one 33- acre VR, and No Harvest) shall reduce the possibility of extended peak flows as noted in the Jackson State study (please see discussion of JDSF study in previous section on peak flows). Due to the level of selective harvesting in this THP watershed and the proposed THP there is not expected to be any measurable effect on peak flows and scouring of watercourse channels associated with this harvest.
- Yarding Methods (14 CCR 916; 923): This plan proposes to reduce the effects of peak flows and scouring as a result of operations with a combination of FPRs, Best Management Practices and the following proposed management practices:

-Tractor operations limited to existing skid trails when feasible.

-Exposure of significant areas of soil or reduction of large amounts of vegetation will not occur on large areas.

-Slash remaining from operations and or standing vegetation will remain on-site to lessen raindrop impact.

-Large areas of exposed ground will not occur due to low amounts of repetitive skid trail use and no prescribed burning.

-Existing, well established mainline roads used for repetitive hauling are concentrated on the ridges away from watercourses when feasible.

-Minimal use of WLPZ roads with mulching requirements as stated in Section II, Item 18.

# Scouring - Conclusion

Because past activities were potentially on a larger scale that led to the reduction of forested land or canopy in the WAA, there may have been an impact during storm events regarding higher peak flow rates, longer duration of peak flow, or scouring. Because no future activities are expected in the WAA that would convert forestland on a large-scale, and the proposed THP also does not have large scale reduction in canopy or intensive broadcast burning proposed, there is not expected to be a significant impact. An evaluation of interactions of proposed

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# Streamside Vegetation- Baseline Conditions

The THP area contains the following baseline conditions regarding streamside vegetation:

• **Canopy Cover** – There are No Class I watercourses within or adjacent to the Plan area. The mainstem Gualala River is over 200 feet from the plan area in the northern portion of the THP. The THP area is adjacent to one Class II-L, and contains many Class II-Standard and Non-ASP Class II watercourses, Class III watercourses, and several wet areas. Streamside vegetation and shade canopy along Class II and III watercourses across the Plan area varies from as high as 100% to as low as 60%. There are no areas that are severely lacking in canopy or vegetation within the project area. Canopy cover is comprised mainly of mature redwood, Douglas-fir, and tanoak in the overstory with an abundance of huckleberry in some portions of the understory. While historic logging activities may have removed canopy cover adjacent to watercourses, current conditions reveal adequate regeneration, high stocking, and recovered shade canopy. There are WLPZ roads within the WAA. WLPZ roads inherently decrease canopy cover adjacent to higher order watercourses, as road construction and maintenance requires the removal and or pruning of overstory trees. The lower slopes of the Black Point Watershed contain grassland and coastal bluff areas that naturally have low canopy levels from a lack of larger conifers.

# Streamside Vegetation - Past Activities

The main activities that could have contributed to past adverse impacts of the Watershed Assessment Area, specifically to streamside vegetation, are wildland burning, agriculture/grazing, development, road building, and timber harvesting, similar to the discussion for sediment effects above.

- <u>Wildland Burning</u>: Past burning activities could have reduced or removed canopy and streamside vegetation. Burning of streamside vegetation including forbs and lower canopy species could have greatly impacted slope stability and water temperatures.
- <u>Agriculture/Grazing</u>: Past grazing and agriculture limited forestlands and possibly streamside vegetation, and over-grazing near riparian areas may have greatly impacted slope stability, water quality, and water temperatures.
- <u>Development:</u> Building and converting within riparian areas reduced the amount of streamside vegetation available.
- <u>Road Building:</u> Road building and mass wasting events of the past, prior to modern day regulations, undoubtedly removed streamside vegetation.
- <u>Timber Harvesting</u>: Past historic timber harvesting did not take into account riparian zones or WLPZs, and harvesting and removing of streamside vegetation was common.

# Streamside Vegetation - Proposed THP

Excessive removal of streamside vegetation can cause slope instability, increases in water temperature, and increases in sedimentation.

The following THP activities shall not adversely affect and shall maintain the existing watercourse condition described in the baseline conditions above:

- Silviculture Single-Tree Selection, STA, VR, and No Harvest regeneration methods regulate erosion upslope of watercourses, maintain streamside vegetation, and prevent excessive erosion leading to sedimentation and pool filling.
- Road Improvements Watercourse crossing upgrades and drainage facility maintenance decreases the amount of failures near watercourses, therefore saving streamside vegetation.

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system has a high amount of deep sediment, and these gravel bars move substantially during flood events, but the increasing amount of LWD being reintroduced to the River allows for the development of pool structures in certain portions of the river. Aquatic habitat is in good condition within the plan area and immediate surrounding area, but some effects like sedimentation are evident today at a less than significant level to aquatic species.

(4) **Biological Habitat Conditions**- Please see the section below for the current conditions of snags/den trees/nest trees, downed large woody material, multistory canopy, road density, hardwood cover, late seral (mature) forest characteristics, late seral habitat continuity, and special habitat elements. There is a moderate presence of snags (firs and pines from drought; redwoods from storm damage) and special characteristic trees near riparian areas, a healthy multistory canopy, downed large woody material, moderate road density with few drainage issues, moderate hardwood cover, no late seral forests or habitats.

# (1) Known Listed Species and (2) Known Wildlife or Fisheries Resource Concerns

# Birds

During layout of this plan the THP area was traversed numerous times. Signs of possible raptor predation have been seen on the appurtenant road system. Some raptor nests have been seen adjacent to and within the plan area, and osprey individuals have been observed. No other evidence of raptors in the area has been discovered.

Northern Spotted Owl (Strix occidentalis caurina): (Status: Federal Threatened, State Threatened CDF Sensitive Species)

There is one Activity Center within 0.07 miles of the THP: SON0082. This AC is over 0.40 miles from the THP Boundary.

The Northern Spotted Owl primarily inhabits old growth forests in the northern part of its range (Canada to southern Oregon) and landscapes with a mix of old and younger forest types in the southern part of its range (Klamath region and California). The species' range is the Pacific coast from extreme southern British Columbia to Marin County in northern California. It nests in cavities or on platforms in large trees and will use abandoned nests of other species. The Northern Spotted Owl is primarily nocturnal. Its diet consists mainly of wood rats (Neotoma sp.) and flying squirrels, although it will also eat other small mammals, reptiles, birds and insects.

One threat to spotted owl populations, at least in the northern part of its range, has been the loss of old-growth and mature late-seral forest, which contains large dead trees for nesting and prey habitat, as well as cool, dark roosts under the dense overstory canopy. Fragmentation of remaining habitat results from logging and roads and may have increased predation by Great Horned Owls and other species. More recently (since 1960s), a related eastern species, the Barred Owl (Strix varia), has invaded the Pacific Northwest. Barred owls are larger, more aggressive, and compete for both nest-sites and food. It is believed that Barred Owls occasionally attack spotted owls but the evidence for this is sparse. More likely the slightly larger barred owl displaces Spotted Owls from their territory. Barred Owls will also mate and hybridize with spotted owls. Barred Owls in the west occur in both young and old forest and are thought to displace spotted owls from their territories in old growth and mature forests. Additional threats to Spotted Owls include loss of habitat to wildfire and forest diseases as well as the West Nile Virus.

The habitat typing used in this assessment is consistent with the USF&WS Coastal Northern Spotted Owl Habitat Description.

Nesting-roosting habitat includes: 60% (or greater) canopy cover of trees 11 inches (or larger) diameter at breast height.

# **Botanical Protections:**

For 3 of the 4 rare plant species found within the THP, there shall be no equipment exclusion zones and the LTO shall be shown the locations of these populations prior to operations (coast-lily, harlequin lotus, and swamp harebell). Their locations will be identified in the field with pink "Native Plant Protection" flagging and are depicted on the Rare Plant Location Map in Section II. Because they occur primarily on roads, skid trails and landings, and did not receive EEZs in the last THP in 2017, the same shall apply for this THP. This THP includes language for the LTO regarding excessive grading near these populations. The rare plants within the THP area are in high abundance and distribution, likely due to the sandy soil type, maintenance of open areas (such as roadways, landings and harvested areas) and higher water table from the effects of the San Andreas Fault to the east of the plan area and ocean to the west. It is not expected that operations will threaten the populations within the plan area, and the years following timber operations, disturbance and harvest should encourage the species to reoccupy as roads, landings and skid trails revegetate.

The fourth rare plant, fringed false hellebore, shall be protected within WLPZs for wet areas in which they occur, or with STZ and pink "Native Plant Protection" flagging if they are not within a WLPZ. These are equipment exclusion zones.

# Post Approval Discovery Protection Measures:

Should a listed plant species be discovered during the timber operations, a 50-foot diameter EEZ shall be flagged around the area and CalFire, CDFW, and the plan submitter or his agent shall be immediately notified. If protections are required, an amendment shall be filed reflecting such additional protection as is agreed between the plan submitter and the Director after consultation with CDFW.

During the pre-operations meeting with the LTO, the RPF will explain the characteristics of wet areas, the location of mapped wet areas, and the importance of protecting them. The RPF will also explain the importance of not operating heavy equipment on saturated soils.

The combination of botanical surveys, existing WLPZ protections, site conditions, population presence and the general protections listed above will further ensure that the botanical resources are not adversely impacted by the proposed operations.

# (2) Aquatic and Near-Water Habitat Conditions

# **Pools and Riffles**

These habitats are found within the assessment area along the Gualala River.

Riffles are areas of swifter flowing water, where the surface is turbulent. Young-of-the-year steelhead like low gradient riffles but coho generally does not. The flowing water delivers insects for food and the broken surface provides cover from predators. Glides (flatwater) are slow moving areas in the stream, where the surface is smooth. Often, streams suffering from cumulative watershed effects have a large percentage of flatwater habitats, such as glides and runs, and riffles. Pools often have filled in

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Botanical Protections: For 3 of the 4 rare plant species found within the THP, there shall be no equipment exclusion zones and the LTO shall be shown the locations of these populations prior to operations (coast-lily, harlequin lotus, and swamp harebell). Their locations will be identified in the field with pink "Native Plant Protection" flagging and are depicted on the Rare Plant Location Map in Section II. Because they occur primarily on roads, skid trails and landings, and did not receive EEZs in the last THP in 2017, the same shall apply for this THP. This THP includes language for the LTO regarding excessive grading near these populations. The rare plants within the THP area are in high abundance and distribution, likely due to the sandy soil type, maintenance of open areas (such as roadways, landings and harvested areas) and higher water table from the effects of the San Andreas Fault to the east of the plan area and ocean to the west. It is not expected that operations will threaten the populations within the plan area, and the years following timber operations, disturbance and harvest should encourage the species to reoccupy as roads, landings and skid trails revegetate. The fourth rare plant, fringed false hellebore, shall be protected within WLPZs for wet areas in which they occur, or with STZ and pink "Native Plant Protection" flagging if they are not within a WLPZ. These are equipment exclusion zones. Post Approval Discovery Protection Measures: Should a listed plant species be discovered during the timber operations, a 50-foot diameter EEZ shall be flagged around the area and CalFire, CDFW, and the plan submitter or his agent shall be immediately notified. If protections are required, an amendment shall be filed reflecting such additional protection as is agreed between the plan submitter and the Director after consultation with CDFW. During the pre-operations meeting with the LTO, the RPF will explain the characteristics of wet areas, the location of mapped wet areas, and the importance of protecting them. The RPF will also explain the importance of not operating heavy equipment on saturated soils. The combination of botanical surveys, existing WLPZ protections, site conditions, population presence and the general protections listed above will further ensure that the botanical resources are not adversely impacted by the proposed operations.

- Measures to benefit pool habitats: These are described under Large Woody Debris discussion. This project as proposed has little or no potential to negatively impact pool habitat conditions. The lack of Class I watercourses in the THP, the limited use of equipment and other harvesting related activities in the WLPZ, and the Forest Practice Rules will reduce the potential for impacts associated with the operation. Not harvesting in the core zone of Class II-S watercourses may provide LWD for the future of these lower order streams.
- Measures to benefit canopy: There will be no timber harvesting within any Class II WLPZ where current canopy levels are less than 50%. Heavy equipment limitations within WLPZs established in the plan will help to protect near water vegetation on the watercourses. Please see the discussion of stream-side vegetation above under the "Watercourse Condition" heading for a further analysis of near-water vegetation.
- Measures to benefit dens and nests: There were no dens located on the plan area however, non-listed wildlife that utilize dens were observed or sign of their presence

In the face of uncertainty, the impacts of climate change must be assessed in terms of the resilience of GRT timberlands should climate changes occur. There are several indications that GRT timberlands have been and continue to be resilient. After more than a century of timber harvest, most of which occurred without the benefits of modern forest practices regulations and best management practices, GRT timberlands remain commercially productive and viable. A key tree species on the property is the coast redwood (*Sequoia sempervirens*), which is the epitome of resilience, having persisted for millennia in the coastal climate of northern California. The redwood tree is not expected to be threatened by pests that might be advantaged by global warming, and it is expected to persist at the southern end of its range even if climate change brings higher temperatures and less precipitation. (Battle 2006). The redwood tree also benefits from coppice regeneration, which means that it regenerates from the stump after a tree has been harvested. As such, much of the living root system of redwood trees persists and the genetic diversity of each individual tree is preserved on the landscape as cut trees are replaced by genetically identical sprouts that grow from the same root system. For the same reason, the regeneration and growth of redwood forests after harvest occurs quickly and with more certainty because young trees have the benefit of mature root systems.

In addition to redwood, the plan submitter's ownership grows hearty and resilient species such as Douglas-fir, a species that thrives in open stands following harvest. Douglas-fir grows in a variety of climates throughout western North America and are believed to have rapidly colonized vast areas following the end of the last Ice Age. Through its substantial and continuous investment in their timberlands, the plan submitter has a strong incentive to nurture healthy and resilient forest stands on its property.

# Greenhouse Gas- Proposed THP

The proposed project will result directly and indirectly in carbon sequestration and temporary, insignificant CO2 emissions. Carbon sequestration is achieved through a repeating cycle of planting and growing of trees that remove CO2 from the atmosphere and store carbon in tree fiber. When a tree is harvested, most of the carbon filled tree fibers become lumber that is sequestered in buildings while a new rotation of trees is planted and grown. Some of the tree fibers such as branches and tops are left in the forest where they are sometimes burned to reduce fire hazard. However, the vast majority of this material is left to decay and will emit CO2 over time; but, it also supplements the forest soils and forest duff layer where carbon is stored that serves as a substrate for more tree growth. In addition, redwood is a dominant species on GRT's timberlands and redwood slash decays more slowly than slash from hardwood and whitewood species. Further, when CO2 is released by decaying slash, it is offset by rapid regeneration of tree stands (including sprouts from redwood and hardwood species) and other vegetation that sequesters carbon. Some of this carbon-filled tree fiber, such as bark, shavings, and chips are used in other engineered building products or as fuel used to generate electricity. When this wood fiber is burned to generate electricity the stored carbon is released into the atmosphere, but it is being done in a controlled setting, which also fills a huge demand by our society. Another factor to consider is that when wood biomass is used to generate electricity it directly reduces the amount of fossil fuels required which are non-renewable energy sources and generate CO2 in more substantial quantities. Another point worth mentioning is that if this wood fiber were left to decompose naturally its stored carbon emissions would still nonetheless occur.

Using the CALFIRE GHG calculator, it is estimated that GHG sequestration for this project will be **224,719 metric tons of CO2 over the 100-year planning horizon**. This sequestration total includes emissions from site preparation, non-biological emissions associated with harvesting and non-biological emissions associated with milling. GHG emissions associated with this project are insignificant relative to global CO2 emissions that are thought to affect climate. There is virtually no

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opportunity to reduce these emissions in a manner that would meaningfully benefit the climate because they are already miniscule. (U.S.E.P.A. 2005). An acre of managed forest may be entered with equipment once every 15-20 years with emissions measured in hours of equipment operation over that time period. Few if any other land uses can match the low intensity of CO2 emissions over space and time that are associated with commercial forestry. In urban areas of California, a typical California household will operate one or more vehicles every day and the demands of that household will induce a variety of additional CO2 emissions for other forms of commerce, power production, and consumption. In rural areas, even a typical farm acre in California will be subject to equipment operation for several hours or days every year over 20 years - not once every 20 years.

The insignificant GHG effects of the proposed project are further diminished by the effects of carbon sequestered in wood products produced from harvest and by the forest stewardship principals used by GRT, which strives to increase forest stocking over time.

On the project scale, the beneficial impacts on carbon sequestration and the project-related CO2 emissions related to global warming are negligible and undetectable at the global scale. The CO2 emissions from vehicles used to implement the project over several weeks or months are dwarfed by the CO2 emissions from other routine daily activities engaged in by all Californians such as a single morning commute for even one city. Also, the implementation of new standards for diesel engines recently adopted by the CARB (CARB 2022) will help to reduce emissions. When considering the impacts of this project on climate it is doubtful that a measurable change could be detected, even at the microclimate level.

Emissions Source/Sink/Reservoir	Total Tons CO2 Sequestered/Emitted		
Live Trees	182,738		
Wood Products	46,449		
Site Prep Emissions	-58		
Non-Bio Harvest Emissions	-3,780		
Non-Bio Milling Emissions	-630		
Total Sequestration	224,719		
Years to Recoup (Maximum)	9 years for SEL, 30 years for VR		

Steam Donkey THP - GHG Summary Estimate

# Greenhouse Gas Conclusion

This plan, alone or in combination with other harvest plans in the past in the watershed, ownership, Sonoma and Mendocino Counties, or State of California is not expected to have an adverse impact on climate change. Carbon from trees harvested will be sequestered for decades or longer in the form of the wood products cut from the logs. Importantly, additional carbon will be sequestered in the future as newly planted, sprouting, and growing crop trees occupy and grow on the site. Therefore, in combination with the goals of the State, future projects likely will not impact Climate Resources. The proposed THP activities do not have a significant impact on GHG. The stands will take less than 9 years for Selection and 30 years for Variable Retention to recoup carbon lost and emitted during harvest. An evaluation of interactions of proposed project activities with the impacts of Past Projects and Reasonably Foreseeable Probable Future Projects on GHG is that there is no significant cumulative impact, and that current conditions will be maintained through the project implementation.

