ITEM # 14 – SILVICULTURE

1. - Check the Silvicultural methods or treatments allowed by the Forest Practice Rules to be applied under this NTMP.
- 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.	Un-evenaged	ACRES	UNEVENAGED REGENERATION METHODS (14 CCR § 913.2 [933.2, 953.2]) (All Districts) NOTE: variation by District in (a)(2)(A)(1)
[X]	Selection	*972*	
[☐]	Group Selection		
[☐]	Transition		
	Intermediate Treatments		**INTERMEDIATE TREATMENTS (14 CCR § 913.3 [933.3, 953.3])**
[☐]	Commercial Thinning		
[☐]	Sanitation Salvage		
	Alternative		**ALTERNATIVE PRESCRIPTIONS (ALL DISTRICTS) (14 CCR § 913.6 [933.6, 953.6])**
[☐]	Alternative Prescription		
	Special Prescriptions		**SPECIAL PRESCRIPTIONS (14 CCR § 913.4 [933.4, 953.4])** RPF is required to include specific information when Restoration or Oak woodland management is selected. The FPR element forms are provided at the end. Indicate the specific acreage for each type of restoration or oak area on these forms.
[X]	Special Treatment Area Prescription	**98**	
[☐]	Rehabilitation of Understocked Area Prescription		
[☐]	Fuel Break / Defensible Space		
[☐]	Variable Retention		
[☐]	Restoration – Aspen, Meadow, & Wet Area		
[☐]	Ca. Black and Oregon White Oak Woodland Management		
	Non-regeneration		**NON-REGENERATION HARVESTING**
[☐]	Road Right-of-way		
[X]	No Harvest	**29**	

TOTAL ACREAGE:	If acreage is different than acreage listed in the legal description provide explanation:
1099	

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 met 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 20-acres minimum or as specified in district rules shall be mapped per 14 CCR § 1090.5(w)(2) & (12)

b. POST-HARVEST STOCKING TO BE MET AT THE COMPLETION OF OPERATIONS		
Silvicultural Prescription	**Site Class (I, II, III, IV, V)**	**Post-harvest stocking standard**
Selection	III	In accordance with 14CCR 913.2(a)(2)(A) (2) and (4): (2) On site III lands at least seventy-five (75) square feet per acre of basal area shall be retained. (4) The residual stand shall contain trees that are representative of the best phenotypic quality of the preharvest stand.
Special Treatment Area	III	At least 100 sq. ft. basal area shall be retained in the Coastal Commission Special Treatment Area. Additional constraints are below: In accordance with 921.3(a)(2): For timber stands where more than one age class is present, leave at least fifty (50) percent by number of those trees over twelve (12) in. d.b.h. Leave trees shall be thrifty coniferous trees which are free from substantial damage caused by Timber Operations. No conifer tree shall be cut which is more than seventy-five (75) ft. from a leave tree twelve (12) inches d.b.h or larger located within the logging area. In accordance with 921.3(g): In no instance shall stocking be reduced below the standards provided in 14 CCR 921.4 nor shall more than sixty (60) percent by numbers of those trees eighteen (18) inches and more d.b.h. and no more than fifty (50) percent by numbers of those trees over twelve (12) inches d.b.h. but less than eighteen (18) inches d.b.h. be removed within any one ten (10) year period.

c. TIMBER MARKING

In the table below indicate the area requiring tree marking, the method of marking, who completed the marking and if it was an entire or sample area mark.

Marking completed in (Specify location(s))	**Trees Marked** (Harvest / Retained)	**Completed By** (RPF / Designee)	**Area Marked** (Entire / Sample area)	**RPF Explanation if needed** (Optional)
Selection – Unit 1	Harvest	RPF / Designee	Sample area	Harvest trees will be clearly marked with paint by the RPF or designee. Harvest trees will be marked with a paint stripe near DBH; a separate base mark is included.
Special Treatment Area – Coastal Zone	Harvest	RPF/ Designee	Sample area	Harvest trees will be clearly marked with paint by the RPF or designee. Harvest trees will be marked with a paint stripe near DBH; a separate base mark is included.
WLPZ – Willig Gulch tributary	Harvest	RPF / Designee	Sample area	Harvest trees will be clearly marked with paint by the RPF or designee. Harvest trees will be marked with a paint stripe near DBH; a separate base mark is included.
Wildlife Trees and Nest Trees	Retained	RPF / Designee	Entire NTO area	Wildlife trees and nest trees including Sonoma tree vole will be marked "W" with paint at the base on three sides or flagged.

[☐]Yes [**X**] 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 how boundaries of the different methods or groups have been identified:

d. FOREST PRODUCTS TO BE HARVESTED:					
[**X**]	Saw Logs	[**X**]	Poles	[☐]	Clean Chips
[☐]	Peeler Logs	[**X**]	Split Wood Products	[**X**]	Firewood
[**X**]	Fuel Wood	[☐]	Fuel chips	[☐]	Other

e. GROUP B SPECIES MANAGEMENT	
[☐]Yes [**X**] No	*Are group B species proposed for management?*
[☐]Yes [**X**] No	Are group B or non-indigenous A species to be used to meet stocking standards?
[☐]Yes [**X**] 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***

[☐]Yes [**X**] No	Are follow-up treatments expected to maintain relative site occupancy of group A species? [☐] Manual Treatments - Describe: [☐] Herbicide Treatments - Describe: [☐] *Both*
	If YES who will be responsible?
[☐]Yes [**X**] No	Will a Licensed Pest Control Advisor be involved in the process? *If YES explain when an advisor will be needed:*

f. LTO FELLING INSTRUCTIONS PLAN AREA

-

Timber falling operations associated with the NTMP shall conform to the provision stated in 14 CCR 914.1:

914.1(a): To the fullest extent possible and with due consideration given to topography, lean of trees, Landings, utility lines, local obstructions, and safety factors, trees shall be felled to lead in a direction away from Watercourses and lakes.

914.1(b): Desirable residual trees and tree seedlings of commercial species, and the oak trees requiring protection pursuant to 14 CCR 953.10 shall not be damaged or destroyed by felling operations, except where unavoidable due to safety factors, lean of trees, location of obstructions or roads, or lack of sufficient openings to accommodate felled trees;

914.1(c): Trees shall be felled in conformance with Watercourse and lake protection measures incorporated into the NTMP and consistent with Article 6 of the Forest Practice Rules;

914.1(d): Felling practices shall conform to requirements of 14 CCR 919.2(b), (c) & (d) to protect nest sites.

As per 14 CCR 919.2(b): During timber operations, Nest Tree(s), designated perch tree(s), screening tree(s), and replacement tree(s), shall be left standing and unharmed except as otherwise provided in the rules.

As per 14 CCR 919.2(c) Timber operations shall be planned and operated to commence as far as possible from occupied Nest Trees unless explained and justified by the RPF in the NTMP.

As per 14 CCR 919.2(d) When an occupied nest site of a listed bird species is discovered during Timber Operations, the Timber Operator shall protect the Nest Tree, screening trees, perch trees, and replacement trees and shall apply the provision of subsection (b) and (c) above and shall immediately notify the CDFW and CAL FIRE. An amendment that shall be considered a minor amendment to the timber harvesting plan shall be filed reflecting such additional protection as is agreed between the operator and the Director after consultation with CDFW.

Sonoma tree vole nest tree(s) will be retained along with 70% of the conifers within 25' of the nest tree. Trees will be felled away from the nest site.

The RPF and LTO will be responsible to implement the following guidelines for timber marking and timber falling activities for this NTMP to ensure the intent of Fish and Game Code Section 3503.5 pertaining to no loss of an active raptor nest.

<u>Physical Inspection</u>
At time of tree marking, each tree proposed for harvesting shall be inspected by the RPF or supervised designee for evidence of raptor use. Each tree marked for harvesting shall be inspected by the LTO and/or the timber faller prior to harvesting. Inspection shall include observation for flying or roosting raptors and any evidence of raptors such as feathers, wash, plucking posts, pellets, or evidence of nests. The LTO shall notify the RPF of raptor use and sign observations. If evidence of raptor use is observed, an initial 500 foot buffer shall be applied and the RPF shall notify CDFW to seek protection measure guidance.

f. LTO FELLING INSTRUCTIONS PLAN AREA

Post Approval Observations

If evidence of raptor use is observed, an initial 500-foot buffer shall be applied. The RPF shall notify the CDFW to seek protection measure guidance.

Green Tree Wildlife Retention Measures:

Desirable wildlife tree features:

1. Large lateral branches: A branch greater than 8 inches in diameter located just outside of the branch collar. However, if no branches in the stand meet or exceed this diameter then a lower threshold of 5 inches in diameter (just outside of the branch collar) shall be considered as a Large Lateral Branch.
2. Cavities: Wood voids with inferred small to medium interior dimension and a relatively small (1.5"- 3") to medium (3"-6") entrance opening suitable for use by a variety of small mammal and bird wildlife species.
3. Hollow: Wood voids with inferred large interior dimension and a large ≥6" entrance opening suitable for use by a variety of small mammal and bird wildlife species.
4. 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. Broken Top: Trees with a minimum diameter at the original break of ≥12" diameter.
6. Multiple Tops: Trees with two or more leaders near the top of the tree that provide opportunities for resting, denning, or nesting.
7. Snag Top: Trees where the top of the tree is dead with the lowest portion of the dead top is at least 12" in diameter.
8. Redwoods with boles having at least 75% defect.
9. Deeply fissured, cracked bark or loose slabs of flaking bark.
10. Granary trees containing at least 100 small holes either filled with acorns or capable of containing acorns.

Snag Retention Measures:

Some snags may be damaged and/or removed in the process of felling, yarding, road use, and forest management activities.

In accordance with 14CCR 919.1: Within the logging area all snags shall be retained to provide wildlife habitat unless felling is required by the Director or federal or state law or to eliminate a safety hazard.

f. LTO FELLING INSTRUCTIONS PLAN AREA
Hardwood Retention Measures: Within Class I, II-L and Class II-S streams, harvesting hardwoods in combination with other conifer harvest shall leave at least 80% of the overstory canopy with 25% being overstory conifer canopy. In all other areas, hardwoods determined by the RPF or LTO to pose a safety or fire hazard, or to achieve other forest management objectives may be harvested, given the limitations below: Hardwood trees with pre-eminent wildlife habitat value, as defined below, shall not be cut unless it is a fire or safety hazard. Wildlife habitat value: dominant, co-dominant and emergent hardwood trees generally 18 inches DBH or greater, exhibiting wide branching crowns, crooks, breaks or other defects, and often with bole defects which may serve as potential nesting cavities.

g. REGENERATION	
[☐]Yes [**X**] No	Will artificial regeneration be required to meet stocking standards?

h. SITE PREPARATION PLAN	
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.	
[☐]Yes [**X**] No	Will site preparation be used within the logging area? If YES, provide site preparation plan per 14 CCR § 915.4 [935.4, 955.4]
[☐]Yes [**X**] No	Will site preparation be required to meet stocking?
	• General method(s) of site preparation:
	• Type of equipment to be used for mechanical site preparation and/or firebreak construction:
	• Methods to protect desirable residual trees per 14 CCR § 917.7 [937.7, 957.7]:
[☐]Yes [**X**] No	• Are there any exceptions or alternatives proposed to the standard rules? If YES, provide an explanation and justification for the proposed exceptions:
	• 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.
	• Prior to conducting site preparation activities provide the name of the person responsible for site preparation:
	- Name:
	- Address:
	- Phone #:

i. REGENERATION PLAN (rehabilitation of understocked areas or variable retention)	
[☐]Yes [**X**] 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. The regeneration plan shall include but not be limited to: - Rehabilitation of understocked areas: site preparation, method of regeneration and other information needed to evaluate the proposal by the Review team: - Variable Retention: Trees and elements retained, objectives intended to achieved by retention, distribution and quantity of retained tress, intended time-period of retention, and potential future conditions or events the RPF believes would allow harvest of retained trees.

Regeneration plan:

ITEM # 15 – PESTS

PESTS / FOREST DISEASES	
Timber operations shall be conducted so as to minimize the build-up of destructive insect populations or the spread of forest Diseases. 14 CCR 917.9 [937.9, 957.9](a) – (c) (All Districts)	
a. [**X**]Yes [☐] No	Is this NTMP within an area that the Board of Forestry and Fire Protection has declared a Zone of: [**X**] Infestation [☐] Infection pursuant to PRC §§ 4712 - 4718? **If YES, identify feasible measures being taken to mitigate adverse infestation or infection impacts from the timber operation. 917.9 (937.9, 957.9)(a)** **Reference Board of Forestry Technical Rule Addendum Number 3 for RPF considerations.**

Measures to mitigate adverse infestations or infections:

Pine Pitch Canker

The NTMP area is located in the Pine Pitch Canker Zone of Infestation.

The following laboratory susceptible species are located within the NTMP area:
Douglas-fir and Pine sp.

If species susceptible to Pine Pitch Canker are cut, the following measures will be taken:

1. The mitigation for pitch canker is to avoid transportation of infected material outside the zone of infestation.
2. Pitch Canker infected pine or beetle infested pine will not be shipped outside of the Zone of Infestation.
3. If logs are not infected with Pine Pitch Canker, they may be shipped outside the Zone of Infestation within four days if during the period of February 1 through June 30.
4. If logs are not infected with Pine Pitch Canker during the period of July 1 through January 31, they may be shipped outside the Zone of Infestation within seven days.
5. Pine slash (brood material) created by timber operations shall be treated by one of the following methods:

   - Within one week, lop and scatter all branches from the sides and tops of those portions of main stems which are 3" or more in diameter. Do not pile brood material. Lopped stems should be cut into short segments to accelerate drying.

   - Within one month, brood material can be removed from the site for disposal, piled and burned, chipped, debarked, treated with an appropriate pesticide, or piled and +covered/sealed with clear plastic (6 mil minimum thickness) for 6 months.

PESTS / FOREST DISEASES

Sudden Oak Death

The NTMP area is located in the Sudden Oak Death Zone of Infestation.

The Sudden Oak Death affected counties include: Alameda, Contra Costa, Del Norte, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, and Trinity.

All SOD host material with bark can only be moved off-site with a valid compliance agreement. For compliance with CDFA regulations, and for the NTMP to act as a compliance agreement, the NTMP provides the following practices that shall be followed to minimize exposure and the spread of Sudden Oak Death:

1. Plants, plant parts, unprocessed wood, wood products, and other products of Sudden Oak Death hosts, created as a result of timber harvest, shall not be moved within or outside of regulated counties infested with SOD without CalFire approved harvest document which meets CDFA regulations.

2. Host material may be removed from the NTMP area in the form of sawlogs, chips, firewood, foliage, etc.

3. Host material shall not be moved outside of the Zone of Infestation until appropriate State and Federal permits are obtained. This NTMP may not be substituted as a compliance agreement/permit when material is to be moved outside of the regulated area.

4. Host material that is moved within the Zone of Infestation:

    a. Destination of host material shall be amended into the NTMP with identification of LTO.
    b. Host material less than 4" diameter (chips, firewood, foliage, etc.) shall be moved in a closed container. Material greater than 4" diameter does not require a closed container.