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# H. Wildfire Risk and Hazard: Assessment

Fire is an integral part of California's forested ecosystems in the past and today, and as such is always a factor that must be considered while managing California forestlands. This analysis seeks to assess the fire risk of the Plan area both before and after harvest operations and characterize the fire risk going forward into the future. The assessment area includes the project boundary plus 300 feet and the residential homes and dwellings within the vicinity of the project.

# Wildfire Risk and Hazard Baseline Conditions

The plan area fire fuel conditions are typical of coastal Sonoma and Mendocino County timberlands of the redwood, Douglas-fir, pines, and grand fir with a high amount of ground and ladder fuels, mostly as as a result of fire suppression, or a lack of vegetation management. Huckleberry, small tanoak, and salal can be dense in some areas of the project, and other areas have an open understory with a buildup of leaf litter and branches. The project area is located next to The Sea Ranch (within 300' of project area), and there is a clustering of homes for a stretch of under 0.4 miles near the northwestern boundary of the project off of Deer Trail. There are also some homes near the southern boundary near Deerfield Road. The homes in this area of The Sea Ranch are often located up against a dense forest of redwood, pine and tanoak. There is significantly more small diameter trees, brush and ingrowth within the 300' area outside of the THP and plan submitter's property than inside of the THP for the majority of the property line in the west.

# 1. Fire Severity Zoning

Wildland fire hazard responsibility areas of the State are generally classified as state, local or federal. The plan area lies within a state responsibility area (SRA). Referencing the FRAP map titled Sonoma County STATE RESPONSIBILITY AREA FIRE HAZARD SEVERITY ZONES (June 15, 2023) the plan area plus 300' is located primarily in the High Severity category, some very high and moderate severity as well.

The Sonoma County General Plan 2020, Public Safety Element and Sonoma County Hazard Mitigation Plan (updated April 2017) were also reviewed. County mapping of fire hazard severity defers to CAL FIREs maps particularly in the wildland and wildland urban interface areas. The County identifies the assessment area as located mostly within the High Zone of the SRA.

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

Hazardous fuels are live and dead vegetation that has accumulated and increases the likelihood of unusually large wildland fires. When fire encounters areas of heavy fuel loads (continuous brush, downed vegetation or small trees) it can burn these surface and ladder fuels and may quickly move from a ground fire into a crown fire.

The assessment area is a redwood forest type approximately 1 mile from the coast. The timbered portion on the assessment area is a closed canopy, fairly open understory, well stocked redwood dominated stand with an estimated 10% herbaceous layer. There is also ingrowth of all species present, creating an understory of small diameter trees and brush that has grown in since the last harvests. Because the area 300' outside of the THP to the west generally has not received any vegetation or fuel treatments, there is a larger accumulation of both horizontal and vertical fuels in this area. The existing fuel condition within the plan area includes both vertical and horizontal continuity of live fuels, with few small snags or dead vegetation. There are larger snags throughout the stand, in a dispersed manner. The vegetative community and the stand type, composition and density are presented in Section III of the plan. Also contained within Section III Project Description is regional information (i.e., topography, aspect, climate regime) which provide background and insight for the assessment of wildfire risk. The probable future fuel conditions are expected to be much less than the pre-harvest stands, especially within the first 10 years after harvest. Ingrowth will inevitably occur

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with time, however the proposed operations will reduce excessive ingrowth now compared to a noharvest alternative which would only build more fuels, and the maintenance of canopy throughout the stand using Single-Tree Selection will keep brush species down during the regrowth period through shading out and competition, compared to a more intensive harvest, and the canopies of the residual codominant and dominant trees will have the opportunity to fill in the upper canopy through thinning and selection.

3. Location of known existing public and private Fuelbreaks and fuel hazard reduction activities. Within and adjacent to the plan area there are no known designated public or private fuelbreaks. There are no known CAL FIRE fuel treatment program projects adjacent to the plan area. The Sonoma County Community Wildfire Protection Plan (CWPP) and The Sea Ranch CWPP have been developed. General fuel reduction treatment goals and areas identified by The Sea Ranch CWPP address among other things, roadside fuel breaks and defensible space for structures.

Timber harvesting maintains, reuses and creates skid trails, and truck roads whose presence, by definition, is a fuel break. Fuel hazard reduction and slash treatment, where the condition or location exists, is addressed in Section II of the plan. During logging operations there is generally equipment on site that would be suitable for the construction of firelines or to support CAL FIRE in fire suppression activities.

# 4. Road access for fire suppression resources.

In the event of wildfire, the plan area is well situated for fire suppression resource access and response time. The Sea Ranch Fire Department station is approximately 3.5 miles south of the plan area. Access to the plan area is gained from Annapolis Road, a county road, to CA SR 1. The plan is to the east of SR 1 and is approximately 3 miles long. Some appurtenant roads associated with the area are existing permanent rocked roads, but the majority of the appurtenant roads within the plan area and property are seasonal roads with native soil, rolling dips and waterbars. Gates are generally left open during the day while active logging operations are occurring which would allow access for fire suppression resources. Gate openings can accommodate over-sized loads.

# Wildfire Risk and Hazard- Past Projects

Although past projects utilized fire as a way to burn off slash after harvesting, many areas were converted to grassland at one point or left unmanaged, and eventually in both cases, were re-occupied with sprouting brush species, sprouting tanoak, and sprouting redwood saplings. The harvest area has been previously harvested in 2010, and some areas of the Plan were accessed and received treatment, and some areas did not. Again, the forested area 300' outside of the THP to the west has generally not received fuel treatments. The areas have since been reforested and conifers grew in competition with brush species. In the project area, it appears that the redwoods that resprouted after the last harvest were successful and resulted in many young redwood trees, but potentially not as widespread as it could have been without the competition. Areas where brush and tanoak are thriving have little redwood regeneration and few redwood clumps, even though the site could support abundant redwood trees. The lack of prescribed fire as a tool in past projects to mimic the natural processes of the redwood region has contributed to the moderate and heavy fuel loading within the project area, near the property line and beyond. Roads from past projects positively impact wildfires as they provide access for firefighting efforts. Skid trails, roads and landings serve as firebreaks. The past activity of development to the west of GRTs property has increased the risk of fire not only starting by residents or guests, but also increased the amount of fuels through a lack of vegetation management. Recent past projects of GRT avoided projects near the property line. The lack of management has had an impact on fuel loading in certain areas.

# Wildfire Risk and Hazard- Future Projects

Future projects are likely to reduce fuel loading within the project area only to moderate/low and likely maintain or even further reduce the level. Fire prevention is an objective of the landowners to protect the

timber resource and with the income provided by harvesting, this work can be accomplished. The future is likely to hold more opportunities to use fire as a fuel reducing tool for small landowners, as well as commercializing small fuels, as our region experiences more drought and more catastrophic fires. The neighboring parcels may also seek more opportunities and implement projects around the proposed THP, which would further reduce risks within the project area, however continued deferred maintenance of vegetation will create a continued risk. Future projects should consider the close nature of the neighborhoods near the project area. Future projects within 300' of the THP to the west may include the continued no-project approach, in which case fuel conditions and fire risk will increase in the future in those areas. Future projects such as a shaded fuel break, timber harvesting, or other vegetation management projects would reduce this risk in the future outside of the Plan Submitter's property.

### Wildfire Risk and Hazard- Proposed THP

As per Item 30 Hazard Reduction in Section II of the THP, slash created within 100' of structures will be removed, and slash created within 200' of a structures shall be treated through lopping for fire hazard reduction means. In addition, GRT will be treating all slash within 100' of the property line. Please see the discussion below.

Wildfire Risk and Hazard has been identified by the RPF to be a potential impact resulting from the proposed project because of the existing and future conditions of the assessment area, particularly along the western boundary of the THP. Slash and brush left in the stand postharvest provides a wildfire risk in combination with the setting and baseline condition, past activities, and future activities that could be mitigated by treating slash more than is required by the Forest Practice Rules. Therefore, a specific mitigation measure has been proposed in this plan ( Please see Sections II as well). Through management of the stand, postharvest fuel conditions will be modified. Harvesting will greatly reduce the current risks associated with the pre-harvest stand in terms of reducing horizontal continuity of fuels through thinning and creating space in the stand, and in terms of vertical continuity by thinning trees that touch other trees crowns. Through the removal of these larger fuels, smaller fuels are created from equipment disturbing small unmerchantable fuels and brush, felling trees, skidding trees, and manufacturing logs from those trees. Some of this slash is taken to or produced at the landing, but there is still slash left in the forest, especially in harder to access areas. Sometimes the orientation, length and size of slash created can still connect fuels horizontally or vertically. Therefore, there is still a risk from the modified slash created through operations. Although accumulations of slash is not anticipated across the balance of the plan area, the landowner has also opted to include in Section II, Item 30, Hazard Reduction, a 100' wide required slash treatment zone along the property line shared with The Sea Ranch community for slash created during operations. This is a specific mitigation measure that goes above and beyond standard Forest Practice Rule requirements.

This may be accomplished through lop and scatter, crushing by equipment, or mastication. The intended effect of slash treatment is to minimize the size, length, and accumulation of slash near the property line, retained trees, or regeneration on the ground surface. By doing this, the horizontal and vertical continuity of post-harvest dead surface fuels will be reduced. Breaking down slash to be smaller and more spread out also allows for exposed soil to be covered and for fuels to break down and decompose faster. In addition, the designated STAs both have requirements for slash treatment within 300' of a publicly used road or watercourse, and where the THP boundary overlaps these areas, mostly in the Gualala River STA, the slash treatment shall apply.

In Section II, Item 30, the RPF also explains that slash created through operations within 100' of CA SR 1 and 50' of Deer Trail (private road with public access) shall be treated as well. Please see the "Required Slash Treatment Map" in Section II. The silvicultures selected in the THP (550 acres of Single-Tree Selection, 151 acres of Coastal Commission Zone STA, and 33 acres of Variable Retention (4.95 acres being No-Harvest Aggregates)) offer this part of the property a fire-resilient

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treatment that allows for growth of heathy trees. In many cases the overly dense, poor health and poor form trees are harvested to release the dominant and codominant conifers and promote natural regeneration. In areas where co-dominant trees are in abundance, and are growing close together, selectively removing some of the trees allows for more growing space and for the remaining vigorous and healthy trees to grow larger and more fire-resilient. The selective removal of trees of all age classes will result in crown separation reducing vertical and horizontal continuity within the stand, while promoting growth of both young thrifty trees and spaced-out larger diameter trees. The retention of healthy conifers will improve the overall stand health and provide for a more fire-resistant stand. In certain areas, an overgrowth of young hardwood trees with a high volume of low hanging branches and leaves, directly above a thicket of huckleberry bushes creates a current condition of hazardous fuel loading when near redwood, grand fir and Douglas-fir trees. Logging allows for this situation to be fragmented both physically and regarding time. Although it is difficult and economically infeasible to treat every acre of the property, the physical presence of logging and entering an area creates a reset between harvests for at least a portion of the stand and creates more growing space and light for the remaining conifer trees.

A 20-year study through UC Berkeley and others (Low et al., 2023), found that "fuel treatments in conifer-dominated forests can conserve forest structure in the face of wildfire." Their results indicated "that continued application of shaded fuel breaks is not only a sound strategy to ensure forest persistence through wildfire but may also be compatible with restoration objectives aimed at allowing for the use of more ecologically beneficial fire across landscapes." Although the THP does not fully propose a shaded fuel break (which has a minimum retention standard of 50 ft<sup>2</sup> ba/acre vs. Single-Tree Selection and STA Selection which have 75 ft<sup>2</sup> ba/acre and 100 ft<sup>2</sup> ba/acre), the silvicultures combined with the proposed slash treatment, as well as the timberland owner's objective of MSP and continual harvest entries through uneven-aged management are intended to treat the forest in a way that provides for the most growth given the current over stocked conditions. This is accomplished by thinning from all age classes which reduces fuel loading in the smaller diameters, while thinning the dominant and codominant canopy class to allow the residuals to laterally expand their canopies. Thinning out and spacing these trees frees up resources for younger thriftier trees as well as the residual larger trees which would allow them to expand their canopies. The slash treatment along the property line where the risk is as identified as the highest, in combination with the silviculture selected creates a means of fire prevention while still allowing the landowner to manage the stand for future growth. Maintaining the area as a shaded fuel break only in which young trees are not encouraged to grow would be against the objectives of the timberland owner. The one Variable Retention unit has a particular overstocking of hardwood compared to conifer. By harvesting this area in a more intensive way, it allows for the landowner to re-establish conifer growth and dominance through harvesting, treat the hardwood and competing brush species, and regenerate the stand through both natural (sprouting and seed fall) and artificial means (planting).

Landings accumulate slash, but in proposed WLPZ areas this slash is spread out on landings and skid trails and tractor crossings. Anywhere not suited for a landing slash pile will have the slash taken back into the woods in which it is packed down by equipment onto trails near the landing to provide for extra erosion control, beyond what is required in Section II, Item 18.

### Wildfire Risk and Hazard Conclusion

When viewed at a landscape level, management is required across the majority of the landscape to effectively reduce fire risk. This can be achieved through uneven aged management utilizing tractor yarding methods and will result in a reduction of the vertical and horizontal continuity of fuels. Road use and skid trail use will also improve access for fire suppression efforts. With the landowner's long-term focus on timberland management, an increase in fire resilience can be expected through the 96% unevenaged prescriptions. Although past projects (both completed and the lack of entry) contributed to the current fuel loading on site, the risks are also part of a regional level issue. Future projects, the FPRs, and the proposed THP and mitigation are all expected to have

Revised 2/5/2024 RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT a positive impact on fuel loading in the project area and immediate surrounding area by reducing fuels and managing the fuels that are created in the project. An evaluation of interactions of proposed project activities with the impacts of Past Projects and Reasonably Foreseeable Probable Future Projects on Wildfire Risk and Hazard is that, after mitigation, there is no significant cumulative impact, and that current conditions will be improved through the project implementation.

# Identification of Information Sources- H. Wildfire Risk and Hazard

Low, Kathryn E., et al. "Shaded Fuel Breaks Create Wildfire-Resilient Forest Stands: Lessons from a Long-Term Study in the Sierra Nevada." Fire Ecology, vol. 19, no. 1, 2023, https://doi.org/10.1186/s42408-023-00187-2.

Prichard, Susan J., et al. "Adapting Western North American Forests to Climate Change and Wildfires: 10 Common Questions." *Ecological Applications*, vol. 31, no. 8, 2021, https://doi.org/10.1002/eap.2433.

Sabalow, Ryan, and Dale Kasler. "Self-Serving Garbage.' Wildfire Experts Escalate Fight over Saving California Forests." Sacramento Bee, 14 Oct. 2021.

Sonoma County General Plan 2020

The Sea Ranch - Community Wildfire Protection Plan

The National Wildfire Coordinating Group web site: https://www.nwcg.gov/

Personal Communications

Menka Sethi, CEO & Community Manager of The Sea Ranch Association

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Todd McMahon, RPF, North Coast Resource Management, Ukiah, CA.

Weaver, Jesse D., Registered Professional Forester and Forest Manager, Redwood Empire Sawmills, Cloverdale, CA.