5. Before vehicles or equipment (logging equipment, log trucks, pick-up trucks, etc) leave the site of harvest operations, they shall be inspected by the LTO for SOD host plant debris (leaves, twigs, and branches). Host material < 4" and not within a closed container shall be removed prior to departure.

6. SOD compliance agreements are valid for only 1 year. The RPF shall be responsible for updating SOD compliance agreements and amending into the NTMP. Harvest operations may begin after one year has passed since plan approval, but host material may not be moved off of the harvest area until the plan is satisfactorily amended to serve as the compliance agreement.

7. The RPF shall be responsible to inform the LTO prior to start-up of initial operations during any given year regarding current SOD hosts, regulated area, and operational requirements to be in conformance with the compliance agreement.

8. The identified host species shall not be transported into the property from areas known to be infected.

PESTS / FOREST DISEASES

9. Prior to updating SOD compliance agreements, the RPF shall check the Sudden Oak Death website for updated information at: http://www.suddenoakdeath.org to view updated maps regarding the confirmed cases of SOD.

10. Monitor the property for unusual levels of mortality in identified host species, and report suspected cases of SOD to the County Agricultural Commissioner's office.

11. When herbicide applications are prescribed and where existing conditions allow, three hardwood trees per acre greater than 20" DBH will be retained (not herbicide killed) to provide for wildlife habitat and SOD mitigation.

12. Remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, saws, vehicles and heavy equipment, etc. before traveling to an area that is not infested with SOD. Lysol® or a 10% bleach solution can be used to disinfect shoes and boots after cleaning.

APHIS Lists of Proven Hosts of and Plants Associated with
Phytophthora ramorum
September 2022
Proven Host Plants of *Phytophthora ramorum*

Scientific Name	**Common Name(s)**	**Koch's Postulates Reference**
Abies grandis§	Grand fir	LeBoldus et al., 2018
Abies magnifica§	Red fir	Chastagner and Riley, 2010
Acer circinatum§	Vine maple	DiLeo et al., 2008
*Acer macrophyllum**	Bigleaf maple	Garbelotto et al., 2003†
Acer pseudoplatanus	Planetree maple	COMTF, October 2006
*Adiantum aleuticum**	Western maidenhair fern	Vettraino et al., 2006a
*Adiantum jordanii**	California maidenhair fern	Vettraino et al., 2006a
*Aesculus californica**	California buckeye	Garbelotto et al., 2003†
Aesculus hippocastanum	Horse chestnut	COMTF, October 2006
*Arbutus menziesii**	Madrone	Garbelotto et al., 2003†
Arbutus unedo§	Strawberry tree	Moralejo et al., 2008
Arctostaphylos columbiana§	Hairy manzanita	DiLeo et al., 2008
Arctostaphylos glauca§	Bigberry manzanita	Rooney-Latham et al., 2020
Arctostaphylos hooveri§	Santa Lucia manzanita	Garbelotto et al., 2020
*Arctostaphylos manzanita**	Manzanita	DiLeo et al., 2008
Arctostaphylos montereyensis§	Monterey manzanita	Garbelotto et al., 2020
Arctostaphylos morroensis§	Morro manzanita	Garbelotto et al., 2020
Arctostaphylos pilosula§	La Panza manzanita	Garbelotto et al., 2020
Arctostaphylos pumila§	Sandmat manzanita	Garbelotto et al., 2020
Arctostaphylos silvicola§	Silverleaf manzanita	Garbelotto et al., 2020
Arctostaphylos viridissima§	White haired manzanita	Rooney-Latham et al., 2020
Berberis aquifolium§ *(≡Mahonia aquifolium)*	Oregon grape	Elliott et al., 2021b

PESTS / FOREST DISEASES

*Calluna vulgaris**	Scotch heather	C Orlikowski and Szkuta, 2004
Camellia spp.*	Camellia - all species, hybrids and cultivars	Beales et al., 2004a
*Castanea sativa**	Sweet chestnut	Denman et al., 2005b
Ceanothus thyrsiflorus§	Blue blossom Ceanothus	DiLeo et al., 2008
Chamaecyparis lawsoniana§	Port Orford cedar	Brasier and Webber, 2012
Chrysolepis chrysophylla§	Golden chinquapin	Rooney-Latham et al., 2022
*Cinnamomum camphora**	Camphor tree	Rooney-Latham et al., 2013
Corylus cornuta§	Beaked hazelnut	DiLeo et al., 2008
Fagus sylvatica	European beech	Harris et al., 2021
Scientific Name	**Common Name(s)**	**Koch's Postulates Reference**
*Frangula californica** (=*Rhamnus californica*)	California coffeeberry	Garbelotto et al., 2003†
*Frangula purshiana** (=*Rhamnus purshiana*)	Cascara buckthorn	Vettraino et al., 2006b
Fraxinus excelsior	European ash	COMTF, August 2005
*Gaultheria procumbens**	Eastern teaberry	Osterbauer et al., 2014
Gaultheria shallon§	Salal	Elliott et al., 2021b
*Griselinia littoralis**	Kapuka	Giltrap et al., 2007
*Hamamelis virginiana**	Witch hazel	Giltrap et al., 2004
*Heteromeles arbutifolia**	Toyon	Garbelotto et al., 2003†
Kalmia spp.*	Mountain laurel - all species, hybrids and cultivars	Tooley and Browning, 2009†
Larix × *eurolepis*§	Hybrid larch	Harris and Webber, 2016†
Larix decidua§	European larch	Harris et al., 2021†
Larix kaempferi§	Japanese larch	Harris and Webber, 2016
*Laurus nobilis**	Sweet bay	COMTF, September 2004
*Lonicera hispidula**	California honeysuckle	Davidson et al., 2003†
Lophostemon confertus§	Brisbane box	Blomquist et al., 2020
Loropetalum chinense§	Chinese fringe flower	Blomquist et al., 2012
Magnolia × *loebneri*§	Loebner magnolia	Giltrap et al., 2007
*Magnolia doltsopa** (≡*Michelia doltsopa*)	Sweet michelia	COMTF, October 2006
Magnolia stellata§	Star magnolia	Giltrap et al., 2007
*Maianthemum racemosum** (=*Smilacina racemosa*)	False Solomon's seal	Hüberli et al., 2005
Notholithocarpus densiflorus (=*Lithocarpus densiflorus*)*	Tanoak	Hansen et al., 2005
*Parrotia persica**	Persian ironwood	Hughes et al., 2006

PESTS / FOREST DISEASES

Phoradendron serotinum subsp. *Macrophyllum*§	Big-leaf mistletoe	Riley and Chastagner, 2011
Photinia × *fraseri**	Red tip photinia	Orlikowski and Szkuta, 2004‡
Pieris spp.*	Andromeda, Pieris - all species, hybrids and cultivars	Parke et al., 2004
Prunus laurocerasus	Cherry laurel	Elliott et al., 2020
Pseudotsuga menziesii var. *menziesii**	Douglas fir	LeBoldus et al., 2018
Quercus agrifolia	Coast live oak	Rizzo et al., 2002
Quercus cerris	European turkey oak	COMTF, August 2006
Quercus chrysolepis	Canyon live oak	Murphy and Rizzo, 2003
Quercus falcata	Southern red oak	Brasier et al., 2004b;

Scientific Name	**Common Name(s)**	**Koch's Postulates Reference**
*Quercus ilex**	Holly oak	Denman et al., 2005a
Quercus kelloggii	California black oak	Garbelotto et al., 2003†
Quercus parvula var. *shrevei*	Shreve's oak	Rizzo et al., 2002
Rhododendron spp.*	Rhododendron (including azalea) – all species, hybrids and cultivars	Hansen et al., 2005
*Rosa gymnocarpa**	Wood rose	Hüberli et al., 2004
*Salix caprea**	Goat willow	COMTF, August 2006
*Sequoia sempervirens**	Coast redwood	Maloney et al., 2002
*Syringa vulgaris**	Lilac	Beales et al., 2004b
*Taxus baccata**	English yew	Lane et al., 2004
*Trientalis latifolia**	Western starflower	Hüberli et al., 2003†
*Umbellularia californica**	California bay laurel	DiLeo et al., 2009
Vaccinium myrtillus§	Whortleberry	Herrero et al., 2011
Vaccinium parvifolium§	Red huckleberry	Elliott et al., 2021b
*Vaccinium ovatum**	Evergreen huckleberry	Hansen et al., 2005
Viburnum spp.*	Viburnum – all species, hybrids and cultivars	Parke et al., 2004
Vinca minor§	Periwinkle	Elliott et al., 2021a

§New additions to the proven host list

*Unmanufactured wood and wood products, including firewood, logs, and lumber of species listed above are **not** regulated. See Federal Regulations, 7 CFR 301.92 - 301.92-2.

b.[☐]Yes [**X**]No	Are there any other insect or forest disease problems within the NTMP area if outside a declared zone? [☐] Insect(s) [☐] Disease(s) [☐] Pest problems [☐] Other (provide description of the forest problem) **If YES, describe proposed measures to improve the health, vigor, and productivity of the stand(s).**
Proposed measures:	

ITEM # 16 – HARVESTING PRACTICES

YARDING SYSTEM AND EQUIPMENT TO BE USED					
	GROUND BASED (Tractor, skidder, Forwarder)		**CABLE**		**OTHER (Special)**
[**X**]	Tractor, including end/long lining	[☐]	Cable, ground lead	[☐]	Helicopter
[**X**]	Rubber tire skidder, forwarder	[**X**]	Cable, High lead	[☐]	Animal
[**X**]	Feller buncher	[**X**]	Cable, skyline	[☐]	Other (describe below)
[☐]	Shovel yarding				
** All Tractor operations restrictions apply to ground-based equipment Reference 14 CCR 914.2.					

Note: Cable yarding operations, which will result in less ground disturbance and residual tree damage, may be performed in any tractor operating area.

Any tractor operations in areas between 50% and 65% slope, shall be limited to existing trails that do not require reconstruction or ridgetop areas that require no cut/fill construction. The RPF or Designee must approve all instances, prior to use, in which tractors may be used as described above.

Cable operations may establish corridors through any "No Harvest" area within the NTMP area. Trees may be cut and left or removed for safety purpose only in cable corridors as specified in the plan. Cable corridor widths in "No Harvest" areas are limited to trees felled for safety purposes. Cable corridors shall be kept to the minimal number and width needed to efficiently cable yard. It is anticipated that few, if any, trees will be felled in the "No Harvest" areas.

ITEM # 17 – EROSION HAZARD RATING

EROSION HAZARD RATING (EHR)					
		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
[X]	LOW	300	200	150	100
[X]	MODERATE	200	150	100	75
[X]	HIGH	150	100	75	50
[☐]	EXTREME	100	75	50	50

NOTE:

- 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:

The EHR worksheets indicate the erosion hazard as mostly moderate and high depending upon soil type and slope, with the steeper slopes indicating a higher erosion hazard. See Erosion Hazard Rating Map.

ITEM # 18 – SOIL STABILIZATION

ITEM #18 SOIL STABILIZATION / EROSION CONTROL	
Per 14 CCR 923.5, 943.5, 963.5 – Erosion Control for Logging Roads and Landings [All Districts] – All logging road and landing surfaces shall be adequately drained, through the use of logging road and landing surface shaping in combination with the installation of drainage structures or facilities and shall be hydrologically disconnected from watercourses and lakes to the extent feasible. Per 14 CCR 914, 934, 954 – Harvesting practice and erosion control [All Districts] – Timber operations shall be conducted to: Meet the goal… to prevent degradation of the quality and beneficial uses of water and maintain site productivity by minimizing soil loss Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 10/27/14) 14 CCR 923.5, 943.5, 963.5(b), (c), (d), (e), (f), (g), (h), (j), (k), (p) contain standard Forest Practice Operational rules pertaining to the timing and specifics for the installation of erosion control structures for Roads and Landings. 14 CCR 914.6, 934.6, 954.6(a) (1-2), (b), (c), (d), (e), (f), (g), additional Coast areas (h), (i) contain standard Forest Practice Operational rules pertaining to the timing and specifics for the installation of erosion control structures for harvesting practices, tractor and cable operations. **THE LTO SHALL BE FAMILIAR WITH THESE STANDARD OPERATIONAL REQUIREMENTS, PRIOR TO OPERATIONS.**	
a. [☐]Yes [**X**] No	Are there any exceptions proposed to the above listed standard operational requirements? **If YES, please provide the specific operational instruction to the LTO.**
[**X**]	Methods of stabilization to be used: (check all that apply) STRAW Mulch Depth (inches):_____ 2 _____ Percent coverage:____ 90%___ • Weed free straw will be used if feasible.
[**X**]	SLASH Mulch [**X**] Scattered Depth (inches):_____2-6_____ Percent coverage:____90%___ [**X**] Packed Depth (inches):_____2-4_____ Percent coverage____90%____ Crush packed slash so that 75% of the material is in touch with the soil surface.
[**X**]	Grass Seeding LTO Instructions: Only native seed or sterile cereal grasses (oat, barley) shall be used. Application rate will be at least 25 lbs./acre
[**X**]	Rock Armoring Size: 8"-16" ___Also 6"___Also 3"____Also__3/4"__ Installation instructions
[**X**]	Replanting LTO instructions if needed
[☐]	Installation of commercial erosion devices Describe commercial devise and provide instructions to the LTO:

ITEM #18 SOIL STABILIZATION / EROSION CONTROL	
[**X**]	Other Describe method and provide LTO instructions: Hydroseeding

Per 14 CCR 914.9[934.9, 954.9] the RPF may develop on a site-specific basis alternative practices that will achieve environmental protection at least equal to the standards set forth in 914.1-914.8 [934.1-934.8, 954.1-954.8]	
b. [☐]Yes [**X**] No	Are there any alternative practices to the standard harvesting or erosion control rules proposed? **If YES, the information as required per 914.9 [934.9, 954.9] and 1090.5(dd) shall be provided in SECTION III. Provide instructions to the LTO in SECTION II.**

Pertaining to Item 18. c. - k. below, the Extended Wet Weather Period is October 15 – May 1.

Rainfall will be monitored at CA Dept of Water Resources/DFM Hydro-SMN Venado weather station.