Steam Donkey Timber Harvest Plan

297.1

Rensed 2/5/2024








	Forest Type			Harv	est Periods	Inve	entory		Growth Rates	Harvest Vo	lume
Multipliers	to Estimate Carbon Ton (Sampson, 2002)	nes per MBF	-	Time of Harvest ()	ears 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 BFIAcre/Year	Hardwood Growth Rate BA/Acre/Year	Conifer Harvest Volume (MBF/acre)	Hardwood Harvested Treated Basal Area (BA/Acre)
Forest Type	Step 0. Identify the approximate percentage of conflex by volume within the harvest plan. Must sum to 100%	Multiplier from Cubic Feet (merchantable) to Total Biomass	Pounds Carbon per Cubic Foot	Enter the anticipated fi cycles should be sup	Step 1. Enter the anticipated faune harvest entries. The re-entry schoold be supported by management plan, it meeting, school be school by management plan, it school be school by		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 conflets 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 coniter harvested per area at current and future entities. The estimate should be based on projections from the management plan, if available.	Step 7, Enter estimated hardwood basal area harvested/treated per son
Douglas-fir	25%	1.575	14.38		0	25	40	650	0.25	6	2
Redwood	50%	1.675	13,42	1	20	32	25	700	0.25	6	1
Pines	10%	2.254	12.14	1	40	43	15	750	0.25	6	1
True firs	15%	2.254	11,18		60	49	5	700	0.25	6	1
Hardwoods		2.214	11.76	User must enter	06	57	0	850	0.25	6	
		Pounds per Matric		harvest cycles to	100	68	0	900	0.25	5	5
Conversion of Board Feet to Cubic Feet	0.165	Tonne	2,204	100 years and/or		0	0	0	0	0	
Multin Late In Extension Total Carbon	Conifer	17	8	at least three							
Tonnes per MBF	Wardunode	10		entry cycles.							
18 Ma Loss to Colorate March article	na anosas	1.0									
Carbon Tonnes per MBF	Coniter	0.9	,			0	0	0	0	0	
	arbon Tonnes per MBF Hardwoods 0.88		3			0	0	0	0	0	
				Periods	har	vest)		0	Site Preparatio	n	
				from above (Time of Harvest as years from project approvol)	Confer Live Tree Tonnes (Clacre) Computed: MBF * Confer Multipler from Stop 0.	Hardwood Live Trees Tonnes (Clacre) Computed: BAY0LmeBasil Area Rotion Barowath WSB1 2 Interfaced	Confer Live Tree Tonnes (CO <sub>2</sub> equivalent/lacre) Computed: Conversion of carbon to CO <sub>2</sub> (3.67	Hardwood Live Tree Tonnes (CD <sub>2</sub> equivalent/lacre) Computed: Computed: Computed:	Step 8. Enter the value (in bold) for each harvest cycel th activities, as averaged across the Heavy-SDN or more of De paciet one is covered with house programities or stamps in a service (inshite entitative across programities and the service across the service of the house of the project area is covered with thru- pagestation (mobile entitistics estimated at .202 metric tomes CO20 Medium - x25% <00% of the project area is covered with thru- pagestation (mobile entitistics estimated at .202 metric tomes	at best reflects the site preparation preject area: and removed as part of site and at .429 metric tennes CO29 per per arei) sh and removed as part of site s CO29 per acces, biological emissions	
				Prom above (Time of Harvest av years from project approval)	Confler Live Tree Tonnes (C/acre) Computed: MBF * Confler Multipler from Step D.	Hardwood Live Trees Tennes (Clacre) Computed: BA*Valume Basil Area Ration (bs convert to MBP)* Herdwood Multiplier tion Step 0.	Confer Live Tree Tennes (CO <sub>2</sub> equivalentiacre) Computed: Compared: Conversion of cabon to CO <sub>2</sub> (3.67 toones CO2 per 1 tone Carbon)	Hardwood Live Tree Tornes (CO <sub>2</sub> equivalentiacre) Computed: Convertient cablon to CO <sub>2</sub> (3.87 terms CO2 per 1 terms Carbon) 21	Step 8. Enter the value (in bold) for each harvest cycel it activities, as averaged across the activities, as averaged across the properties or stamps are sensed (noble emissions activate any, biological emissions actimated at 1 motive tennes CO2e Machian - >50% <20% of the project area is covered with thor argumation (noble emissions actimated at .202 metric torno actimated at 1 metric torne per acre). Light - 25% or less of the project area is covered with bruch a preparation (noble emissions actimated at .202 metric torne actimated at 1.6 metric tornes per acre). Light - 25% or less of the project area is covered with bruch a preparation (noble emissions actimated at .20 metric tornes actimated at .5 metric tornes per acre). None - No site preparation is conducted. <u>None</u>	nt best reflects the site preparation project area: and temoved as part of site ed at .428 metric tennes CODe per per tane) ab and removed as part of site a CODe per acre, biological emissions and is removed as part of site CODe per acre, biological emissions	
				fram above (Time of Hanvett as years fram project approvol) 0 20	Confer Live Tree Tonnes (Charre) Computed: MBF * Confer Multipler from Step D. 45	Hardwood Live Trees Tonnes (Clacre) Computed: BA'UsitmeBasid Ake Ration (be convert to MB? + Hardwood Multiplier from Sitep 0.	Confer Live Tree Tonnes (CD <sub>2</sub> equivalent/lacre) Computed: Computed: Conversion of carbon to CO <sub>2</sub> (3.67 somes CO2 per 1 tanke Carbon) 165 209	Hardwood Live Tree Tomes (CO <sub>2</sub> equivalent/lacre) Computed: Computed: Conversion of cades to CO <sub>2</sub> (JL87 tomes CO2 per 1 tome Carbon) 21 13	Step 8. Enter the value (in bold) for each harvest cycel it activities, as averaged actors the activities, as averaged actors the Heavy-50% or more of the project near is cauned with bruck preparation or home, as we smooth and the emissions estimate ann, biological emissions estimated at 2 metric tonnes CO20 Medium - >25%. 40% of the project area is covered with true preparation (mobile emissions estimated at 20 metric tonnes calimated at 1 metric tonnes par and). Light - 25% or loss of the project area is covered with truth a preparation (mobile emissions estimated at 20 metric tonnes estimated at 3 metric tonnes par and). None - No at 5 metric tonnes par and).	at best reflects the site preparation project area: and isemoved as part of site end at .20 metric tonnes CO20 per para anei) sh and removed as part of site s CO20 per acre, biological emissions and is removed as part of site CO20 per acre, biological emissions 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
				fram shove (Time of Harvest as years from project approval)	Confer Live Tree Tonnes (C/acre) Computed: MBF * Confer Multipler from Step D. 45 77	Hardwood Live Trees Tennes (Clacre) Computed: BX*UsizmeBost Ates Ration (8: convert to MSP) * Hardwood Multiplier tow Step 0.	Confer Live Tree Tannas (CO <sub>2</sub> equivalentiacre) Computed: Convesion of cabon Is CO <sub>2</sub> (3.67 tonnes CO2 per 1 tanne Carbon) 165 209 281	Hardwood Live Tree Tornes (CO <sub>2</sub> equivalent/lacre) Computed: Conversion of cadoos to CO <sub>2</sub> (3.87 tornes CO2 per 1 torne Carbon) 21 32 33 33 33 33 33 33 33 33 33 33 33 33	Step 8. Enter the value (in boild for each harvest cycel it activities, as averaged across the activities, as averaged across the properties or stamps are removed (mobile emissions activate and the stamps are removed (mobile emissions activate activated at 1 motio tennes CO2 Modium - >25%            Modium - >25%          <25% of the project area is covered with truth a proparticion (mobile emissions activated at 2.02% metric torne activated at 1 metric torne per acrej.           Light - 25% or less of the project area is covered with truth a separation (mobile emissions activated at 2.00 metric torne estimated at 3.5 metric tornes per acrej.           None - No afte preparation is conducted.           None - No afte preparation is conducted.           None - No	at best reflects the site preparation project area: and lemoved as part of site and services are strongs CO2a per per tang) as and removed as part of site cO2a per acre, biological emissions and is removed as part of site cO2a per acre, biological emissions 0 a	
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#### Project Carbon Accounting: Inventory, Growth, and Harvest - Single Tree Selection (WLPZ, Selection and STA areas)

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	Project Ca	arbon Acc	ounting	: Harve	esting E	mission	ns- Sin	gle Tre	ee Selec	tion (V	VLPZ, Se	election and S	TA areas	5)	-	
This worksheet add	fresses the non-biolo	gical emissions as	ssociated with	the project a	area's harves	ting activities.	Complete t	he input for	Steps 9- 14 or	n this works	heet.					
Harvest Periods	Falling Operations	Production per Day	Emissions	missions Associated with Yarders En and Loaders		Emissions Associated with Tractors and Skidders		Emissions Associated with Helicopters		Landing Saws	Truc	king En	issions			
from Inventory, Growth, and Harvest Page (Time of Harves)	Assumption: (J.25 galons gasoline per MBP harvested * 5.33 gounds action per galon)/2225(convention to metric borreor) * mb per sore harvested Computed. Metric Tormes CO2 equivalent per mb harvested harvested or thread	MBF (all species) Yarded Delivered to Landing	Assumption:))(/ equipment * 6.12 po metric tonnes carboo equiv	35 gallons diesel per unds carbon / gallor n)* 3,67 to convert la sient) Production pe	r day per piece of 1/2205 to convert to o metric tonves CO2 r Day	Assumption: ()(55 equipment * 6.12 pour metric tonnes carbony equivale	gallons diesel per de carbon / gallon ) 3.67 to convert to : m()(Production per	tay per piece of /2205 to convert to metric tonnes CO2 Day	Assumption: ((( equipment * 5 pound) tonnes carbon)* equit	200 gallons jet fuel s carbon / gallon )/2 3.67 to convert to r valenti/Production p	per day per piece of 205 to convert to metric netric tonnes CO2 er Day	Assumption: (():16 pallons gasoline per MSP * 5.33 (pounds carbon per gallon())2205(conversion to metric tonnes (C2 equilantit) from per acre harvestee. Applies to all species whether harvested or not.	Round Trip Hours/Los mb/hour) /[16 g carbon/gallon/2205 (co (conversion to met)	Assumption and average ( pallons diese priversion to ric tonnes ca	on: Irom below, to compute the (hour * 6.12 pounds matrix transe carbon)(*3.67 rbon dioxide equivalent)	
mom meteritory, Growth, and Jarvest Page (Time of Narvest a years from project approval)		preject sportval) Computed. Metric Tornes CO2 equivalent per mot harvested Applies to all species whether harvested or treated	Computed. Metric Torrnes CO2 equivalent p 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 Computer 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 equivalient/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 equivalient/mbf (metric tonnes)	Computed. Helicopters CO2 equivalent per Acre Harvested (metric Ionnes)	Computed, anding Save CO2 equivalent per Acre Harvested (metric tonnes)		
0	(0.02)	14	3	-0.08	-0.44	2	-0.08	-0.45	0	0.00	0.00	-0.01	Steps 13 and 14	4 below	-0.10546938	
20	(0.02)	14	3	0.00	0.00	2	-0.08	-0,46	0	0.00	0.00	-0.01	Enter Estimated Load Average: MBF/Truck	4.5	-0.10546938	
40	(0.02)	14	3	-0.08	-0.44	2	-0.08	-0.45	0	0.00	0.00	-0.01	Step 14		-0.10546938	
60	(0.01)	16	3	-0.07	-0.38	2	-0.07	-0.40	0	0.00	0.00	-0.01	Enter Estimated	5	-0.10546938	
80	(0.01)	16	3	-0.07	-0.38	2	-0.07	-0.40	o.	0.00	0.00	-0.01	-0.01 Round Trip Haul in		-0.10546938	
100	(0.01)	20	3	-0.05	-0.30	2	-0.06	-0.32	0	0.00	0.00	-0.01			-0.10546938	
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			-	
0		0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			-	
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	1		-	
Sum Emissions	-0.09				-1.94			-2.49			0.00	-0.06	1		-0.6	

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his worksheet add	resses the non-	biological emis	sions associated with t	he project area's har	vesting activities. Complete th	he input for Steps 15-16	on this worksheet.			
Harvest Periods		Quantity of Fore	est Carbon Delivered to	Mills	Non-Biological Emissions Associated with Mills	Quantity of Forest Immediately After M	Carbon Remaining Iilling (Mill Efficiency)	Long-Term Sequestration in Wood Products		
	Conifer Percentage Delivered to Mills	Hardwood Percentage Delivered to Mills	Conifer CO2e Delivered to Mills / Acre	Handwood 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 Us 100 Year Weighted Average / Acre	
m Inventory, Growth, and est Page (Time of Harvest sams from project approval) Insert the percentage of bardwords Step 15. Insert the percentage of bardwords	Computed: The marchantable portion determined by the conversion factors (Samson 2002) on the	Computed: The merchantable portion determined by the conversion factors	ala lui	The difference between carbo remaining after milling is assu	on delivered to mills and carbon med to be emitted immediately	Estimate. The weighted average carbon remaining in use at year 100 is 46.3%	Estimate. The weighted average carbon remaining in use at year 100 is 23.0%			
	of conifer trees harvested that are subsequently delivered to sawmilis	of hardwoods harvested or treated that are subsequently delivered to sawmils	Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	(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.	The CO2e associated with processing the logs at the mill	The efficiency rating from mills in California is 0.67 (DOE 1605b) for confilers	The efficiency rating from mills in California is .5 (DOE 1605b) for hardwoods	Estimate, The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.	Estimate. The carbon in landfills at year 10 is 29.8% of the initial carbon produced in wood products.	
0	95%	0%	20.67	0.00	-0.14	13.85	0.00	10.54	0.0	
20	95%	D%6	20.67	0.00	-0.14	13.85	0.00	10.54	0.0	
40	95%	0%	20,67	0.00	-0.14	13.85	0.00	10.54	0.0	
60	95%	0%	20.67	0.00	-0.14	13.85	0.00	10.54	0.0	
80	95%	0%	20.67	0.00	-0.14	13.85	0.00	10.54	0.0	
100	95%	0%	20.67	0.00	-0.14	13.85	0.00	10.54	0.0	
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.0	
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.0	
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.0	
0	0.00	075	0.00	0.00	0.00	0,00	0.00	0.00	0.0	

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Summary: Single Tree Sel	ection (WLPZ, Selection and	STA areas)	Years until Carbon Stocks are Recouped from Initial Harvest (Includes Carbon in Live Trees		
, ,	Beginning Stocks	Ending Stocks	Harvested Wood Products, and Landfill)		
Emissions Source/Sink/Reservoir	Metric Tonnes CO2 Equi Per Acre Basis	välent	9 Years		
Live Trees (Conifers and Hardwoods)	184.78	444.23			
Wood Products		63.22			
Site Preparation Emissions		0.00			
Non-biological emissions associated with harvesting		-5.21			
Non-biological emissions associated with milling		-0.86			
Sum of Net Emissions/Sequestration over Identified Harvest Cycles (CO2 metric tonnes)		316.61			
Pi	roject Summary				
Project Acres	Step 17- Insert the acres that are part of the harvest area.	701			
otal Project Sequestration over defined larvesting Periods (CO2 metric tonnes)		221,941			

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	Forest Type			Harve	est Periods	Inv	entory		Growth Rates	Harvest Vol	lume
Multipliers	to Estimate Carbon Torin (Sampson, 2002)	es per MBF		Time of Harvest (y	Time of Harvest (years from project approval)		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 Harveste Treated Basal Area (BA/Acre)
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	Enter the anticipated fu cycles should be sup	r the anticipated future harvest entries. The re-entry else should be supported by management plan, if available, on		Step 3. Enter the estimated hardwood inventory (asail area per acre) present in project area prior to harvest.	Step 4. Enter the average annual periodic growth of conflers between harvests based on estimated growth in management plan, if available. Nust be ortened for each harvest cycle identified in Step 1.	Step 5. Inset average annual periodic growth of hardwoods between harvests based on estimated growth in management plan, if available.	Step 5. Enter the estimated confer harvested per sere at current and future entries. The estimate should be based projections from the management plan, if evaluable.	Step 7. Entor estimated hardwood besal area harvested/beated per s
lougias-fe	20%	1.575	14.38			6	06	280	0.25	5	
adwood '	70%	1,675	13.42		40	12.2	25	380	0,25	5	
nes	10%	2.254	12.14		60	13.8	17	420	0.25	7	
ve frs.	0%	2.254	11,18		80	15.2	17	480	0.25		
ardwoods		2.214	11,75	User must enter	100	16.8	0	500	0.25	10	
		Pounds per Metric	1.	narvest cycles to	0	0	0		0	0	
onversion of Board Feet to Cubic Feet	0.165	Tonné	2,204	100 years and/or	C	0	0		0	9	
Aultipliers to Estimate Total Carbon	Conifer	1.7	4	at jeast three	0	0	0		0	0	
Tonnes per MBF	Hardwoods	10	5	entry cycles,							
And he have a station of a	The shows										-
Aultipliers to Estimate Merchantable	Conifer	1.0	1		0	0	0	0	0	0	
Hardwoods 0.88		8		0	0	0		0	0		
				Pendus	Conifer Live Tree Tonnes (Critere)	Handwood Live Trees Tonnes (Clacre)	Coniter Live Tree Tonnes (CO <sub>2</sub> equivalent/acre)	Hardwood Live Tree Tonnes (CO <sub>2</sub> equivalent/acre)	Step 8. Enter the value (in bold) for each harvest eyeel the activities, as everaged across the p	a best reflects the site preparation reject area:	
				fram above (Time of Harvest as years from project approval)	Computed: MBF * Confer Multiplier from Step 0.	Computed: BA*VolumeBasil Ans Ration (to convert to MPP) * Hardwood Multiplier from Step D.	Computed: Conversion of carbon to CO <sub>2</sub> (J.S7 Isones CO2 per 1 torne Carbon)	Computed: Conversion of carbon to CO <sub>2</sub> (3.57 lennes CO2 per 1 tenne Carbon)	Heavy-50% or more of the project area is sovered with bruch programbion or stamps are removed proble emissions estimate area, biological emissions estimated at 2 metric termes CO26 Medium - 23% CO56 of the project area is sovered with true proparation (mobile emissions estimated at 202 metric tennes estimated at 1 metric tennes per arrol. Light-25% or less of the project area is covered with bruch a proparation (mobile emissions estimated at 20 metric tennes estimated at 3 metric tennes per area).	and removed as part of site of at .439 motios tonnes CO2e per per acte) h and removed as part of site CO2e per acre, biological emissions will is removed as part of table CO2e per acre, biological emissions.	
								-	None - No site preparation is conducted.		
				0	10	12	38	43	Light	-0.59	
				40	21	4	78	43	Ught.	-0,59	
				60	24	2	88		UgM	-0.59	
				80	27	2	97	-	None	0	
				100	25	0	107		Nome	0	
				0	0	0	0		1010	0	
				0	0	0	0		Inche	- 0	
				0					None	0	