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing Roads and landings & watercourse crossings on logging roads (for all Districts). Please address the following table and the specific rule. If not applicable to NTMP so state.				
All WATERSHEDS **Logging roads / Landings**	**N/A**	**Description of Treatments**	**Protection Measures**	**Timing**
c.923.5[943.5, 963.5](i): treatments to prevent significant discharge where features cannot be hydrologically disconnected.		One or more of the following measures will be implemented to effectively trap sediment prior to entering a watercourse or "lock up" surface fines so they remain in place. • Rocked road surface • Straw-based sediment traps such as bales or wattles • Slash packing		Upon completion of use for the year or by October 15, whichever is earlier or, if logging roads or landings are in use, prior to the start of rain that generates overland flow.
d.923.5[943.5, 963.5](l) & (m): treatments for sidecast or fill; cuts and fills associated w/ approaches to watercourse crossings; bare areas w/in WLPZ.		One or more of the following measures will be implemented to cover bare soil to disperse rain drop and overland flow energy. • Straw mulching • Grass seeding • Slashing • Rock armoring • Excavation or removal of unstable material. Materials shall be spread along a stable portion of the road or landing or transported to a stable location outside of any WLPZ, EEZ, or ELZ.	Place soil coverage material so that it does not enter the watercourse.	Upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first. Except that bare areas created during the extended wet weather period shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s),

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing Roads and landings & watercourse crossings on logging roads (for all Districts). Please address the following table and the specific rule. If not applicable to NTMP so state.				
				whichever is sooner.
e.923.5[943.5,963.5](n): When the natural ability of ground cover in WLPZ is inadequate to filter sediment.		Scattered slash or Straw mulching	Place soil coverage material so that it does not enter the watercourse.	Upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first. Except that bare areas created during the extended wet weather period shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.
f. 923.5[943.5,963.5](o): Exceptions to soil stabilization treatment timing.				Upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first. Except that bare areas created during the extended wet weather period

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing Roads and landings & watercourse crossings on logging roads (for all Districts). Please address the following table and the specific rule. If not applicable to NTMP so state.				
				shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.
Watercourse crossings on logging roads				
g. 923.9[943.9,963.9] (t)(1)-(3): Bare soil on fills, sidecast, timing of treatment.		Waterbar installation Straw mulching Seeding Slashing		Upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first except that bare areas created during the extended wet weather period shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.

Berry's Knotfarm NTMP ITEM #18 – SOIL STABILIZATION

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing. WLPZ & Protected ELZ & EEZs within a Non ASP and exempt ASP watersheds. Please address the following table and the specific rule. If not applicable to NTMP so state.				
Non ASP & Exempt ASP watersheds WLPZ & Protected ELZ & EEZ	**N/A**	**Description of Treatments**	**Protection Measures**	**Timing**
h.916.7[936.7,956.7] Stabilization measures for WLPZ of CI & C II.	NA			

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing WLPZ & Protected ELZ & EEZ, Roads and Landings and Watercourse Crossings, within an ASP Watershed or Immediately upstream of an ASP Watershed. Please address the following table and the specific rule. If not applicable to NTMP so state.				
ASP WATERSHEDS Logging roads / Landings	**N/A**	**Description of Treatments**	**Protection Measures**	**Timing**
i. 916.9[936.9,956.9](n)(1)-(7): WLPZ, & protected ELZ & EEZs.		Refer to Soil Stabilization Measures in Item 18(a).		From May 1 to October 15, treat prior to the start of rain that causes overland flow. From October 15 to May 1, treat prior to NWS forecast of a chance of rain of 30% or greater or within 10 days, whichever is earlier.

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing WLPZ & Protected ELZ & EEZ, Roads and Landings and Watercourse Crossings, within an ASP Watershed or Immediately upstream of an ASP Watershed. Please address the following table and the specific rule. If not applicable to NTMP so state.				
j. 923.5[943.5,963.5](q)(3): as it pertains to roads, landings, etc.		Treat areas exceeding 100 square feet, exposed by operations. Treat disturbed road and landing cutbanks and fills. Treat areas that may cause significant sediment discharge. These areas will primarily include landings, crossing upgrades, and skid trails. No new road construction is proposed. One point of road reconstruction is proposed at road point 5.18 (a).	Landing perimeters will be seeded and straw mulched. If seed or straw is not available, other material such as slash will be used. Landings will be drained to a stable area with an adequate filtration buffer. Treat all disturbed bare soils and soils that may discharge with straw and/or seed, or slash. Where the natural ability of ground cover is inadequate to protect beneficial uses of water, treat with straw and/or seed, or slash and redirect drainage to an area with adequate protection where feasible. All treatments will be applied at the rates identified in Item 18(a) which match 923.5(q)(3). Drain all roads and landings away from unstable areas.	From May 1 to October 15, treat prior to the start of rain that causes overland flow. From October 15 to May 1, treat prior to NWS forecast of a chance of rain of 30% or greater or within 10 days, whichever is earlier.
k. 923.9[943.9,963.9](t)(4): as it pertains to watercourse crossings.		Where mineral soil has been exposed by timber operations on approaches to watercourse crossings of Class I or II waters, or Class III waters if an ELZ or WLPZ is required, the disturbed area shall be stabilized to the extent necessary to prevent the discharge of soil into watercourses.	Where the natural ability of ground cover is inadequate to protect beneficial uses of water, treat with straw and/or seed, or slash and redirect drainage to an area with adequate protection where feasible. All treatments will be applied at the rates identified in Item 18(a) which match 923.5(q)(3).	From May 1 to October 15, treat prior to the start of rain that causes overland flow. From October 15 to May 1, treat prior to NWS forecast of a

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed NTMP addressing WLPZ & Protected ELZ & EEZ, Roads and Landings and Watercourse Crossings, within an ASP Watershed or Immediately upstream of an ASP Watershed. Please address the following table and the specific rule. If not applicable to NTMP so state.				
		Treat crossing approaches. Treat areas exceeding 100 square feet, exposed by operations. Treat disturbed road and landing cutbanks and fills. Treat areas that may cause significant sediment discharge.		chance of rain of 30% or greater or within 10 days, whichever is earlier.

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ITEM # 19 – 21: GROUND BASED EQUIPMENT

GROUND BASED EQUIPMENT	
a. [☐]Yes [**X**] No	Per 14 CCR 895.1 a layout is a prepared bed in which a tree is felled, generally constructed by a tractor or other ground-based equipment. Are tractor or skidder constructed layouts to be constructed? **If YES, specify the location (consider mapping) and the extent of use.** **NOTE: winter operations and soil stabilization measures apply to tractor or skidder constructed layouts.**
Per 14 CCR 914.3 [943.3, 954.3](e)Tractors shall not be used in areas designated for cable yarding except: • To pull trees away from streams • To yard logs in areas where deflection is low • Where swing yarding is advantageous • To construct firebreaks and/or layouts • To provide tail-holds Such exception(s) shall be explained and justified in the NTMP, and require Director's approved	
b. [☐]Yes [**X**]No	Will ground based equipment be used within area(s) designated for cable yarding: (CHECK all that apply)
[☐]	Pulling trees away from watercourses
[☐]	Yarding logs from areas with low deflection
[☐]	Swing yarding
[☐]	Construct fire breaks
[☐]	Construct layouts
[☐]	Providing tail-holds
[☐]	Other Describe:
	If YES, specify the location (consider mapping) and provide LTO instructions
c. [☐]Yes [**X**] No	Are any exceptions proposed for ground-based operations within cable areas outside of the exceptions listed above? **If YES, provide the required explanation and justification in SECTION III of the NTMP and provide operations instructions for the LTO in SECTION II below.**

Per 14 CCR § 914.9 [934.9, 954.9](a) Alternatives to Standard Rules:

(a) Alternative practices may be developed by the RPF on a site-specific basis provided the following conditions are complied with and the alternative practices will achieve environmental protection at least equal to that which would result from using measures stated in 14 CCR §§ 914.1-914.8 ,934.1-934.8, 954.1-954.8.

(1) Environmental impacts with potential for significant adverse effects on the beneficial uses of water, on the residual timber, and on the soil productivity are identified and measures proposed to mitigate such impacts are included in an approved NTMP. The NTMP shall also contain a clear statement as to why alternative harvesting and erosion control measures are needed.

(2) The alternative practice(s) must be explained in sufficient detail and standards provided in the NTMP so that they can be adequately evaluated and enforced by the Director and implemented by the licensed timber operator.

(3) On a NTMP in which alternatives covering harvesting and erosion control measures have been incorporated, the timber operator shall agree to the alternative specifications by signing and filing with the Director a copy of the plan, the amended plan or a facsimile thereof, prior to beginning or continuing operations on the portion of the plan to which the alternatives apply.