#### Project Carbon Accounting: Inventory, Growth, and Harvest (Variable Retention)

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		P	roject C	arbon	Accoun	ting: Ha	rvestin	ng Emi	ssions	(Variat	le Reter	ntion)						
This worksheet add	dresses the non-biolog	gical emissions as	sociated with	the project a	area's harvest	ting activities.	Complete ti	he input for	Steps 9- 14 on	this works	neet.							
Harvest Periods	Falling Operations	Production per Day	Emissions A	Emissions Associated with Yarders I and Loaders		Emissions Associated with Tractors and Skidders		Emissions Associated with Helicopters		Landing Saws	Trucking Emission		issions					
ga from inventory, Growth, and Harvest Page (Time of Harvest as years from project approval) Mo	Assumption: ([25 pallors gatedine per MBF harvested * 5.35 gate)(2205)exercises / Yarded Delivered to Landing brines)* mbf per acre harvested Computed. Metric Tomes CO2 equivalent per mbf harvested a trained a Applies to all species whether harvested to trained	Assumption: ((.25 pallons noline per MBF harvalet * 5.33 (pounds carbon per libri)(2205)(convension to metric nnes)* mbit per acre harvested	Assumption: ((25 galons soline per MBF harvested * 5.33 (pounds carbon per diton))2205(conversion to metric nntes) <sup>o</sup> mbf per acte harvested	Assumption: ((,25 galors gascine per MBF harvestet * 5.3 (pounds carbon per gallon))/2205(conversion to metric tonnes)" mbf per acre harvested	MBF (all species) Yarded Delivered to Landing	Assumption:(() equipment * 6.12 po metric tornes carbor equito	15 gallons diesel per unds carbon / gallon († 3.67 to cenvert to alent)/Production pe	day per piece of )/2205 to convert to metric tonnes CO2 r Day	Assumption: ()(55 equipment * 6.12 pours metric tonnes carbon) equivale	gallons diesel per ds carbon / gallon ) 3.67 to convert to : nt)/Production per	tay per piece of /2205 to convert to metric tonnes CO2 Day	Assumption: ((() equipment * 5 pounds tonnes carbony equiv	200 gallens jet fuel p carbon / gallen )/22 3,67 to convert to n alent)/Production p	er day per piece of 105 to convert to metric tetric tonnes. CO2 er Day	Assumption: ((L16 galons gasoline pr MBF * 5.33 (pounds carbon per galon)(2205(coversion to metric tonnes (C2 equivalent))mb per arc harvested, Applies to all species whether harvested or not.	Round Trip Hours/Loa mb@hour) (16 g carbonigation)/2205 (co (conversion to metr	Assumption d average (1 allons clessi inversion to r in tonnes ca	on: tem below, to compute the linour * 6.12 pounds metric tonnes carbon)(*3.67 from dioxide equivalent)
		Step 10. Enter number of pinces of equipment in use per day for each harvest entry	Computed, Yarders and Loaders CO2 equivalent/intbf (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 equivalient/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 tornes)	Chart 12 and 1	halaur	Computed, Estimated Metric Tonnes CO2e per harvestied acre for each harvesting period.				
0	(0.02)	14	3	-0.08	-0.36	2	-0.08	-0.38	0	0.00	0.00	-0.01	Steps 13 and 14	DEIOW	-0.093061224			
40	(0.02)	14	3	0.00	0.00	2	-0.08	-0.46	0	0.00	0.00	-0.01	Enter Estimated Load Average: MBF/Truck	4.25	-0.111673465			
60	(0.02)	16	3	-0.07	-0.44	2	-0.07	-0.47	0	0.00	0.00	-0.01	Step 14		-0.130285714			
80	(0.02)	16	3	-0.07	-0.51	2	-0.07	-0.53	0	0.00	0.00	-0.01	Enter Estimated	5	-0.148897959			
100	(0.02)	20	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	-0.01	Round Trip Haul In. Hours		-0.186122449			
0		0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00			1			
0		0	D	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	1000		-			
0		.0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00						
0		0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	the second		-			
Sum Emissions	.0.00				.1 32			.1.83			0.00	30.0			-0.57			

Pr	oject Ca	rbon Acc	ounting: Har	vested Woo	od Products and	Processing E	missions (Va	riable Reten	tion)	
Harvest Periods	resses the non	Quantity of Fore	sions associated with t est Carbon Delivered to	he project area's har Mills	vesting activities. Complete to Non-Biological Emissions Associated with Mills	he input for Steps 15- 16 Quantity of Forest Immediately After M	on this worksheet. Carbon Remaining Iilling (Mill Efficiency)	Long-Term Sequestration in Wood Products		
	Conifer Percentage Delivered to Mills	Hardwood Percentage Delivered to Mills	Conifer CO2e Delivered to Mills / Acce:	Hardwood CO2 equivalent Delivered to Mills / Acre	Assumption. 20 kwihour (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 / Acte and Landfill	Computed. CO2 Equivalent Tonnes in Hardwood Wood Products in Use- 100 Year Weighted Average / Acre	
from Inventory, Growth, and anvest Page (Time of Harvest i years from project approval)	Step 15.	Step 16. Insert the percentage	Computed: The merchantable portion determined by the conversion factors (Samoson 2002) on the	Computed: The merchantable portion determined by the conversion factors	Calculated	The difference between carb remaining after milling is assu	on delivered to mills and carbon med to be emitted immediately	Estimate. The weighted average carbon remaining in use at year 100 is 46.3% 23.0%		
	of conifer trees harvested that are subsequently delivered to sawmills	of hardwoods harvested or treated that are subsequently delivered to sawmills	Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	(Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the parcent delivered to mills to reflect the carbon delivered to mills.	The CO2e associated with processing the logs at the mill	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 carbon in landfills at year 100 is 29.8% of the initial carbon produced h wood products.	Estimate. The carbon in landfills at year 100 is 29,8% of the initial carbon produced in wood products.	
0	95%	0%	17.60	0.00	-0.12	11.79	0.00	8.97	0.00	
40	95%	0%	21.12	0.00	-0.14	14.15	0.00	10.77	0.00	
60	95%	0%	24.64	0.00	-0.17	16.51	0.00	12.56	0.00	
80	95%	0%	28.16	0.00	-0.19	18.86	0.00	14.36	0.00	
100	95%	0%	35.19	0.00	-0.24	23.58	0.00	17.94	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 e	missions associate with proce	essing of lumber	-0.86	Sum of CO2 equiva	lent in wood products	64.60	0.00	

Summar	y (Variable Retention)		Years until Carbon Stocks are Recouped from Initial Harvest (Includes Carbon in Live Trees,
	Beginning Stocks	Ending Stocks	Harvested Wood Products, and Landfill)
Emissions Source/Sink/Reservoir	Metric Tonnes CO2 Equi Per Acre Basis	valent	30 Years
Live Trees (Conifers and Hardwoods)	81.31	107.50	
Wood Products		64.60	
Site Preparation Emissions		-1.77	
Non-biological emissions associated with harvesting		-3.97	
Non-biological emissions associated with milling		-0.86	
Sum of Net Emissions/Sequestration over Identified Harvest Cycles (CO2 metric tonnes)		84.18	
Pr	oject Summary		
Project Acres	Step 17- Insert the acres that are part of the harvest area.	33	
otal Project Sequestration over defined larvesting Periods (CO2 metric tonnes)		2,778	

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#### Steam Donkey Timber Harvest Plan

#### Section V

- Erosion Hazard Rating Worksheets
- Soils Map
- Erosion Control Plan and Maps
- Landowner Responsibilities Letter
- Domestic Water Letter- Neighbors
- Domestic Water Notice-Independent Coast Observer
- Gualala Redwood Timber- Watershed Landslide Inventory Report
- Gualala Redwood Timber-2017 Sewer Treatment Road Action Plan
- Published Landslide Mapping (pages from CGS PHI Report for THP 1-23-00099SON)
- Gualala Redwood Timber- Watershed Stream Monitoring Information and Completed Road Work Information
- Northern Spotted Owl Information
- Botanical Survey Report

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Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	

1	CSDS	Moderate,	Yes	A Class II-L watercourse and northern bank seep cross an existing permanent road
	Class II-L Watercourse Q100= 81.2 cfs	Yes	No	<ul> <li>culvert is set ~6" lower than the southern one, is spaced 2' from the southern culvert, and is the main culvert passing flows under the road. This culvert is completely rusted through, and water is running under the pipe. The channel bottom has a rocky and hard substrate both up and down stream of the crossing. The southern culvert passes water during high flows and is functional/ not rusted through.</li> <li>Remove both culverts and install a 73"x 55" size pipe-arch culvert (with a non-beveled inlet) to watercourse grade.</li> <li>Install a critical dip downgrade of the crossing.</li> <li>Rock armor the fill slope where the inside ditch outlets into the culvert inlet area with 10" D<sub>50</sub> rock.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
2	CSDS	Low, 1 yd	Yes	An inside ditch draining a bank seep leads to the inlet of a functional Class II-S
	Bank seep inside ditch; Draining to Class II-S Watercourse	No	No	<ul> <li>watercourse crossing (30" culvert) located on an existing permanent road. The ditch is shallow for ~75' upgrade of the crossing and is saturating the road, due to road rocking maintenance. At the culvert outlet, there is an unstable feature that was identified as a point on a map for THP 1-15-042SON; This road and this crossing was addressed in the 2017 Action Plan: Gualala Redwood Timber LLC (GRT) and Gualala Community Services District (GCSD): Storm Proofing the Sewer Treatment Plant Access Road (included in Section V), in which the culvert was carefully replaced and set in a specific manner due to the slide at the outlet as well as the utilities for the sewer treatment plant buried directly under the culvert inlet. The road was also insloped and intended to drain to the inside ditches in order to keep flows off of the slide. Therefore, the improvement of the inside ditch at this location is imperative in protecting this site.</li> <li>From the 3 orange flags (75' upgrade of crossing), to the culvert inlet, improve the ditch line by excavating the ditch approximately 2' wide and 1-2' deep.</li> <li>Operations at this road point shall be solely confined to the inboard edge of the road, and operations proposed shall improve road drainage and saturation of the road prism above the unstable feature. It is not expected to have any negative impact on the feature and should prevent water from flowing onto the feature from the road's edge.</li> </ul>
7	CSDS	20 yds, Moderate	Yes	A Class II watercourse crosses an existing seasonal road via a 36" CMP. The inlet is
	Class II Watercourse (Non-ASP) Q100= 18.6 cfs	Yes	No	<ul> <li>underneath the culvert. The culvert is not set to grade, and there is approximately 10' of backcutting underneath the pipe, and a 2.5' drop to natural channel grade. The culvert is also rusty at the bottom but is not rusted through.</li> <li>Remove the culvert and replace with a 36" diameter culvert to watercourse grade.</li> <li>Install a trash rack at the inlet of the culvert.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
9	CSDS	20 yds,	Yes	A Class II watercourse crosses an existing seasonal road via a 30" CMP. The pipe is
	Class II Watercourse Q100≡ 9.3 cfs	No	No	<ul> <li>rusty and water runs under the curvert. The curvert is not set to grade, and there is a ~2,5' drop at the outlet.</li> <li>Remove the culvert and replace with a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
10	CSDS	5 yds, Moderate	No	A ditch drains along an existing permanent road and crosses a spur road via an 18" culvert with a rocked inlet. The culvert outlet is <sup>3</sup> / <sub>4</sub> plugged with sediment and the
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Map Point	Controllable Sediment Discharge Site (CSDS), Description	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	
	Ditch Relief Culvert	No	No	<ul> <li>ditch is transporting a significant amount water; After the pipe crosses the spur road, water is discharged into the stand on flat topography. The water makes its way back to the road's edge, flows alongside it for a ~20', then eventually makes its way to the southern approach of RP 6. Water flows down the spur road for 100' to RP 6, and there is gully erosion leading to the Class II-S watercourse. There is an existing ditch line with a lower ditch relief culvert along the permanent road on the southern side of the road that would be more appropriate for this system.</li> <li>Remove the cross drain for the spur road.</li> <li>Replace the culvert as per Diagram # 3.</li> <li>Improve and deepen the ditch line on the southern side of the permanent road from RP #10 to the next DRC downgrade where the ditch is currently too shallow.</li> </ul>
14	CSDS	5 yds,	Yes	A Class III watercourse runs down an existing seasonal road to the inlet of RP #15
	Class III Watercourse Q100: 5 cfs	Yes	No	<ul> <li>(down grade of RP #14), as well as off of the road towards the outlet of RP #15, with no crossing in place. There is minor erosion in the road prism and the fillslope of the road.</li> <li>Install an 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures</li> </ul>
15	CSDS	10 yds,	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. At the inlet the culture is rust and at the culture there are rust heles from the culture to
	Class III Watercourse Q100: 11.1 cfs	Yes	No	<ul> <li>about 10' back.</li> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
18	Bank Seep	N/A	No	A bank seep and wet area cross an existing seasonal road via a waterbar. No erosion
		No	No	<ul> <li>is occurring in the road prism or edge.</li> <li>If wet during operations, install a small temporary pipe to avoid saturation of the road prism during hauling and operations.</li> <li>After operations and prior to the winter period of use, reinstall the waterbar at this location, or a rolling dip.</li> </ul>
20.1	CSDS	10 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. The culvert is rusted through and is shotgunned with a 4' drop at the outlet.
	Class III Watercourse Q100: 1.7 cfs	No	No	<ul> <li>Remove the culvert and install an 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
21	CSDS	5 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP with a rocked fill face. The culvert is buried at the outlet. At the inlet, there are rust holes.
	Class III Watercourse Q100: 2.7 cfs	No	No	<ul> <li>Remove the culvert and install an 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
22	CSDS	10 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via an 18" CMP. The culvert is rusted through and is shotgunned with a 1' drop at the outlet.

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Map Point	Controllable     Potential     CDFW       Sediment     Sediment     1600       Discharge Site     Discharge       (CSDS),     (cy),       Description,     Priority*	CDFW 1600	Description and Recommendations	
	Watercourse Class	Hydro Calc.	Geo Report	

	Class III Watercourse Q100: 1.1 cfs	No	No	<ul> <li>Remove the culvert and install an 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
23	CSDS Class III Watercourse Q100: 5.3 cfs 1.5:1 outfall gradient	7 yds, Moderate No	Yes	<ul> <li>A Class III watercourse crosses an existing seasonal road with no crossing in place, however there is a large cavity in the road prism near the out-board edge, with water running ~10' below the road surface via a soil pipe. The channel directly above the road is poorly defined.</li> <li>Install a rock armored fill crossing as per Diagram #1 using 18" D<sub>50</sub> rip rap.</li> <li>In the road prism, excavate to the apparent channel bottom and place larger rip rap for a minimum of 5' prior to adding road rock above.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
31	CSDS Class III Watercourse Q100: 5.1 cfs	10 yds, Low Yes	Yes	<ul> <li>A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through.</li> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
32	CSDS Bank Seep upgrade of Class II Watercourse	1 yd, Low No	No No	<ul> <li>A bank seep drains to an inside ditch which drains to the inlet of a Class II watercourse. Water from the bank seep currently saturates road and is minorly eroding the road prism.</li> <li>Improve and deepen the ditch from this point to the inlet of the Class II watercourse crossing.</li> <li>Rock armor the outlet of the ditch at the culvert inlet with 10" D<sub>50</sub> rock.</li> <li>Spoils shall be removed from site and placed in a stable location outside of the WLPZ.</li> </ul>
33	CSDS Class II Watercourse Q100: 51.0 cfs	15 yds, Low Yes	Yes	<ul> <li>A Class II watercourse crosses an existing seasonal road via a 36" CMP. The culvert is breaking apart and rusted at the inlet, rusty all the way through, and has rust holes allowing water to run underneath the culvert. The culvert is not set to grade and there is a 4' drop at the outlet. The fillslope beneath the outlet of the culvert is back cutting due to water running beneath the culvert.</li> <li>Remove the culvert and install a 54" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
34	CSDS Class III Watercourse Q100: 2.9 cfs	15 yds, Low Yes	Yes	<ul> <li>A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through.</li> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
35	CSDS	12 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through.

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Map Point	Controllable Sediment Discharge Site (CSDS), Description	controllable Potential lediment Sediment Discharge Site Discharge CSDS), (cy), Description, Priority*		Description and Recommendations					
	Watercourse Class	Hydro Calc.	Geo Report						
	Class III Watercourse Q100: 7.1 cfs	Yes	No	<ul> <li>Remove the culvert and install a 24" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>					
С	CSDS	3 yds,	No	A steep segment of through-cut road with a high watertable and wet areas has seven					
	Rolling dips and Wet Area	No	No	<ul> <li>existing rolling dips. Between the o<sup>w</sup> and 7<sup>w</sup> dip at the bottom of the road segment, additional bank seep water is contributing to the last dip. This is eroding the road prism down by about 2.5' into a gully. The road is insloped towards this dip.</li> <li>At the location of the three orange flags just upgrade of the dip, excavate an inside ditch that is 1.5' wide by 2 feet deep in order to drain the wet bank seep to the outlet of the dip without eroding the road prism.</li> <li>Maintain all other 6 dips at their current location.</li> </ul>					
36	CSDS	1 yd, Low	No	A wet area crosses an existing seasonal road via a rocked dip with large sandstone					
	Wet Area	No	No	<ul> <li>rip rap at the outlet. There is a small nick point where the road prism meets the rip rap at the edge of the road.</li> <li>Restack and reposition the existing rip rap at this location to ensure the edge of the road is fully armored at the dip.</li> </ul>					
37	CSDS	5 yds,	Yes	A Class III watercourse and wet area collect in a ditch and cross an existing					
	Class III Watercourse Q100: 14.7 cfs	Yes	No	<ul> <li>seasonal road via an 18" CMP. The culvert is rusted through. Downgrade of this crossing there is another inside ditch with a 24" CMP as a ditch relief culvert that i functional.</li> <li>Remove the culvert at the watercourse crossing and install a 36" diameter culvert to watercourse grade.</li> <li>Install a critical dip.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>					
40	CSDS	2 yds,	No	A Class III watercourse runs down an existing seasonal road for ~45' before					
	Class III Watercourse	No	No	<ul> <li>crossing the road via an earthen dip. There are no signs of major erosion at the outlet of the dip or in the road prism.</li> <li>Where the Class III watercourse first hits the road, reestablish the dip upgrade of the watercourse.</li> <li>Install an inside ditch for 45' that leads to the dip to keep the water off of the road prism.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>					
48	CSDS	8 yds,	Yes	A Class III watercourse crosses an existing seasonal road via 12" CMP. The outlet					
	Class III Watercourse O100: 1.5 cfs	Yes	No	<ul> <li>The LTO shall locate and clean the outlet if possible.</li> <li>If the culvert is crushed or damaged at the outlet, replace the culvert with a 24" culvert to watercourse grade.</li> </ul>					
49	CSDS	15 yds,	Yes	A Class III watercourse crosses an existing seasonal road via a 30" CMP. The pipe					
	Class III Watercourse Q100: 4.9 cfs	Yes	No	<ul> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip no more than 50' downgrade of the culvert.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>					
50	CSDS	8 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 30" CMP. The pipe is rusted through the entire length of the culvert.					