(b) The Director shall not accept for inclusion in a NTMP alternative harvesting and erosion control measures proposed under this section which do not meet the standard of subsection (a) of this section. In the event that there is more than one written negative position showing that the alternative practice(s) does (do) not meet the standard of subsection (a) received from among the agencies listed in 14 CCR 1037.3 and the Department which participated in the review of the plan including on-the-ground inspection, the Director shall reject the proposed alternative.

(c) Alternative practices stated in an approved NTMP shall have the same force and authority as those practices required by the standard rule.

d. [☐]Yes [**X**]No	Is the RPF proposing any Alternative Practices to the standard rule on a site-specific basis? **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, 954.2](a-k) Identifies the Forest Practice Rule requirements for the use of ground based equipment within the harvesting area.

- (b) Tractor, or other heavy equipment equipped with a blade, SHALL NOT operate on skid roads or slopes that are so steep as to require the blade to be used for breaking.
- (c) Tractor roads SHALL be limited in number and width to the minimum necessary for removal of logs.
  - When less damage to the resources specified in 14 CCR 914[934, 945] will result, existing tractor roads shall be used instead of constructing new tractor roads.
  - [NORTHERN only] RPF may propose exceptions for silvicultural reasons when explained and justified within the plan.
- (e) Slash and debris from timber operations SHALL not be bunched adjacent to residual trees required for silvicultural or wildlife purposes, or placed in a location where they could discharge into a Class I or II watercourse, or Lake.
- (g) where tractor roads are constructed only those roads shall be used for the skidding of logs to landings
- (h) Desirable residual trees and seedlings will not be damaged or destroyed by tractor operations.
- (i) where water breaks cannot effectively disperse surface runoff, other erosion controls shall be installed as needed.
- Slope restrictions are identified in subsection (d), (f) [Coastal, Northern], (j) [Southern]

The LTO shall be aware of these rule requirements prior to operations

e.[☐]Yes [**X**] No	Will new tractor roads be constructed?
f. [**X**]Yes [☐] No	Will tractor road use be limited to existing tractor roads?
Will ground based equipment be used on:	
g.[**X**]Yes [☐] 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.** *The existing road across S6 will only be used for access to Jenner Gulch.* *The existing road across S7 will only be used for access to Sawmill Gulch and log hauling.* Unstable area descriptions are in Item 38. Explanation and justification is in Section III.
h.[☐]Yes [**X**] No	Slopes steeper than 65% **if YES, provide site specific instructions to the LTO in SECTION II below and provide the required explanation and justification in SECTION III.**
i. [☐]Yes [**X**] 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 below and provide the required explanation and justification in SECTION III.**
j. [**X**]Yes [☐] No [**X**] [☐] [☐]	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. **[COASTAL only]** New tractor roads at a location that has been shown on the NTMP map, flagged by an RPF or supervised designee prior to the pre-harvest inspection, or prior to the start of timber operations if a PHI was not required.

14 CCR 914.2 [934.2, 954.2](a-k) Identifies the Forest Practice Rule requirements for the use of ground based equipment within the harvesting area.

- (b) Tractor, or other heavy equipment equipped with a blade, SHALL NOT operate on skid roads or slopes that are so steep as to require the blade to be used for breaking.
- (c) Tractor roads SHALL be limited in number and width to the minimum necessary for removal of logs.
  - When less damage to the resources specified in 14 CCR 914[934, 945] will result, existing tractor roads shall be used instead of constructing new tractor roads.
  - [NORTHERN only] RPF may propose exceptions for silvicultural reasons when explained and justified within the plan.
- (e) Slash and debris from timber operations SHALL not be bunched adjacent to residual trees required for silvicultural or wildlife purposes, or placed in a location where they could discharge into a Class I or II watercourse, or Lake.
- (g) where tractor roads are constructed only those roads shall be used for the skidding of logs to landings
- (h) Desirable residual trees and seedlings will not be damaged or destroyed by tractor operations.
- (i) where water breaks cannot effectively disperse surface runoff, other erosion controls shall be installed as needed.
- Slope restrictions are identified in subsection (d), (f) [Coastal, Northern], (j) [Southern]

The LTO shall be aware of these rule requirements prior to operations

	if YES, provide site specific instructions to the LTO in SECTION II below.

k. [☐]Yes [**X**] No	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 below and provide the required explanation and justification in SECTION III.**

NOTE:

- 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.

ITEM # 23 – WINTER OPERATIONS

Per 14 CCR 895.1:

- **"Winter period" means the period between November 15 and April 1, Except under special County Rules per 14 CCR:**
  - 925.1 (Santa Clara)
  - 926.18 (Santa Cruz)
  - 927.1 (Marin)
  - 965.5 (Monterey)

- **"Extended wet weather period" means the period from October 15 to May 1.**
- **Tractor roads (except as otherwise provided in the rules):**
  - All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations.
  - Installation of drainage facilities and structures is required from October 15 to November 15 and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours per 14 CCR 914.6[934.6, 954.6](a).
- **Logging roads and landings used for timber operations shall have adequate drainage**:
  - Upon completion of use for the year or by October 15, whichever is earlier.
  - An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow. 923.5[943.5, 963.5](j).
- When the term "**WPOP"** (Winter Period Operating Plan) is used below, all the requirements per 14 CCR 914.7[934.7, 954.7] (b) must be addressed.

Due to California Red-legged Frog restrictions: The Wet Season starts with the first frontal rain system depositing a minimum of .25 inches of rain after Oct. 15 and ends on April 15. Dry Season starts April 16 and ends with the first frontal rain system.

Rainfall will be monitored at the CA Dept of Water Resources/DFM Hydro-SMN Venado weather station.

ITEM #23 WINTER OPERATIONS	
If timber operations are proposed within the winter period the RPF may propose to operate under a: • **Winter Period Operating Plan (WPOP) per 14 CCR 914.7, 934.7, 954.7(b)** • **In-lieu winter operating plan per 14 CCR 914.7 [934.7, 954.7](c)**	
a. [**X**]Yes [☐] No	Will timber operations occur during the winter period?
WINTER PERIOD OPERTING PLAN (WPOP)	
A Winter Period Operating Plan (WPOP) is required when winter operations will occur under the following conditions: • **Site preparation** • **Road and landing construction** • **Temporary logging road watercourse crossings will not be removed** • **At tractor watercourse crossings** • **Temporary logging roads or landings** • **Roads to be abandoned or deactivated** • **Operations are proposed in an ASP watershed or immediately upstream**	
b. [☐]Yes [**X**] No	Will mechanical site preparation be conducted during the winter period?