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Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	

	Class III Watercourse Q100: 6.8 cfs	Yes	No	<ul> <li>Remove the culvert and install a 30" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
52	CSDS	15 yds, Low	Yes	A Class II watercourse crosses an existing seasonal road via a 36" CMP. The pipe is rusted through the entire length of the culvert. A 3' long x 4' wide x 1.5' deep hole
	Class II Watercourse Q100: 28.9 cfs	Yes	No	<ul> <li>exists in the road prism over the culvert. A Class III watercourse at RP 53 delivers to the crossing at RP 52 by way of a shallow inside ditch and saturates the road prism.</li> <li>Remove the culvert and install a 36" diameter culvert to watercourse grade.</li> <li>The inside ditch will outlet the Class III watercourse to the inlet of this Class II watercourse. Rock armor the fill face and inside ditch at the southern side of the inlet with 10" D<sub>50</sub> rip rap.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
53	CSDS	5 yds, Low	Yes	A Class III watercourse runs down an inside ditch, then on the road prism towards RP 52.
101	Class III Watercourse	No	No	<ul> <li>Re-establish the inside ditch to connect to the inlet of RP 52. As stated above, rock armor the inlet and fill face of culvert where the ditch intercepts it.</li> </ul>
54	CSDS	10 yds, Low	Yes	A Class II watercourse crosses an existing seasonal road via a 30" CMP. The culvert is rusted through for 5-10' at the outlet, and the inlet bottom is broken apart.
	Class II Watercourse Q100: 22.0 cfs	Yes	No	<ul> <li>Remove the culvert and install a 36" diameter culvert to watercourse grade.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>

55	CSDS	4 yds, Low	Yes	A Class III watercourse crosses an existing seasonal road via a 24" CMP. The culvert is rusted through at both the inlet and outlet. It is not to watercourse grade,
	Class III Watercourse Q100: 0.6 cfs	Yes	No	<ul> <li>and has a flume at the outlet (20' long). The culvert is located on an inside turn in the road, the road is outsloped, and there is an old fillslope failure at the outlet. The fillslope at the edge of the road is vertical in some places, but overall is stable, mostly vegetated and has young straight redwood and Douglas-fir trees (6-16" DBH) growing throughout the feature. The road upgrade (east) of the crossing is shedding water off the road onto the feature in various locations prior to the culvert. There is a shallow, overflowing inside ditch that is also allowing water to cross the road rather than flow into the inlet of the crossing.</li> <li>Remove the culvert and install a 24" diameter culvert. Install the culvert so that the outlet is set to where there is a well-defined channel, about 10' downslope of the current flume outlet. (-35' slope distance from road edge). Setting the culvert to watercourse grade in this location is not feasible due to the unknown depth at which true watercourse grade exists within the deposited material from the fill failure near the outlet.</li> <li>Layback the vertical fillslopes to the extent feasible where "dip" is painted on a tree.</li> <li>Downgrade of the dip, reinstall the inside ditch to approximately 6" deep.</li> <li>Install a critical dip over the pipe.</li> <li>Exposed soil shall be stabilized as per Item 18 Soil Stabilization Measures.</li> </ul>
			-	

Map Point	Controllable Sediment Discharge Site (CSDS), Description,	Potential Sediment Discharge (cy), Priority*	CDFW 1600	Description and Recommendations
	Watercourse Class	Hydro Calc.	Geo Report	

\*High Immediacy Sites: Must be completed within one year of plan approval.

Moderate Immediacy Sites: Must be completed within the first full year of operation. Low Immediacy Sites: Must be completed during the life of the plan.

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	Location:	Steam Donkey	THP	Gualala, CA						
		,						C=runoff		
ati	ional Method fo	or 100-year flood	flow (A < 200 ac	res)			Q100=CiA	Coefficient	A=area (acres)	
	Crossing	Runoff	3.16 100-year Return-Period Precipitation (in/hr)	50-year Return-Period Precipitation (in/hr)	25-year Return- Period Precipitation (in/hr)	10-year Return-Period Precipitation (in/hr)	Area (acres)	100-yr flood flow (cfs)	Minimum Culvert or Rock Size Required	Alternat Culvert S
0.		С	P*	P	P	P	A	Q100		
	7	0.35	3.2	2.9	2.6	2.2	16.6	18.6	36	
	9	0.35	3.2	2.9	2.6	2.2	8.2	9.3	27	30
	14	0.35	3.2	2.9	2.6	2.2	4.4	5.0	18	24
	15	0.35	3.2	2.9	2.6	2.2	9.8	11.1	27	30
	20.1	0.35	3.2	2.9	2.6	2.2	1.5	1.7	18	24
	21	0.35	3.2	2.9	2.6	2.2	2.4	2.7	18	24
	22	0.35	3.2	2.9	2.6	2.2	1	11	18	24
	23	0.35	3.2	2.9	2.6	2.2	47	53	18" 050	
	31	0.35	3.2	2.9	2.6	2.2	45	51	24	24
1	37	0.35	3.2	2.9	2.6	2.2	45	510	21	24
	34	0.35	3.2	2.9	2.6	2.2	45	20	10	24
-	25	0.35	3.2	2.9	2.6	2.2	6.2	7.4	24	27
1	27	0.35	3.2	2.9	2.6	2.2	0.0	117	27	26
-	3/	0.35	3.2	29	26	22	13	14./	33	30
-	40	0.35	32	29	26	22	1.20	1.0	10	24
-	49	0.35	3.2	2.0	2.6	22	4.3	4.9	18	30
-	50	0.35	2.2	2.0	2.0	2.2	6	6.8	24	30
-	52	0.35	3.2	2.5	2.0	2.2	25,5	28.9	36	-
_	54	0.35	3.2	2.9	2.0	2.2	19.4	22.0	36	
-	qnitude and Fre	equency Method Area (acres) A	<u>for 100-year floo</u> Area (mi <sup>2</sup> ) A	d flow (A > 100 at Avg. Annual Precipitation (in/yr) p	tion of the second seco	50-yr flood flow Q50 (cfs)	Magnitude & Frequer	ncy Q 100 equations	Minimum Culvert Size Required	
	1	106	0.17	41.6	81.2	64.0	North Coast Q100= (48.	5*A^0.866)* (p^0.556)	73"x55" pipe-arch culvert	
	1 Template prepared by: Mithael Monat	106 If questions, contact M or at <u>michael.wopat@fi</u>	0.17 r.Vopat at 530-24-4748 re.ca.gov	41.6	81.2	64.0	North Coast Q100= (48.	5*A^0.866)* (p^0.556)	culvert	

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Revised 2/5/2024 RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT

			100 year flood	Headwall to pipe diameter ratio	What does the pipe inlet look like?	100 yr	100 VT
T	Man Point #	area (ac)	(cfs)			Culvert Size (in)	area (#2
+	1	106	81.2	-	Mitredihevel	66	23.7
1		100	01.2	0.67	Drojected pipe >	72	28.7
+				0.07	Mitrod/houol >	60	20.0
+		-		0.75	Projected pipe	00	23.7
+		-		0.75	Mitteed based	00	45.0
+		1		0.0	Mitred/Devel ->	24	10.8
+		-		0.9	Projected pipe ->	51	13.0
+		-			Mitred/bevers	51	19.4
-	7	47	10.0	-	Projected pipe ->	34	10.0
+		1 17	10.0	0.67	Decidented pipe >	30	7.1
+				0.07	Projected pipe ->	92	9.0
+				0.75	Mitred/bevel->	33	5.8
+				0.75	Projected pipe >	36	1.1
÷				-	Mitred/bevel ->	33	5.9
1		-		0.9	Projected pipe >	33	5.9
4		1			Mitred/bevel ->	30	4.9
1		1		1	Projected pipe >	30	4.9
1	9	8	9.3		Mitred/bevel ->	27	4.0
1	2	1		0.67	Projected pipe >	27	4.0
L		1			Mitred/bevel ->	27	4.0
				0.75	Projected pipe >	27	4.0
T		1			Mitred/bevel ->	24	3.1
T		1		0.9	Projected pipe ->	24	3.1
T					Mitred/bevel >	21	2.4
T		1		1 1	Projected pipe >	24	3.1
T	14	4	5.0		Mitred/bevel >	18	1.8
T		1		0.67	Projected pipe >	18	1.8
1		1		0.01	Mitred/bevel	18	1.0
1t		1		0.75	Decidented pine	40	1.0
÷		1		0.15	Projected pipe ->	10	1.0
÷		-			Mitred/bever->	10	1.0
÷		-		0.9	Projected pipe >	18	1.0
+				-	Mitred/bevel >	18	1.8
÷	45			1	Projected pipe >	18	1.8
+	15	10	11.1	-	Mitred/bevel >	27	4.0
÷				0.67	Projected pipe ->	30	4.9
+		-			Mitred/bevel >	27	4.0
+				0.75	Projected pipe ->	30	4.9
+					Mitred/bevel ->	24	3.1
1		1		0.9	Projected pipe >	27	4.0
1		1			Mitred/bevel ->	24	3.1
1				1	Projected pipe >	24	3.1
L	20.1	2	1.7		Mitred/bevel ->	16	1.8
1				0.67	Projected pipe >	18	1.8
T					Mitred/bevel ->	18	1.8
T				0.75	Projected pipe >	18	1.8
T					Mitred/bevel >	18	1.8
T		1		0.9	Projected pipe >	18	1.8
T		1	-		Mitred/bevel >	18	1.8
T				1 1	Projected pine >	18	1.0
t	21	2	27		Mitradibaval	18	4.0
t	41	-	6.1	0.67	Drojacted pipe	10	1.0
1		-		0.07	Mitrod barrel >	10	1.0
+		-		0.75	Mitred/bever->	16	1.8
+		1		0.75	Projected pipe >	18	1.8
+		-			Mitred/bevel >	18	1.8
+		-		0.9	Projected pipe >	18	1.8
-		-		-	Mitred/bevel ->	18	1.8
				1	Projected pipe >	18	1 2

		100 year flood	Headwall to pipe diameter ratio	What does the pipe inlet look like?	100 yr	100 vr
Man Point #	area (ac)	(cfs)			Culvert Size (in)	area (ft2)
22	1	11		Mitred/bevel >	18	1.8
			0.67	Projected pipe >	18	1.8
				Mitred/bevel ->	18	1.8
			0.75	Projected pipe ->	18	1.8
	4			Mitred/bevel ->	18	1.8
			0.9	Projected pipe ->	18	1.8
	1			Mitred/bevel >	18	1.8
			1 1	Projected pipe ->	18	1.8
23	5	5.3		Mitred/bevel >	21	2.4
	1		0.67	Projected pipe ->	21	2.4
				Mitred/bevel >	21	2.4
			0.75	Projected nine >	24	24
	-	-	0.75	Aliteadihaval	40	4.0
	-	-		Projected pipe	10	1.0
	-		0.9	Projected pipe ~	10	1.0
				Mitred/bevel >	18	1.8
			1	Projected pipe >	18	1.8
31	5	5.1		Mitred/bevel >	21	2.4
			0.67	Projected pipe ->	21	2.4
		in the second se		Mitred/bevel >	21	2.4
	1		0.75	Projected pipe >	21	2.4
				Mitred/bevel >	18	1.8
			0.9	Projected pipe ->	18	1.8
				Mitred/bevel >	18	1.8
			1	Projected pipe >	18	1.8
33	45	51.0	-	Mitred/bevel >	54	15.9
	-		0.67	Projected pipe >	60	19.6
	-		-	Mitred/bevel >	48	12.6
			0.75	Projected pipe ->	54	15.9
	-		-	Mitred/bevel >	48	12.6
			0.9	Projected pipe >	48	12.6
	-			Mitred/bevel >	48	12.6
			1	Projected pipe >	48	12.6
34	3	2.9		Mitred/bevel >	18	1.8
	-		0.67	Projected pipe ->	18	1.8
	-	-		Mitred/bevel->	18	1.8
	-		0.75	Projected pipe >	18	1.8
	-		-	Mitred/bevel >	18	1.8
	-		0.9	Projected pipe ->	18	1.8
	-			Mitred/Devel >	18	1.8
36		74	1	Projected pipe ->	10	1.0
30	0	7.1	0.07	Mitred/bever >	24	3.1
	-		0.07	Projected pipe 3	24	3.1
	-		0.75	Decidented ping	24	2.1
	-		0.75	Projected pipe ->	24	2.1
	-	-		Mitred/bevel >	21	2.4
			0.9	Projected pipe >	21	2.4
-	-			Mitred/Devel >	21	2.4
37	13	147	-	Mitred/hevel	21	50
31	15	14.1	0.67	Projected pipe	33	5.0
		-	0.07	Mitred/hevel	20	4.0
-	-		0.75	Projected nine >	33	5.0
	1		0.13	Mitred/bevel >	27	4.0
	1		0.9	Projected nine >	30	4.0
		-	0.0	Mitred/bevel >	27	4.0
			1 1	Projected pipe >	27	4.0

_		100 year flood	Headwall to pipe diameter ratio	What does the pipe inlet look like?	100 yr	100 yr	
Map Point #	area (ac)	(cfs)			Culvert Size (in)	area (ft2	
48	1	1.5		Mitred/bevel ->	18	1.8	
	1		0.67	Projected pipe >	18	1.	
				Mitred/bevel ->	18	1.	
			0.75	Projected pipe ->	18	1.	
			1	Mitred/bevel ->	18	1.	
			0.9	Projected pipe >	18	1.	
				Mitred/bevel ->	18	1.	
			1	Projected pipe >	18	1.	
49	4	4.9		Mitred/bevel ->	18	1.	
	-		0.67	Projected pipe ->	18	1.	
				Mitred/bevel ->	18	1.	
	02	-	0.75	Projected pipe >	18	1.	
	1.1			Mitred/bevel ->	18	1.	
			0.9	Projected pipe ->	18	1.	
			Carl and the second	Mitred/bevel ->	18	1.	
50			1	Projected pipe ->	18	1.	
	6	6.8		Mitred/bevel ->	24	3.	
		2	0.67	Projected pipe ->	24	3.	
				Mitred/bevel ->	21	2.	
		2	0.75	Projected pipe ->	24	3.	
	1			Mitred/bevel ->	21	2	
			0.9	Projected pipe >	21	2.	
	1			Mitred/bevel ->	18	1.	
			1	Projected pipe >	18	1.	
52	26	28.9		Mitred/bevel ->	36	7.	
	1		0.67	Projected pipe >	48	12	
	1			Mitred/bevel ->	42	9.	
	1		0.75	Projected pipe ->	42	9.	
				Mitred/bevel ->	36	7.	
	1		0.9	Projected pipe ->	36	7.	
				Mitred/bevel ->	33	5.	
			1	Projected pipe >	36	7.	
55	1	0.6		Mitred/bevel >	18	1.	
		A second second second	0.67	Projected pipe ->	18	1.	
	1			Mitred/bevel >	18	1.	
			0.75	Projected pipe ->	18	1.	
				Mitred/bevel ->	18	1.	
		1	0.9	Projected pipe >	18	1.	
		1		Mitred/bevel >	18	1.	
	1	A	1	Projected pipe ->	18	1.	

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Steam Donkey THP

Cfs Calculations

Steam Donkey THP Map Point #1: Pipe-arch Culvert Sizing Chart

Map Point #1: 81.2 cfs



Steam Donkey THP

GRT Watershed Landslide Inventory Reports

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> RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT

357.1

### Landslides\*

Planning Watershed Big Pepperwood Creek

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
5	5	Best CEG	1984	Photos	Skid Trail	Headwall Swale	Divergent	Mgt. Relate	85+	NA	389	97
17	17	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	75-84	NA	889	222
18	18	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	889	222
19	19	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	389	194
25	25	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	889	222
26	26	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	889	222
40	40	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	50-64	NA	389	97
41	41	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	889	222
48	48	Best CEG	1959	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	4,074	3,055
56	56	Best CEG	1998	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	0-29	NA	7,778	5,833
75	75	Best CEG	1984	Photos	Hill Slope	Headwall Swale	Convergent	Natural	50-64	NA	222	55
81	81	Best CEG	1930	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	1,481	1,110
82	82	Best CEG	1930	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	1,481	1,110
92	92	Best CEG	1947	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	648	486
99	99	Best CEG	1930	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	6,519	4,888
100	100	Best CEG	1930	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	11,852	8,889
101	101	Best CEG	1930	Photos	Hill Slope	Headwall Swale	Convergent	Natural	0-29	NA	11,852	8,889
119	119	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	6,519	1,629
154	154	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	0-29	Ukn	1,481	1,110
172	172	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	30-49	NA	1,481	740
173	173	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	648	324
174	174	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	1,481	1,110
186	186	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	75-84	NA	11,852	8,889
187	187	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	NA	18,519	13,888
189	189	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Convergent	Natural	65-74	NA	222	166
190	190	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Convergent	Natural	85+	NA	389	292
191	191	Best CEG	1998	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	1,778	1,333
233	233	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Convergent	Natural	85+	NA	67	49
240	240	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	65-74	NA	222	111
252	252	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Divergent	Natural	85+	Ukn	4,074	3,055
255	255	Best CEG	1984	Photos	Hill Slope	Inner Gorge	Divergent	Natural	75-84	Ukn	222	166
256	256	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Divergent	Natural	65-74	NA	67	16
262	262	Best CEG	1970	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	Ukn	648	486
265	265	Best CEG	1970	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	Ukn	1,481	1,110
266	266	Best CEG	1959	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural	0-29	Ukn	2,370	1,777
267	267	Best CEG	1959	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	Ukn	6,519	4,888
289	289	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Plannar	Natural	30-49	NA	1,481	1,110
293	293	Best CEG	1970	Photos	Stream Bank Failure	Inner Gorge		Natural	65-74	Ukn	648	486
294	294	Best CEG	1970	Photos	Stream Bank Failure	Inner Gorge		Natural	50-64	Ukn	648	486
295	295	Best CEG	1959	Photos	Stream Bank Failure	Inner Gorge		Natural	85+	Ukn	648	486
297	297	Best CEG	1947	Photos	Hill Slope	Inner Gorge		Natural	0-29	Ukn	389	292
298	298	Best CEG	1947	Photos	Hill Slope	Inner Gorge		Natural	30-49	NA	389	97
304	304	Best CEG	1970	Photos	Landing	Inner Gorge	Plannar	Mgt. Relate	0-29	Ukn	4,074	3,055
307	307	Best CEG	1970	Photos	Hill Slope	Inner Gorge	Plannar	Natural	30-49	Ukn	1.481	1,110
314	314	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	65-74	Ukn	370	277
339	339	Best CEG	1970	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	0-29	NA	1,481	370
341	341	Best CEG	1959	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	648	486
349	349	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	65-74	NA	1.037	777
360	360	Best CEG	1959	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	389	292