ITEM #23 WINTER OPERATIONS	
	If YES, then a WPOP is required per 14 CCR 914.7 [934.7, 954.7](b)
c. [☐]Yes [**X**] No	Will roads be constructed during the winter period? **If YES, a WPOP is required per 14 CCR 914.7 [934.7, 954.7] addressing logging road and landing construction and reconstruction per 14 CCR 923.4 [943.4, 963.4](l). Provide operational instructions to the LTO in the in SECTION II**
d.[☐]Yes [**X**] No	Will landings be constructed during the winter period? **If YES, a WPOP is required per 14 CCR 914.7 [934.7, 954.7] addressing logging road and landing construction and reconstruction per 14 CCR 923.4 [943.4, 963.4](l).). Provide operational instructions to the LTO in the in SECTION II**
e.[☐]Yes [**X**] No	Will temporary logging road watercourse crossings be left in place during the winter period? **If YES, a WPOP is required per 14 CCR 923.9 [943.9, 963.9](r). Provide specific measures to be taken during operations by the LTO in SECTION II**
f. [☐]Yes [**X**] No	Will tractor watercourse crossings be used during the winter period? **If YES, a WPOP is required per 14 CCR 914.8 [934.8, 954.8](d). Provide operational instructions and stabilization measures in SECTION II.** **If an exception is proposed provide an explanation and justification in SECTION III.**
g.[☐]Yes [**X**] No	Will temporary logging roads be used during the winter period? **If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II.**
h.[☐]Yes [**X**] No	Will temporary landings be used during the winter period? **If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II.**
i. [☐]Yes [**X**] No	Will logging roads to be abandoned or deactivated, be open (not blocked) during the winter period? **If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II.**
ASP WATERSHEDS OR IMMEDIATELY UPSTREAM	
	Extended Wet Weather Period:
j. [**X**]Yes [☐] No	Are timber operations proposed during the extended wet weather period – October to May 1? If YES, then a WPOP is required per 14 CCR 916.9 [936.9, 963.9](l) and (l)(1)
k.[☐]Yes [**X**] No	Will <u>logging roads construction or reconstruction</u> occur within the extended wet weather period? **If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II**
l. [**X**]Yes [☐] No	Will <u>logging road use</u> occur within the extended wet weather period? **If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II**

ITEM #23 WINTER OPERATIONS	
m. [☐]Yes [**X**] No	Will <u>landing construction or reconstruction</u> occur within the extended wet weather period? **If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II**
n.[**X**]Yes [☐] No	Will <u>landing use</u> occur within the extended wet weather period? **If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II**
o.[☐]Yes [**X**] No	Will any watercourse crossing drainage structures be <u>CONSTRUCTED</u> during the extended wet weather period? **If YES, provide specific measures to be taken during operations per 14 CCR 923.9 [943.9, 963.9](s) In SECTION II**
p.[☐]Yes [**X**] No	Will any watercourse crossing drainage structures be <u>RECONSTRUCTED</u> during the extended wet weather 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. [**X**]	**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:	Low, Moderate, and High
2) Mechanical Site preparation methods:	No mechanical *site preparation is proposed for this NTMP*.
3) Yarding system: ***(Constructed skid trails and tractor road watercourse crossings)***	Ground based yarding or heavy equipment use shall occur only during dry rainless periods and the dry season. Operations 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 to 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

WINTER PERIOD OPERATING PLAN (WPOP)	
	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 slurry, or (5) inadequate traction without blading wet soil or surfacing materials."
4) Operating Period:	Extended Wet Weather Period: October 15 – May 1
5) Erosion Control facilities timing:	During the winter period, erosion control structures shall be installed on all tractor roads prior to the end of the day if the National Weather Service forecast is a "chance" (30% or more) of rain before the next day, and prior to weekend or other shutdown periods (14 CCR 914.7 (c)(2)). Upgraded permanent roads will have drainage facilities and structures installed prior to the winter period at intervals along the road that are no greater than the guidelines in Table 19 (Handbook for Forest, Ranch & Rural Roads, Weaver, Weppner and Hagans, 2014) and frequent enough to disperse road surface runoff so as to avoid gully formation and minimize erosion of the road surface, erosion of the inside ditches and other drainage facilities, and erosion at the outfalls of drainage facilities and structures.
6) Consideration of form of precipitation: ***(rain or snow)***	Rain and fog
7) Ground conditions: ***(soil moisture conditions, frozen)***	Indicators of saturated soil conditions: During yarding, this condition may be evidenced by: reduced traction by equipment indicated by spinning or churning of wheels or tracks in excess of normal performance, ii) inadequate traction without blading wet soil, iii) soil displacement in amounts that cause visible increase in turbidity of downstream waters in a receiving Class I, II, III, or IV waters, or in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, or iv) creation of ruts greater than would be normal following a light rainfall. On logging roads and landing surfaces, this condition may be evidenced by: i) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance, ii) inadequate traction without blading wet soil, iii) soil displacement in amounts that cause visible increase in turbidity of the downstream waters in receiving Class I, II, III, or IV waters, or in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, or iv) pumping of road surface materials by traffic, or v) creation of ruts greater than would be created by traffic following normal road watering, which transports surface material to a drainage facility that discharges directly into a watercourse. vi) Soils or road and landing surfaces that are hard frozen are excluded from this definition. The following restrictions to ground based operations shall apply:

WINTER PERIOD OPERATING PLAN (WPOP)	
	• Use of tractor roads and watercourse crossings within any WLPZ will be prohibited during the winter period. • Use of Class III tractor road crossings is prohibited during the winter period. • Only one tractor road system shall be kept open per tractor. The road system shall be small enough for the tractor to waterbar per 14CCR 914.7(c)(2). Road and landings use: No hauling or equipment use during the wet season. Roads used for hauling during the winter period must be hydrologically disconnected. Hauling on roads during any season will cease if fines are being eroded and threaten to deliver to flowing water inside ditches or watercourses. If the landowner chooses to operate during the winter period, those seasonal roads must be upgraded to permanent roads (14 CCR 895.1) prior to commencement of hauling operations. Log hauling is prohibited if the following site conditions are present: 1) vehicles can create ruts in the surface of a road or landing (i.e. when there is an indication of saturated soil); 2) when precipitation is sufficient to generate overland flow off the road and deliver sediment to a watercourse. A dry road is one in which moisture is less than or equal to that found during normal watering (dust abatement) treatments or light rainfall. Further, vehicles are not rutting a road surface or pumping fines causing a visible increase in turbidity in any drainage facility which drains directly to Class I, II or III waters. Logging roads and landings shall not be used during any time of the year when operations may result in significant sediment discharge to watercourse, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs. Road construction and reconstruction (defined in 14 CCR 895.1) will not occur during the winter period. This also includes the construction or reconstruction of watercourse crossings. Road upgrades (upgrading seasonal roads to permanent roads) may be conducted during the winter period when soils are not saturated. Saturated soils is defined in item 3 of this WPOP. Road maintenance (grading) may occur during the winter period as long as the road system is dry. A dry road is one in which moisture is less than or equal to that found during normal watering (dust abatement) treatments or light rainfall. Further, equipment is not rutting a road surface or pumping fines causing a visible increase in turbidity in any drainage facility which drains directly to Class I, II or III waters.
8) Silvicultural system ground cover:	Silvicultural system is Selection. This is discussed in NTMP Section II and III, Item 14, and shown on the Silviculture Map at the end of Section II. A significant amount of canopy and ground cover will remain post-harvest.

WINTER PERIOD OPERATING PLAN (WPOP)	
9) Operations within the WLPZ:	Operations within the WLPZ of the NTMP during the winter period will be limited to: • Operations are prohibited during the wet season. • The felling of trees. Trees shall be felled away from a watercourse, in such a manner as to facilitate the removal of logs from the WLPZ with minimized disturbance to vegetation and ground cover. • Long lining of logs. • Road maintenance as defined above. • Road use as described above.
10) Equipment limitations:	The following restrictions shall apply: Tractor yarding and log hauling on seasonal roads shall be allowed if all of the following conditions are met. Operations are prohibited during the wet season. a. Tractor roads shall not be used in areas designated as high EHR or within any WLPZ. b. Currently in an extended dry period with low antecedent soil moisture during the dry season. c. Saturated soil conditions do not exist. A dry road is one in which moisture is less than or equal to that found during normal road watering for dust abatement. This condition shall be applied according to reasonableness, and it shall not prohibit, for example, the use of a short segment of wet road on an otherwise dry road, provided the other conditions listed here are met. d. A stable operating surface exists. e. There is no visibly turbid water from a road, landing, or inside ditch that may reach a watercourse or lake. Only one tractor road system shall be kept open per tractor. The road system shall be small enough for the tractor to waterbar per 14CCR 914.6(a)(2). 14CCR 914.6(a)(2) Installation of drainage facilities and structures is required from October 15 to November 15 and from April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours. Grading to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited. Light vehicles (defined as 1 ton pickup trucks or less, or smaller vehicles such as quad-tracks or motorcycles) may be used for access on seasonal roads during periods of wet weather, however, access will be limited to ATV's whenever rutting of the logging roads would occur (such that runoff is carried along the ruts) and/or waterbars would be breached (such that they no longer would function as intended) as a result of road use by light vehicles (pickups, etc). If the use of roads results in damage to the road surface, drainage facilities, waterbars, or watercourse crossings, the damage will be repaired using hand tools within 24 hours after the