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Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
365	365	Best CEG	1998	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	389	194
387	387	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	75-84	Ukn	14,444	10,833
388	388	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	0-29	Ukn	12,963	9,722
396	396	Best CEG	1970	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	75-84	NA	389	97
406	406	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	75-84	Ukn	1,481	1,110
409	409	Best CEG	1970	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	4,074	2,037
417	417	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	30-49	Ukn	389	292
418	418	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	NA	67	49
429	429	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	370	277
430	430	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	NA	370	92
435	435	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	1,037	777
436	436	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	65-74	Ukn	2,370	1,777
440	440	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	222	166
443	443	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	Ukn	222	166
446	446	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	389	292
449	449	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	NA	389	292
451	451	Best CEG	1998	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	NA	389	97
468	468	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	Ukn	1,481	1,110
469	469	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	Ukn	1,481	1,110
470	470	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	Ukn	370	185
471	471	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	Ukn	370	277
475	475	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	648	324
476	476	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	Ukn	4,074	3,055
485	485	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	30-49	Ukn	2,370	1,185
486	486	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	67	49
487	487	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	222	111
493	493	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	65-74	Ukn	1,481	1,110
494	494	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	648	486
498	498	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	389	292
501	501	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	0-29	Ukn	222	166
502	502	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	222	166
503	503	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	0-29	Ukn	222	166
525	525	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	648	486
526	526	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	65-74	Ukn	648	486
527	527	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	75-84	Ukn	1,481	1,110
528	528	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	1,481	1,110
530	530	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	370	277
531	531	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	648	486
540	540	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	NA	222	166
542	542	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	Ukn	648	486
543	543	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	Ukn	648	324
547	547	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	889	444
548	548	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	30-49	Ukn	222	166
551	551	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	75-84	Ukn	389	292
569	569	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	0-29	NA	1,481	370
570	570	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	30-49	Ukn	648	486
571	571	Best CEG	1959	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	Ukn	648	486
572	572	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	Ukn	1,481	1,110
586	586	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	50-64	Ukn	4,074	3,055
591	591	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	50-64	Ukn	889	444
592	592	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	75-84	NA	2,444	611
596	596	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	50-64	NA	1,481	740
603	603	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Divergent	Natural	50-64	Ukn	1,481	1,110
608	608	Best CEG	1970	Photos	Hill Slope	Inner Gorge	Plannar	Natural		Ukn	16,898	8,448

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Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
615	615	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Plannar	Natural	50-64	Ukn	1,481	1,110
616	616	Best CEG	1970	Photos	Hill Slope	Inner Gorge		Natural	0-29	Ukn	222	166
617	617	Best CEG	1970	Photos	Hill Slope	Inner Gorge		Natural	50-64	Ukn	222	166
625	625	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mat. Relate	30-49	Ukn	389	292
627	627	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	50-64	NA	648	486
631	631	Best CEG	1984	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	0-29	Ukn	370	277
636	636	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	0-29	Ukn	389	292
645	645	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate		Ukn	1,527	763
656	656	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	65-74	Ukn	1,481	1,110
657	657	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	NA	648	486
661	661	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	2,370	1,185
669	669	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	648	486
670	670	Best CEG	1970	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	65-74	Ukn	648	486
677	677	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	85+	Ukn	222	166
710	710	Best CEG	1998	Photos	Road		Divergent	Mgt. Relate	65-74	NA	67	16
720	720	Best CEG	1959	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	NA	648	486
724	724	Best CEG	1998	Photos	Stream Bank Failure		Convergent	Natural	50-64	NA	67	16
727	727	Best CEG	1998	Photos	Stream Bank Failure		Divergent	Natural	85+	NA	67	16
731	731	Best CEG	1959	Photos	Stream Bank Failure		Plannar	Natural	65-74	NA	1,481	740
734	734	Best CEG	1959	Photos	Stream Bank Failure		Plannar	Natural	0-29	NA	2,370	1,185
735	735	Best CEG	1970	Photos	Stream Bank Failure			Natural	0-29	Ukn	6,519	4,888
740	740	Best CEG	1970	Photos	Road		Convergent	Mgt. Relate	50-64	NA	389	97
741	741	Best CEG	1970	Photos	Road		Convergent	Mgt. Relate	50-64	NA	222	55
750	750	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	50-64	NA	222	55
754	754	Best CEG	1947	Photos	Hill Slope		Convergent	Natural	50-64	Ukn	222	166
767	767	Best CEG	1998	Photos	Hill Slope		Convergent	Natural	50-64	NA	67	33
768	768	Best CEG	1998	Photos	Hill Slope		Convergent	Natural	30-49	NA	67	33
785	785	Best CEG	1984	Photos	Stream Bank Failure		Plannar	Natural	0-29	Ukn	648	486
786	786	Best CEG	1984	Photos	Stream Bank Failure		Plannar	Natural	30-49	Ukn	648	486
797	797	Best CEG	1998	Photos	Hill Slope		Plannar	Natural	85+	NA	67	16
817	817	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	85+	NA	389	97
834	834	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	389	194
839	839	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	889	222
850	850	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	1,481	740
851	851	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	1,481	370
852	852	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	648	162
853	853	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	75-84	Ukn	648	324
864	864	Best CEG	1984	Photos	Road		Plannar	Mgt. Relate	30-49	NA	2,444	611
882	882	Best CEG	1959	Photos	Skid Trail		Convergent	Mgt. Relate	30-49	NA	67	49
892	892	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	30-49	NA	648	486
893	893	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	Ukn	648	486
903	903	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	50-64	Ukn	6,519	4,888
915	915	Best CEG	1998	Photos	Skid Trail		Convergent	Mgt. Relate	85+	NA	67	33
916	916	Best CEG	1998	Photos	Skid Trail		Convergent	Mgt. Relate	75-84	NA	67	49
931	931	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	NA	1,481	740
932	932	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	75-84	Ukn	648	486
940	940	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	30-49	NA	648	324
942	942	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	85+	NA	648	486
956	956	Best CEG	1970	Photos	Skid Trail		Divergent	Mgt. Relate	50-64	NA	389	97
964	964	Best CEG	1959	Photos	Skid Trail		Divergent	Mgt. Relate	30-49	NA	222	55
998	998	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	30-49	NA	648	324
1019	1019	Best CEG	1970	Photos	Skid Trail		Plannar	Mgt. Relate	65-74	NA	389	194
1047	1047	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	30-49	NA	648	324
1050	1050	Best CEG	1970	Photos	Skid Trail			Mgt. Relate	30-49	Ukn	2,444	1,833

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Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1051	1051	Best CEG	1970	Photos	Skid Trail			Mgt. Relate	30-49	Ukn	2,444	1,833
1052	1052	Best CEG	1970	Photos	Skid Trail			Mgt. Relate	50-64	Ukn	2,444	1,833
1054	1054	Best CEG	1970	Photos	Skid Trail			Mgt. Relate	0-29	Ukn	1,481	1,110
1058	1058	Best CEG	1998	Photos	Hill Slope		Convergent	Natural	85+	NA	67	33
1060	1060	Best CEG	1970	Photos	Hill Slope		Convergent	Natural	30-49	Ukn	648	486
1067	1067	Best CEG	1970	Photos	Hill Slope		Plannar	Natural	65-74	NA	389	292
1088	1088	Best CEG	1970	Photos	Stream Bank Failure		N/A	Natural		Ukn	6,471	4,853
1098	1098	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	9,010,298	0
1100	1100	Best CEG	1959	Photos	Road		Convergent	Mgt. Relate	30-49	Ukn	67	33
1103	1103	Best CEG	1959	Photos	Road		Plannar	Mgt. Relate	50-64	Ukn	889	444
1104	1104	Best CEG	1959	Photos	Road		Plannar	Mgt. Relate	65-74	Ukn	67	16
1105	1105	Best CEG	1959	Photos	Road		Plannar	Mgt. Relate	50-64	Ukn	67	16
1143	1143	Best CEG	1970	Photos	Hill Slope		Convergent	Natural	50-64	NA	5,926	0
1144	1144	Best CEG	1970	Photos	Hill Slope		Convergent	Natural	30-49	NA	5,926	0
1150	1150	Best CEG	1970	Photos	Hill Slope		Plannar	Natural	65-74	NA	222	166
1169	1169	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	119,194	0
1170	1170	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	169,366	0
1195	1195	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	2,125,677	0
1196	1196	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	590,261	0
1197	1197	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	224,662	0
1198	1198	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	184,370	0
1199	1199	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	339,888	0
1209	1209	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	208,882	0
1210	1210	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	75,912	0
1211	1211	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	181,924	0
1212	1212	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	200,166	0
1213	1213	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	1,092,839	0
1245	1245	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	215,941	0
1247	1247	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	387,987	0
1248	1248	Best CEG	1900	Photos	Translational Slide		N/A	Natural	30-49	NA	29,630	0
1249	1249	Best CEG	1984	Photos	Stream Bank Failure		N/A	Natural		NA	4,399	3,299
1262	1262	Best CEG	1998	Photos	Road	Headwall Swale	Plannar	Mgt. Relate		NA	648	324
1268	1268	Best CEG	1998	Photos	Road	Inner Gorge	Plannar	Mgt. Relate		NA	389	97
1269	1269	Best CEG	1998	Photos	Hill Slope		Convergent	Natural		NA	2,370	1,777
1277	1277	Best CEG	1998	Photos	Stream Bank Failure		Convergent	Natural		NA	14,052	10,538
1278	1278	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	222	111
1279	1279	Best CEG	1998	Photos	Road	Inner Gorge	Plannar	Mgt. Relate		NA	222	111
1280	1280	Best CEG	1998	Photos	Road	Headwall Swale	Convergent	Mgt. Relate		NA	19,641	14,731
1281	1281	Best CEG	1998	Photos	Landing		Convergent	Mgt. Relate		NA	867	433
1282	1282	Best CEG	1998	Photos	Landing		Convergent	Mgt. Relate		NA	119	0
1283	1283	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	3,804	1,902
1284	1284	Best CEG	1998	Photos	Road	Headwall Swale	Convergent	Mgt. Relate		NA	648	324
1285	1285	Best CEG	1998	Photos	Road		Plannar	Mgt. Relate		NA	222	111
1286	1286	Best CEG	1998	Photos	Stream Bank Failure		Divergent	Natural		NA	33	8
1299	1299	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	222	111
1300	1300	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	222	111
1301	1301	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	648	324
1302	1302	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	648	324
1303	1303	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	1,481	740
1304	1304	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Plannar	Natural		NA	33	0
1305	1305	Best CEG	1998	Photos	Road	Headwall Swale	Convergent	Mgt. Relate		NA	648	324
1306	1306	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	370	185
1307	1307	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	3,223	1,611
1308	1308	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	7,152	3,575

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Man#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1309	1309	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural	Steps	NA	222	66
1310	1310	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	222	66
1311	1311	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Convergent	Natural		NA	389	292
1312	1312	Best CEG	1998	Photos	Stream Bank Failure	initial conge	Plannar	Natural		NA	33	0
1313	1313	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	370	185
1314	1314	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	67	33
1315	1315	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	370	185
1316	1316	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	222	55
1317	1317	Best CEG	1998	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate		NA	370	185
1318	1318	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	648	162
1319	1319	Best CEG	1998	Photos	Stream Bank Failure		Plannar	Natural		NA	222	55
1320	1320	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	11,740	2,935
1325	1325	Best CEG	1998	Photos	Road	Inner Gorge	Convergent	Mgt. Relate		NA	2,370	1,777
1331	1331	Best CEG	1998	Photos	Road	and a second	and the Berlin	Mgt. Relate		NA	111	0
1332	1332	Best CEG	1984	Photos	Hill Slope			Natural		NA	22	11
1333	1333	Best CEG	1998	Photos	Hill Slope			Natural		NA	15	7
1334	1334	Best CEG	1998	Photos	Hill Slope			Natural		NA	15	7
1335	1335	Best CEG	1984	Photos	Hill Slope			Natural		NA	222	199
1336	1336	Best CEG	1984	Photos	Hill Slope			Natural		NA	44	0
1337	1337	Best CEG	1900	Photos	Translational Slide			Natural		NA	336,633	0
1338	1338	Best CEG	1998	Photos	Road		Convergent	Mgt. Relate		NA	104	0
1339	1339	Best CEG	1998	Photos	Road		Convergent	Mgt. Relate		NA	89	0
1340	1340	Best CEG	1998	Photos	Road		Convergent	Mgt. Relate		NA	370	296
1341	1341	Best CEG	1984	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	4	4
1342	1342	Best CEG	1984	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	4	4
1343	1343	Best CEG	1984	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	267	53
1344	1344	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate		NA	556	277
1346	1346	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate		NA	67	33
1347	1347	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate		NA	67	33
1348	1348	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	44	22
1349	1349	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	0	0
1362	1362	Best CEG	1998	Photos	Road	Inner Gorge	Convergent	Mgt. Relate		NA	4,074	1,018
1373	1373	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	4,519,913	0
1377	1377	Haschak	1984	Field	Road	Headwall Swale	Convergent	Mgt. Relate	75-84	NA	556	0
1378	1378	Haschak	1900	Field	Hill Slope	Headwall Swale	Convergent	Natural	65-74	111	2,222	555
1379	1379	Haschak	1984	Field	Hill Slope	Headwall Swale	Plannar	Natural	65-74	NA	417	0
1380	1380	Haschak	1984	Field	Hill Slope	Headwall Swale	Plannar	Natural	65-74	NA	417	0
1381	1381	Haschak	1984	Field	Road	Inner Gorge	Convergent	Mgt. Relate	75-84		778	0
1400	1400	Haschak	1970	Field	Hill Slope	Inner Gorge	Plannar	Natural	50-64		46	41
1401	1401	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	1,736	173
1402	1402	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	23	0
1403	1403	Haschak	1970	Field	Hill Slope		Plannar	Natural	30-49	NA	23	0
1404	1404	Haschak	1947	Field	Hill Slope	Land Barrie	Plannar	Natural	30-49	NA	30	107
1405	1405	Haschak	1984	Field	Skid Trail	Inner Gorge	Convergent	Ngt. Relate	50-64		020	437
1406	1406	Haschak	1984	Field	Hill Slope		Convergent	Natural	50-64		417	291
1407	1407	Haschak	1900	Field	Hill Slope	Inner Carrie	Plannar	Natural	00-04		417	200
1408	1408	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65.74		02	03
1409	1409	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65.74	1	110	110
1410	1410	Hacobak	1009	Field	Hill Slope	Inner Gorge	Plannar	Natural	65.74		1 333	1 100
1411	1411	Hacobok	1000	Field	Hill Slope	inner Golge	Divergent	Natural	50.64		1,000	206
1412	1412	Haschak	1009	Field	Road		Plannar	Mat Relate	50-64		278	278
1413	1413	Haschak	1930	Field	Skid Trail	Inner Gorge	Plannar	Mot. Relate	65-74	11	111	55
1414	1414	Haschak	1047	Field	Hill Slope	initer Goige	Plannar	Natural	50-64	NA	400	0
1415	1410	Idoular	1041	1 Iolu	i ili olopo		, infinition	, total of	00.04		100	0

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Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1441	1441	Fisher	1998	Field	Road	Inner Gorge		Mgt. Relate	30-49	Ш	200	200
1442	1442	Fisher	1998	Field	Road	Inner Gorge		Mgt. Relate	30-49	11	200	200
1496	1496	Best CEG	1998	Photos	Stream Bank Failure		Plannar	Natural			434	216
1538	1538		0		Unknown			Natural			0	0
1539	1539		0		Unknown			Natural			0	0
1540	1540		0		Unknown			Natural			0	0
1541	1541		0		Unknown			Natural			0	0
1542	1542	Best CEG	1998	Photos	Hill Slope		Convergent	Natural			14,052	10,538
1546	1546		0		Unknown			Natural			0	0
1547	1547		0		Unknown			Natural			0	0
1584	1584	Best CEG	1998	Photos	Road		Plannar	Mgt. Relate			426	212
1586	1586	Best CEG	2004	Photos	Road		Plannar	Mgt. Relate			256	63
1587	1587	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			50	0
1588	1588	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			50	0
1589	1589	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			1,185	592
1590	1590	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			144	0
1592	1592	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			50	0
1612	1612	Best CEG	1998	Photos	Hill Slope		Plannar	Natural			144	0
1613	1613	Best CEG	2004	Photos	Stream Bank Failure		Plannar	Natural			144	108
1614	1614	Best CEG	2004	Photos	Stream Bank Failure		Plannar	Natural			256	102
1615	1615	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			50	0
1616	1616	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			50	12
1617	1617	Best CEG	2004	Photos	Hill Slope		Plannar	Natural			256	127
26	1627		0		THP Site, no data			No Info.			0	0
1628	1628		0		THP Site, no data			No Info.			0	0
1629	1629		0		THP Site, no data			No Info.			0	0
1630	1630		0		THP Site, no data			No Info.			0	0
1631	1631		0		THP Site, no data			No Info.			0	0
25	1632		0		THP Site, no data			No Info.			0	0
17	1633		0		THP Site, no data			No Info.			0	0
1634	1634		0		THP Site, no data			No Info.			0	0
1678	1678		0		THP Site, no data			No Info.			0	0
1679	1679		0		THP Site, no data			No Info.			0	0
1680	1680	í.	0		THP Site, no data			No Info.			0	0
1681	1681		0		THP Site, no data			No Info.			0	0
1743	1743		0		THP Site, no data			No Info.			0	0
1744	1744		0		THP Site, no data			No Info.			0	0
1745	1745	e	0		THP Site, no data			No Info.			0	0
1746	1746	6	0		THP Site, no data			No Info.			0	0
1748	1748		0		THP Site, no data			No Info.			0	0
1749	1749		0		THP Site, no data			No Info.			0	0
1771	1771		0		THP Site, no data			No Info.			0	0
1772	1772	1.1.1	0		THP Site, no data			No Info.			0	0
1773	1773	Haschak	2010	Field	Road		Convergent	Mgt. Relate	50-64	111	444	444
75	1774	Haschak	1984	Field	Translational Slide		Convergent	Natural	50-64	111	5,556	4,444
1143	1775	Haschak	1901	Field	Hill Slope		Plannar	Natural	65-74	11	333	267
1776	1776	Haschak	1998	Field	Stream Bank Failure		Convergent	Natural	50-64		556	556
1777	1777	Haschak	1998	Field	Stream Bank Failure	Inner Gorae	Plannar	Natural	75-84	11	67	67
1778	1778	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	11	222	222
1770	1770	Haschak	1959	Field	Hill Slope		Plannar	Natural	75-84	NA	2,222	1,111
1780	1780	Haschak	1959	Field	Translational Slide		Plannar	Natural	75-84	NA	8,889	4,444
178	1781	Haschak	1959	Field	Translational Slide	Inner Gorae	Plannar	Natural	65-74	ſ	2,500	2,500
178	1783	Haschak	1984	Field	Translational Slide		Plannar	Natural	50-64	11	1,111	1,111
		. Internetic	1001	FT-14	Oler and Dealt Falling		-	Alest and	ED CA		0	

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Map#	ID #	Inspector	Year **	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1785	1785	Haschak	1984	Field	Stream Bank Failure	Inner Gorge		Natural	50-64	1	0	0
1800	1800	Haschak	2010	Field	Road		Convergent	Mgt. Relate	50-64	111	625	0
1829	1829	Haschak	2010	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	11	556	556
1875	1875	Pehl	1901	Field	THP Site, no data			No Info.			0	
1901	1901	Haschak	1984	Field	Unknown		Plannar	Natural	65-74	NA	333	0
1902	1902	Haschak	1984	Field	Skid Trail		Plannar	Mgt. Relate	50-64	NA	278	83
1903	1903	Haschak	1900	Field	Translational Slide		Plannar	Natural	75-84	Ш	1,111	0
1904	1904	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	11	333	167
1905	1905	Haschak	1984	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	185	185
1906	1906	Haschak	1959	Field	Hill Slope	Inner Gorge		Natural	65-74		625	438
1907	1907	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	1,250	1,125
1908	1908	Haschak	1998	Field	Hill Slope		Plannar	Natural	50-64	NA	296	0
1909	1909	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	85+	11	556	556
1910	1910	Haschak	1970	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	1	417	417
1911	1911	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	1	278	278
1912	1912	Haschak	1984	Field	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	1	556	444
1913	1913	Haschak	1984	Field	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	1	556	444
1914	1914	Haschak	1959	Field	Unknown	Inner Gorge	Convergent	Natural	75-84	- F	556	556
1915	1915	Haschak	1998	Field	Unknown	Inner Gorge		Natural	65-74		222	222
1917	1917	Haschak	1984	Field	Unknown	Inner Gorge	Plannar	Natural	75-84	11	1,875	1,500
1918	1918	Haschak	1998	Field	Unknown	Inner Gorge	Convergent	Natural	65-74	111	185	185
1920	1920	Haschak	2010	Field	Road	Headwall Swale	Convergent	Mgt. Relate	50-64	III	400	360
1946	1946	Haschak	1959	Field	Unknown	Inner Gorge	Plannar	Natural	65-74	11	347	243
1947	1947	Haschak	2004	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	11	278	278
1959	1959	Haschak	1900	Field	Translational Slide		Convergent	Natural	65-74	00	463	231
1960	1960	Haschak	1900	Field	Translational Slide		Convergent	Natural	65-74	111	463	231
1961	1961	Haschak	1984	Field	Hill Slope		Plannar	Natural	50-64	11	44	11
1962	1962	Haschak	1984	Field	Hill Slope	Inner Gorge	Plannar	Natural	50-64	Ш	556	278
1963	1963	Haschak	1984	Field	Hill Slope		Convergent	Natural	50-64	NA	278	0
1964	1964	Haschak	1984	Field	Hill Slope		Convergent	Natural	65-74	NA	417	
1965	1965	Haschak	1984	Field	Hill Slope		Convergent	Natural	50-64	NA	185	0
1967	1967	Haschak	2010	Field	Translational Slide		Convergent	Natural	50-64	III	6,250	3,125

Delivery Avg

\*Landslide information for this report comes from two main sources, aerial photo analysis or field observations. Information about a landslide is entered into a database and the Slide ID number is entered into GIS and appears on the maps. Information about landslides entered by professionals other than a licensed geologist should be considered as informational until reviewed by a licensed geologist.

\*\*Tim Best, CEG analyzed six sets of aerial photos to identify landslides (1947, 1959, 1970, 1984, 1998 and 2004). The year in this report is usually the year of the photos on which the slide was first observed. If the year is 1900 it means the slide is ancient. If the year is 1930 means the slide was old in the 1947 photos. If the year is 2010 it means the slide occurred after the most recent photos in 2004.

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# Unstable Areas in the Big Pepperwood Creek PWS Map Sheet 1 of 3

January 23, 2024







COAST AREA OFFICE RESOURCE MANAGEMENT

# Unstable Areas in the Big Pepperwood Creek PWS Map Sheet 2 of 3



**RESOURCE MANAGEMENT** 

# Unstable Areas in the Big Pepperwood Creek PWS Map Sheet 3 of 3



**RESOURCE MANAGEMENT**
## Landslides\*

Planning Watershed Black Point

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
30	30	Best CEG	1984	Photos	Road	Headwall Swale	Divergent	Mgt. Relate	0-29	NA	222	55
239	239	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	0-29	NA	889	444
261	261	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural	85+	Ukn	222	55
787	787	Best CEG	1984	Photos	Stream Bank Failure		Plannar	Natural	30-49	Ukn	648	486
788	788	Best CEG	1984	Photos	Stream Bank Failure		Plannar	Natural	30-49	Ukn	6,519	4,888
1396	1396	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	Ц	194	174
1397	1397	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	11	46	41
1398	1398	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	H-	30	27
1399	1399	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	111	56	49
1497	1497	Heath	1970	Field	Hill Slope			Natural	65-74	н	0	0
1498	1498	Heath	1959	Field	Hill Slope			Natural	30-49	11	0	0
1499	1499	Heath	1900	Field	Hill Slope			Natural	75-84	- 0	0	0
1500	1500	Heath	1900	Field	Hill Slope			Natural	65-74	11	833	624
1501	1501	Heath	1900	Field	Hill Slope			Natural	65-74	11	556	277
1502	1502	Heath	1998	Field	Hill Slope			Natural	65-74	11	1,250	937
1503	1503	Heath	1984	Field	Hill Slope			Natural	75-84	11	0	0
1504	1504	Heath	1984	Field	Hill Slope			Natural	65-74	- 11	89	17
1505	1505	Heath	1984	Field	Skid Trail			Mgt. Relate	50-64	11	292	218
1506	1506	Heath	1984	Field	Hill Slope			Natural	50-64	11	1,111	555
1507	1507	Heath	1984	Field	Skid Trail			Mgt. Relate	50-64	11	833	624
1508	1508	Heath	1984	Field	Skid Trail			Mgt. Relate	50-64	11	833	624
1509	1509	Heath	1900	Field	Hill Slope			Natural	50-64		1,250	937
1510	1510	Heath	1998	Field	Hill Slope			Natural	50-64		1,389	694
1511	1511	Heath	1984	Field	Skid Trail			Mgt. Relate	50-64	- II	0	0
1512	1512	Heath	1984	Field	Skid Trail			Mgt. Relate	50-64	11.	0	0
1513	1513	Heath	1984	Field	Road			Mgt. Relate	50-64	11	148	111
1514	1514	Heath	1984	Field	Road			Mgt. Relate	50-64	11	74	55
1515	1515	Heath	1900	Field	Hill Slope			Natural	50-64	11	694	173
1516	1516	Heath	1984	Field	Hill Slope			Natural	50-64	- tî	833	208
1517	1517	Haschak	1984	Field	Hill Slope			Natural	50-64	. 11	1,111	555
1518	1518	Haschak	1959	Field	Hill Slope		Plannar	Natural	50-64	- 11	296	148
1519	1519	Haschak	1984	Field	Hill Slope			Natural	50-64	- 11	69	34
1520	1520	Haschak	1959	Field	Hill Slope			Natural	50-64	11	296	148
1521	1521	Haschak	1984	Field	Skid Trail			Mgt. Relate	75-84	П	333	83
788	1522	Haschak	1984	Field	Skid Trail		Convergent	Mgt. Relate	50-64	11	926	462
787	1523	Haschak	1984	Field	Hill Slope			Natural	65-74	If	1,296	648
1524	1524	Haschak	1984	Field	Hill Slope			Natural	50-64	. 11	67	16
1525	1525	Haschak	1984	Field	Skid Trail			Mgt. Relate	75-84	11	167	41
1688	1688	Haschak	0		THP Site, no data			No Info.			0	0
1689	1689	Haschak	0		THP Site, no data			No Info.			0	0
1690	1690	Haschak	0		THP Site, no data			No Info.			0	0
1691	1691	Haschak	0		THP Site, no data			No Info.			0	0
1692	1692	Haschak	0		THP Site, no data			No Info.			0	0
1693	1693	Haschak	0		THP Site, no data			No Info.			0	0
1897	1897	Haschak	1901	Field	Hill Slope	Inner Gorge	Convergent	Natural	75-84	н	208	208
1898	1898	Haschak	1998	Field	Hill Slope	Inner Gorge	Plannar	Natural	50-64	11	162	130
1899	1899	Haschak	1998	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	93	74
1900	1900	Haschak	1998	Field	Hill Slope	Inner Gorge	Divergent	Natural	50-64	Ш	296	119

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### Planning Watershed Black Point

Map# ID #	Inspector	Year**	Source	Slide Type	Slo	pe Type	Slope	Form	Association	Slope	Stream	Total Y	ds Delivered
Summa	ry for 'PW N	ame' = B	lack Poir	nt (48 detail reco	ords)		- 6.5						
				D	elivery	Avg	311	Min	0	Max	4,88	<sup>8</sup> Sun	14,944

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\*\*Tim Best, CEG analyzed six sets of aerial photos to identify landslides (1947, 1959, 1970, 1984, 1998 and 2004). The year in this report is usually the year of the photos on which the slide was first observed. If the year is 1900 it means the slide is ancient. If the year is 1930 means the slide was old in the 1947 photos. If the year is 2010 it means the slide occurred after the most recent photos in 2004.

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# Unstable Areas in the Black Point PWS Map Sheet 1 of 4



Instability

COAST AREA OFFICE **RESOURCE MANAGEMENT** 

# Unstable Areas in the Black Point PWS Map Sheet 2 of 4



Instability

# Unstable Areas in the Black Point PWS Map Sheet 3 of 4



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Sheet

2



COAST AREA OFFICE RESOURCE MANAGEMENT





## Landslides\*

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
28	28	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	50-64	NA	648	162
43	43	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	0-29	NA	222	55
44	44	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	389	97
50	50	Best CEG	1970	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	1,481	370
65	65	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural	75-84	NA	67	16
66	66	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Divergent	Natural	50-64	NA	67	16
67	67	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Divergent	Natural	85+	NA	222	55
93	93	Best CEG	1984	Photos	Hill Slope	Headwall Swale	Convergent	Natural	30-49	NA	648	324
127	127	Best CEG	1984	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	648	324
250	250	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	30-49	Ukn	648	486
251	251	Best CEG	1959	Photos	Hill Slope	Inner Gorge	Convergent	Natural	65-74	Ukn	648	486
253	253	Best CEG	1984	Photos	Hill Slope	Inner Gorge	Divergent	Natural	50-64	NA	67	16
290	290	Best CEG	1984	Photos	Hill Slope	Inner Gorge	Plannar	Natural	30-49	Ukn	1,481	1,110
746	746	Best CEG	1959	Photos	Skid Trail		Divergent	Mgt. Relate	30-49	NA	222	55
759	759	Best CEG	1984	Photos	Hill Slope		Convergent	Natural	50-64	NA	67	16
780	780	Best CEG	1959	Photos	Hill Slope		Divergent	Natural	50-64	NA	389	194
783	783	Best CEG	1970	Photos	Hill Slope		Divergent	Natural	85+	NA	648	486
792	792	Best CEG	1998	Photos	Hill Slope		Plannar	Natural	50-64	NA	648	324
799	799	Best CEG	1970	Photos	Hill Slope		Plannar	Natural	30-49	NA	4,074	1,018
838	838	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	0-29	NA	2,370	592
849	849	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	648	324
918	918	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	30-49	NA	222	111
919	919	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	50-64	Ukn	389	292
922	922	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	0-29	NA	222	55
938	938	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	NA	648	486
939	939	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	85+	NA	648	324
952	952	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	30-49	NA	67	33
974	974	Best CEG	1998	Photos	Skid Trail		Divergent	Mgt. Relate	50-64	NA	222	166
979	979	Best CEG	1970	Photos	Skid Trail		Divergent	Mgt. Relate	50-64	NA	389	97
980	980	Best CEG	1970	Photos	Skid Trail		Divergent	Mgt. Relate	75-84	NA	222	111
986	986	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	0-29	NA	222	55
987	987	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	75-84	NA	222	55
988	988	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	65-74	NA	222	111
989	989	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	50-64	NA	389	97
1000	1000	Best CEG	1970	Photos	Skid Trail		Divergent	Mgt. Relate	50-64	Ukn	648	486
1003	1003	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	65-74	NA	1,481	370
1020	1020	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	30-49	NA	222	55
1065	1065	Best CEG	1984	Photos	Hill Slope		Divergent	Natural	30-49	NA	648	324
1099	1099	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	28,885,683	0
1200	1200	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	3,999,571	0
1219	1219	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	2,625,584	0
1220	1220	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	1,240,194	0
1221	1221	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	271,840	0
1224	1224	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	643,376	0
1225	1225	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	1,432,993	0
1235	1235	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	1,795,857	0
1236	1236	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	2,428,156	0
1291	1291	Best CEG	1984	Photos	Stream Bank Failure		Plannar	Natural		NA	33	8
1371	1371	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	41,994,496	0

Planning Watershed Mouth of the Gualala River

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### Planning Watershed Mouth of the Gualala River

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1372	1372	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	3,339,083	0
1375	1375	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	5,709,893	0
1376	1376	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	32,694,094	0
1384	1384	Haschak	1984	Field	Hill Slope		Plannar	Natural	50-64	NA	139	0
1392	1392	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Convergent	Natural	65-74	111	833	749
1393	1393	Haschak	1984	Field	Landing		Convergent	Mgt. Relate	50-64	11	556	416
1394	1394	Haschak	1984	Field	Road		Plannar	Mgt. Relate	65-74	11	1,111	555
1395	1395	Haschak	1984	Field	Road	Inner Gorge	Convergent	Mgt. Relate	50-64	111	278	0
1443	1443	Haschak	1970	Field	Road	Inner Gorge	Convergent	Mgt. Relate	30-49	10	1,111	277
1444	1444	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	Ш	667	667
1445	1445	Haschak	1900	Field	Hill Slope		Convergent	Natural	50-64	NA	741	74
1530	1530	Haschak	1998	Field	Hill Slope	Inner Gorge	Convergent	Natural	75-84	III	694	347
1577	1577	Best CEG	2004	Photos	Hill Slope		Convergent	Natural			256	63
1578	1578	Best CEG	2004	Photos	Hill Slope		Convergent	Natural			1,185	296
1654	1654		0		THP Site, no data			No Info.			0	0
1655	1655		0		THP Site, no data			No Info.			0	0
1656	1656		0		THP Site, no data			No Info.			0	0
1657	1657		0		THP Site, no data			No Info.			0	0
1698	1698		0		THP Site, no data			No Info.			0	0
1699	1699		0		THP Site, no data			No Info.			0	0
1700	1700		0		THP Site, no data			No Info.			0	0
1701	1701		0		THP Site, no data			No Info.			0	0
1709	1709		0		THP Site, no data			No Info.			0	0
1710	1710		0		THP Site, no data			No Info.			0	0
1711	1711		0		THP Site, no data			No Info.			0	0
1712	1712		0		THP Site, no data			No Info.			0	0
1713	1713		0		THP Site, no data			No Info.			0	0
1747	1747		0		THP Site, no data			No Info.			0	0
1751	1751		0		THP Site, no data			No Info.			0	0
1767	1767		0		THP Site, no data			No Info.			0	0
1768	1768		1998	Field	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	111	667	333
1769	1769		0		THP Site, no data			No Info.			0	0
1770	1770		0		THP Site, no data			No Info.			0	0
1807	1807	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	m	15	15
1820	1820	Haschak		Field	THP Site, no data			No Info.		1	0	
1821	1821	Haschak		Field	THP Site, no data			No Info.			0	
1822	1822	Haschak		Field	THP Site, no data			No Info.			0	
1823	1823	Haschak		Field	THP Site, no data			No Info.			0	
1824	1824	Haschak		Field	THP Site, no data			No Info.			0	
1825	1825	Haschak		Field	THP Site, no data			No Info.			0	
1826	1826	Haschak		Field	THP Site, no data			No Info.			0	
1827	1827	Haschak		Field	THP Site, no data			No Info.			0	
1828	1828	Haschak		Field	THP Site, no data			No Info.			0	
1839	1839	Haschak	1959	Field	Road	Inner Gorge	Plannar	Mgt. Relate	75-84	1	333	100
1840	1840	Haschak	1959	Field	Hill Slope		Convergent	Natural	65-74	10	333	267
1841	1841	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	167	150
1843	1843	Haschak	1959	Field	Hill Slope	Inner Gorge	Convergent	Natural	75-84	11	125	125
1844	1844	Haschak	1930	Field	Hill Slope	Inner Gorge	Convergent	Natural	65-74	1	2,222	2,222
1845	1845	Haschak	1970	Field	Hill Slope		Convergent	Natural	65-74	1	74	0
1846	1846	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	1	556	389
1847	1847	Haschak	1901	Field	Stream Bank Failure		Plannar	Natural	30-49	11	278	250
1848	1848	Haschak	1901	Field	Hill Slope		Plannar	Natural	75-84	NA	1,111	0
1849	1849	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	75-84		56	56
1850	1850	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	75-84	. 11	111	111

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#### Mouth of the Gualala River **Planning Watershed**

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1851	1851	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	75-84	11	116	116
1852	1852	Haschak	1930	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	222	222
1853	1853	Haschak	1959	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	0	33	30
1854	1854	Haschak	1900	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	IL	583	583
1855	1855	Haschak	1901	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	11	389	389
1859	1859	Haschak	1900	Field	Unknown	Inner Gorge	Convergent	Natural	65-74	11	778	622
1878	1878	Haschak	1970	Field	Road	Headwall Swale	Convergent	Mgt. Relate	50-64	III	1,111	556
1894	1894	Haschak	1998	Field	Skid Trail		Convergent	Mgt. Relate	65-74	111	67	50
1944	1944	Haschak	1998	Field	Hill Slope		Plannar	Natural	50-64	11	133	0
1945	1945	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Convergent	Natural	75-84	U.	167	83
1948	1948	Haschak	1930	Field	Stream Bank Failure	Inner Gorge	Convergent	Natural	65-74	11	1,250	1,125
1968	1968	Haschak	1998	Field	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	75-84	11	1,667	1,333
1970	1970	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Convergent	Natural	65-74	- 11	1,111	1,000
1971	1971	Haschak	1970	Field	Unknown	Inner Gorge	Plannar	Natural	85+	11	111	56
1972	1972	Haschak	2010	Field	Unknown	Inner Gorge	Convergent	Natural	65-74	- 11	356	249
1973	1973	Haschak	1901	Field	Unknown	Inner Gorge	Plannar	Natural	85+	11	2,222	2,222
1974	1974	Haschak	1998	Field	Translational Slide		Plannar	Natural	30-49	11	20,000	1,000
1975	1975	Haschak	1984	Field	Unknown	Inner Gorge	Plannar	Natural	65-74	- 11	556	111
1977	1977	Haschak	1998	Field	Unknown		Plannar	Natural	50-64	NA	167	0
1978	1978	Haschak	1984	Field	Unknown	Inner Gorge	Convergent	Natural	65-74	- 11	222	111
1979	1979	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	. 11	500	500
1980	1980	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	H	200	200
1981	1981	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Convergent	Natural	65-74	- 11	278	278
1982	1982	Haschak	1984	Field	Hill Slope		Plannar	Natural	65-74	NA	278	0
1983	1983	Haschak	1970	Field	Unknown	Inner Gorge	Plannar	Natural	65-74	1	278	0
1984	1984	Haschak	1998	Field	Road	Inner Gorge	Plannar	Mgt. Relate	65-74	1	556	278
1985	1985	Haschak	1901	Field	Unknown	Inner Gorge	Plannar	Natural	30-49	1	625	188
1986	1986	Haschak	1901	Field	Unknown	Inner Gorge	Plannar	Natural	75-84	1	1,667	1,667
1987	1987	Haschak	1959	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	1	370	370
	Summa	ary for 'PW I	Vame' = I	Mouth of	the Gualala River (132	detail records)						
		10			Deliver	w Ava	249 Min	0	Max	2,2	22 Sum	30,568

Delivery

Avg 249

\*Landslide information for this report comes from two main sources, aerial photo analysis or field observations. Information about a landslide is entered into a database and the Slide ID number is entered into GIS and appears on the maps. Information about landslides entered by professionals other than a licensed geologist should be considered as informational until reviewed by a licensed geologist.

\*\*Tim Best, CEG analyzed six sets of aerial photos to identify landslides (1947, 1959, 1970, 1984, 1998 and 2004). The year in this report is usually the year of the photos on which the slide was first observed. If the year is 1900 it means the slide is ancient. If the year is 1930 means the slide was old in the 1947 photos. If the year is 2010 it means the slide occurred after the most recent photos in 2004.





357.21

Additional Page 2,5, 2024 RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT

Instability







Additional RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT

357.24

# Gualala Redwood Timber LLC (GRT) and Gualala Community Services District (GCSD) Storm Proofing the Sewer Treatment Plant Access Road 2017 Action Plan

The above parties plan to take corrective action to repair minor storm damage that occurred during the 2016-2017 winter period to GCSD's sewer treatment access road where it crosses over Gualala Redwood Timber holding. Said work is to be completed prior to October 15<sup>th</sup>, 2017.

### Scope of Work:

Work involves a general reshaping of the road running surface to facilitate better drainage and to hydrologically disconnect road from watercourses in the area to the degree feasible; see attached map and road point table. Work consists of 1) placing rolling dips across the road surface to break long runs of collected surface runoff, 2) replacement of worn ditch relief pipes and watercourse crossing culverts where called for, 3) restoring road drainage to established inboard ditch lines as necessary, 4) conduct standard road maintenance, and 5) resurface the road with rock to allow all season access.

Prepared by Gualala Redwood Timber LLC

Charll K Stoneman, RPF#2375

June 27, 2017

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357.25

## **GRT & GCSD Sewer Treatment Road Storm Proofing**



**RESOURCE MANAGEMENT** 

MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC)	PROPOSED Culvert Diameter Size (PC)	Geologist used? Yes or No	1600? Yes or No	Potential Sediment Discharge (PSD) in cu. yds. (See Key)	Implementation Priority (IP) (See Key)
	MITIGATION AND/OI	RMANAGEMEN	T MEASURES: If ne	eded, provide addition	hal details of sit	e; and/or o	lescribe proposed treatm	lent
		*NOTE:	Write "NA" or "	" if a box is not app	licable to the	map poir	nt	
MP: A to B	SD: Tip & Dip Out	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: Incidental Road Runoff	IP: Low
	Management Measures Starting from the flat ab established inboard dito Inboard Ditch Line- Wh	s: pove the entrance ch line. Install rol ere present mair	e to the sewer treatm ling dips at or near de Itain the existing inbo	nent facility "tip and c esignated locations as pard ditch in an ungra	dip" road runni flagged in the ded, vegetated	ng surface field. I, condition	out from the road cutba n.	ank and/or from the
MP: A.1	SD: Ditch Relief Culvert	WC: NA	EC: 18"	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measures Existing, functional 18"	s: X 40' CMP cross-	drain with downspou	t. Leave intact and m	naintain as nec	essary.		
MP: B to C	SD: Tip & Dip Out	WC: NA	EC: NA	PC: NA	Geo Used?	1600? NA	PSD: Incidental Road Runoff	IP: Low
457.27	Management Measures The road transitions bac inboard ditch line as fea Inboard Ditch Line- Wh	s: ck with an establ ssible. Install roll ere present mair	ished inboard ditch li ing dips at or near de stain the existing inbo	ne. "Tip and dip" roa signated locations as pard ditch in an ungra	d running surfa flagged in the ided, vegetated	ace out fro field. d, condition	m the road cutbank and n.	/or the established
MP: B.1	SD: Ditch Relief Culvert	WC: NA	EC: 18"	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measure Worn out 18" X 40' CMI outfall as needed. Bern Install rolling dip across	s: P ditch relief cros n or block downs the road surface	s-drain. Replace wit lope side of culvert o from cut bank imme	h new culvert of same pening to direct ditch diately below (down)	e size and leng flow through grade) of pipe	th. Set cul pipe. entrance a	vert to grade, and down s feasible.	spout or rock armor
MP: C to D	SD: Tip & Dip In or Crown Road Surface	WC: NA	EC: 18"	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measure	S:					inte C and D transition r	
	Maintain inboard ditch to the ditch line or as a	line and existing crowned road su	18" cross drain culve rface.	rt at road junction en	trance. Betwe	en map po		oad drainage as a "tip-in

MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC)	PROPOSED Culvert Diameter Size (PC)	Geologist used? Yes or No	1600? Yes or No	Potential Sediment Discharge (PSD) in cu. yds. (See Key)	Implementation Priori (IP) (See Key)
	MITIGATION AND/O	RMANAGEMEN	T MEASURES: If ne	eded, provide addition	nal details of sit	te; and/or o	lescribe proposed treatm	lent
	-	*NOTE	: Write "NA" or "	" if a box is not app	olicable to the	map poir	nt	
	Management Measure "Tip and dip" road runn by the map and in the fi Inboard Ditch Line- Ma	s: ing surface out fi ield. intain the existin	rom the established i g inboard ditch in an	nboard ditch line as f ungraded, vegetated	easible. Install	rolling dip	os from the road crest at	the ditch line as marked
MP: D.1	SD: Worn Out Ditch Relief Culvert	WC: NA	EC: 18"	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measure	s: Remove or ab	andon existing 18" di	tch relief culvert at th	his location in f	avor of ne	w installation at Point D.	2.
MP: D.2	SD: New Ditch Relief Culvert	WC: NA	EC: 18"	PC: 18"	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measures	Install new min	imum 18" by 40' ditch	n relief pipe at design	ated location r	oughly 50 f	feet above road junction	as shown on map.
MP: E to F	SD: Tip & Dip In	WC: NA	EC: NA	PC: NA	Geo Used?	1600? NA	PSD: NA	IP: NA
357,26	Management Measure headwall of the slide. R maintained along the o	s: Existing road g load runoff along utboard edge of	grade needs be transi g this section of road the road to prevent o	tioned from a flat run is to be tilted in and o verland flow dischar	nning surface to directed to the ge from the roa	o a slight ir inboard di ad surface	nslope condition as the r tch line. A berm is to be onto the slide.	oad skirts around the constructed and
MP: E.1	SD: Minor Class II Watercourse Crossing	WC: Class II	EC: 18"	PC: 30"	Geo Used? No	1600? No	PSD: 2 to 3 cu yds if culvert were blocked	IP: Medium
	Management Measure 8 inches in height shall immediately down grad will be necessary to ten Caution: Utilities that so removal and installation	s: The existing 18 be rock armored le of the culvert in porarily divert it ervice the sewer h. Since pipe rep	3' CMP is to be replace or down-spouted to inlet to direct flow to t around the installati treatment plant are based lacement is only expension.	ed by a minimum 30' channel grade. Rock the next rolling dip ir on site during pipe re ouried just below the ected to alter the roa	" x 40' culvert s armor size is to stallation at the emoval and new existing pipe's d grade no DFV	et to grade o be 12-inc ne bend in w pipe plac inlet. Due N 1600 per	e as near as feasible. An ch plus, if needed. Resur road. If flow is present a cement. e caution will need to be rmit is anticipated.	y outfall drop greater the inboard ditch line the time of installation exercised with pipe
MP: F to G	SD: Tip & Dip Out	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
Additional Pau 21512024	Management Measure and dip" road running s Inboard Ditch Line- Res Exposed bare mineral s straw waddle check dar	s: Install rolling o urface out from tore a proper dit oil within the dit ms.	lip diagonally across h the established inboa tch line as necessary, ch line shall be treate	bend in road at Point and ditch line as feasil but maintain the exis d for erosion control	F to drain road ble. sting inboard d , and to prever	I runoff col itch in an u it ditch dov	llected below culvert ins ingraded, vegetated, cor wncutting, by rock lining	tallation at Point E.1. " ndition where feasible. the ditch or installing

	DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC)	PROPOSED Culvert Diameter Size (PC)	Geologist used? Yes or No	1600? Yes or No	Potential Sediment Discharge (PSD) in cu. yds. (See Key)	Implementation Priori (IP) (See Key)
	MITIGATION AND/OF	RMANAGEMEN	T MEASURES: If ne	eded, provide addition	hal details of sit	te; and/or o	escribe proposed treatm	nent
		*NOTE	Write "NA" or "	" if a box is not app	licable to the	map poir	nt	
MP: F.1	SD: Gully Erosion of Road Fill	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: 2 to 3 cu yds	IP: Low
	Management Measures E.1 during the winter of 2 been periodically channe point to facilitate any min failure at Point E.1.	s: Two (2) to thre 2017. It is evider elized. The gully nor road runoff to	e (3) cubic yard gully ht that this diversion h is to be filled with 12- be directed to the low	erosion site off the ou as occurred in years inch plus rock to fill th v spot at and over the	ter road fill due past as the slop he hole and stal rock fill, and to	to culvert be from the bilize the o provide a	blockage and diversion of road to a flat at the Clas uter road edge. The roa backup discharge location	of stream flow from Poin ss II stream channel has ad is to be tipped out at th on in the event of culvert
MP: G.1	SD: Existing Permanent Crossing	WC: Class II	EC: Two 30" Steel Pipes	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: High; Clear Pipe In
357.20	materials shall be removed.	ved from the site	e or stored at a stable	grade side of the Clas	stream channe s II crossing. H	inge top (i	e., the berm) of the dip	on the downslope side
-	the crossing from the cu crossing (near the stread hinge line at this locatio	utbank to the bo m crossing hinge n would result ir	ttom end of the culve e line) and not along t n a smaller amount of	ert outlet as marked in he centerline where t gully erosion if the c	n the field. The the fill is the de rossing pipes w	critical dip epest. A c vere to bec	is to be built on the do ritical dip installed alon come plugged.	wn grade side of the g the stream crossing
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MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC)	PROPOSED Culvert Diameter Size (PC)	Geologist used? Yes or No	1600? Yes or No	Potential Sediment Discharge (PSD) in cu. yds. (See Key)	Implementation Priority (IP) (See Key)
	MITIGATION AND/OI	RMANAGEMEN	T MEASURES: If ne	eded, provide addition	hal details of si	te; and/or o	l describe proposed treatm	nent
		*NOTE:	Write "NA" or "	" if a box is not app	licable to the	e map poir	nt	
MP: I to J	SD: Crown or Tip & Dip Road In	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measures to be directed to the ex	s: Crown road th isting, functional	rough this section or , ditch relief culvert a	"tip and dip" road in t Point J.1.	. In either case	e road rund	off along the inboard sec	tion of the road surface is
MP: J.1	SD: Ditch Relief Culvert	WC: NA	EC: 18"	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measures	s: Existing funct	ional 18" CMP cross-	drain.				
MP: J to K	SD: Tip & Dip Out	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
	Management Measures	s: Tip and dip the	e road running surfac	e out as feasible.				
MP: K.1	SD: Rolling Dip	WC: NA	EC: NA	PC: NA	Geo Used? NA	1600? NA	PSD: NA	IP: NA
357.30	Management Measure road. Install a shallow r	s: End of project olling dip to capt	area and bottom of s ture runoff from both	sewer treatment acce directions and disch	ess service road arge runoff off	d where it at the ser	intersects with the pave vice road entrance.	d Regional County Park

ADDITIONAL INFORMATION:

1. Length/distance of storm proofing road work is 0.6 miles.

2. Once road reshaping is complete, the road is to be surfaced with ¾ inch crush or angular surface rock to a minimum 4-inch depth.

3. The project requires two culvert installations that are to be included in the work bid, with culvert purchasing included. Those pipe installations are as follows:

• 18" X 40' CMP Ditch Relief Pipe

• 30" X 40' CMP Replacement Culvert at Point E.1; a minor Class II Watercourse. The RPF and/or the sewer treatment plant staff are to be present onsite during pipe removal, and initial excavation and placement of the new pipe, to oversee installation due to the pipe's inlet proximity to buried utilities.

RECEIVED 02/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT Additional Pase 2/5/2024

### Storm Proofing Plan Appendix

Best Management Practices in Road Reshaping, Rolling Dip Construction and Crossing Critical Dip Installations

Ditch drainage should be directed into vegetation and undisturbed soil filter, and not allowed to continue flowing down the ditch and into the stream.

**Figure 1.** Diagram showing implementation of road drainage disconnection facilities/structures to limit sediment delivery into a watercourse. Note the absence of an apparent critical dip at the crossing. (modified from Oregon Forest Resources Institute 2011, 2nd Ed., used with permission).



Point G.1 Critical Dip Installation



**Figure 2.** Illustration of a critical dip installed at a watercourse crossing to remove diversion potential (from DFG 2006). The critical dip should be constructed at the point where the potential for erosion and the loss of fill is minimized.

Source: Weaver, W.E., Weppner, E.M. and Hagans, D.K., 2015, Handbook for Forest, Ranch and Rural Roads.

Additional REGEIVED 105/05/2024 COAST AREA OFFICE RESOURCE MANAGEMENT DocuSign Envelope ID: E715129A-4CFB-4725-BCC0-3E70AD718884



RESOURCE MANAGEMENT



RESOURCE MANAGEMENT

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### THP 1-23-00099SON PHI RPF Responses

### Madeline Green <mgreen@ncrm.com>

Mon 2/5/2024 3:53 PM

To:Santa Rosa Review Team@CALFIRE <SantaRosaReviewTeam@fire.ca.gov>

Cc:Sone, Kim@CALFIRE <Kim.Sone@fire.ca.gov>;Brand, Patrick@DOC <Patrick.Brand@conservation.ca.gov>;Longstreth, Aaron@Wildlife <Aaron.Longstreth@Wildlife.ca.gov>;Burke, James@Waterboards <James.Burke@waterboards.ca.gov>

🚺 1 attachments (11 MB)

PHI Responses.pdf;

**Warning:** this message is from an external user and should be treated with caution. Hi there,

Please see the attached RPF responses to the PHI recommendations for the Steam Donkey THP. Note this is only the written responses to each question, plus additional attachments to the responses (not revised pages). Following this email, there will be approximately 9 parts to the revised pages that go with this first PDF, which I will just send to Santa Rosa, so please check Caltrees for those revised pages.

Thank you,

### Madeline Green

NCRM, Inc. Forester, RPF #3069 Phone: (707) 489-5195 mgreen@ncrm.com