WINTER PERIOD OPERATING PLAN (WPOP)	
	initial damage has occurred to eliminate the likelihood of related sediment reaching Class I, II, or III waters.
11) Known Unstable Areas:	*See plan maps at the end of Section II for known locations. No ground-based operations are permitted on or within 25 feet of mapped slides or unstable areas during the winter period.*
12) Logging roads and landings:	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, outsloping, 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).** **If there are NO winter operations in these areas, so state.**
s. [☐]Yes [**X**] 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 from degradation of the quality and beneficial uses of water in SECTION II as instructions to the LTO.**
Hauling and heavy equipment use roads and landings	
t. [☐]Yes [**X**] No	Will ROADS 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].**

IN-LIEU WINTER PERIOD OPERATION PLAN	
u.[☐]Yes [**X**] No	Will <u>LANDINGS</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].**
Hauling and heavy equipment use on hydrologically disconnected or saturated soils.	
v.[☐]Yes [**X**] No	Will <u>ROADS</u> be used for log hauling and heavy equipment use during the winter period on roads that are NOT hydrologically disconnected and exhibit saturated soil conditions? **If YES, provide a required explanation and justification in SECTION III. per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].**
w. [☐]Yes [**X**] No	Will <u>LANDINGS</u> be used for log hauling and heavy equipment use during the winter period on roads that are NOT hydrologically disconnected and exhibit saturated soil conditions? **If YES, provide a required explanation and justification in SECTION III. per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].**
Watercourse crossing removal	
x. [☐]Yes [**X**] No	Will any logging road watercourse crossing proposed for removal and/or stabilization be left in place during the winter period? **If YES, provide the specifics of the applicable CDFW 1600 agreement, or otherwise specify in the plan. Per 14 CCR 923.9[943.9, 963.9](p)(4) In SECTION II**

ITEM # 24 – ROADS AND LANDINGS

ITEM #24 ROAD CONSTRUCTION	
a.[☐]Yes [**X**] No	**Will any road(s) be CONSTRUCTED?**
	PROVIDE: The classification and approximate length of each of the following logging road segment categories: 1034(o) Road classification: ☐ Permanent Approximate Length Feet: _____ ☐ Seasonal Approximate Length Feet: _____ ☐ Temporary Approximate Length Feet: _____
b.[☐]Yes [**X**] No	Will new road construction 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)**
c.[***X***]Yes [☐] No	Will any Logging road(s) cross? ☒ Unstable areas ☐ Connected headwall swales (14 CCR 895.1 "Connected Headwall Swale") ☐ Both **If YES, address pursuant to 14 CCR 923.1 [943.1, 963.1](d)** *Existing roads cross unstable areas S6 and S7. Hauling is proposed at S7. No hauling is proposed at S6. No construction or reconstruction is proposed at either location.*
d. [☐]Yes [**X**] No	Will any new roads? ☐ Exceed a grade of 15% ☐ Have grades greater than 15% for distances greater than 500 feet ☐ Both NOTE: per 14 CCR 1034(x)(5)(A) new road construction or reconstruction segments exceeding 15% for 200 feet shall be mapped. **If YES, address pursuant to 14 CCR 923.2 [943.2, 963.2](d)(2). See 923 [943. 963](c).**
e. [☐]Yes [**X**] No	Will any logging roads be constructed within? ☐ 150 feet of a Class I Watercourse and Lake Transition Line (WLTL) ☐ 100 feet of a class II WLTL on slopes greater than 30% ☐ Class I Watercourse or Lake ☐ Class II Watercourse or Lake ☐ Class III Watercourse or Lake ☐ Class IV Watercourse or Lake ☐ A Watercourse and Lake Production Zone (WLPZ) ☐ Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging road crossing(s) - Logging road watercourse crossing(s) to be constructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. **If YES, address per 14 CCR 923 [943, 963](c)**
f. [☐]Yes [**X**] No	Will any constructed road be located across 100 feet or more lineal distance on? ☐ Slopes over 65% ☐ Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake **If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)**

ITEM #24 ROAD CONSTRUCTION	
g. 1.[☐]Yes **X**] No	Will any road(s) be deactivated?
2.[☐]Yes [**X**] No	Will any road(s) be abandoned? Road classification: ☐ Permanent Approximate Length Feet: _____ ☐ Seasonal Approximate Length Feet: _____ ☐ Temporary Approximate Length Feet: _____
3.[**X**]Yes [☐] No	Will any watercourse crossing(s) be deactivated?
4.[☐]Yes [**X**] No	Will any watercourse crossing(s) be abandoned? **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)** **If Logging road(s) are to be abandoned provide the blockage design Per 14 CCR 923.8 [943.8, 963.8](d)**
h. [☐]Yes [**X**] No	Is there any exception to flagging or otherwise identifying the location of any road(s) to be constructed? **If YES, address per 14 CCR 923.3 [943.3, 963.3](c)**

ROAD RECONSTRUCTION	
i. [☐]Yes [**X**] 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: ☐ Permanent Approximate Length Feet: _____ ☐ Seasonal Approximate Length Feet: _____ ☐ Temporary Approximate Length Feet: _____
j. [☐]Yes [**X**] 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 [**X**] No	Will any logging roads be reconstructed within? ☐ Class I Watercourse or Lake ☐ Class II Watercourse or Lake ☐ Class III Watercourse or Lake ☐ Class IV Watercourse or Lake ☐ A Watercourse and Lake Zone (WLPZ) ☐ Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging road crossing(s) - Logging road watercourse crossing(s) to be constructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. **If YES, address per 14 CCR 923 [943, 963](c)**

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ROAD RECONSTRUCTION	
l. [☐]Yes [**X**] No	Will any reconstructed road be located across 100 feet or more lineal distance on? ☐ slopes over 65% ☐ Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake. **If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)**
m. [☐]Yes [**X**] No	Is there any exception to flagging or otherwise identifying the location of any road(s) to be reconstructed? **If YES, address per 14 CCR 923.3 [943.3, 963.3](c)**
LANDING CONSTRUCTION	
n. [☐]Yes [**X**] No	**Will any Landing(s) be CONSTRUCTED?**
o. [☐]Yes [**X**] No	Will any landing(s) be constructed within? ☐ 150 feet of a Class I Watercourse and Lake Transition Line (WLTL) ☐ 100 feet of a class II WLTL on slopes greater than 30% ☐ Class I Watercourse or Lake ☐ Class II Watercourse or Lake ☐ Class III Watercourse or Lake ☐ Class IV Watercourse or Lake ☐ A Watercourse and Lake Protection Zone (WLPZ) ☐ Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing crossing(s) - Logging road watercourse crossing(s) to be constructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. **If YES, address per 14 CCR 923 [943, 963](c)**
p. [☐]Yes [**X**]No	Will any landing(s) exceed one half acre in size? NOTE: per 14 CCR 1034(x)(5)(D) if any landing exceeds ¼ acre in size or requires substantial excavation, the location shall be mapped. **If YES, address per 14 CCR 923 [943, 963](c) and 923.2 [943.2, 963.2](e)(2)**
q. [☐]Yes [**X**] No	Will any Landing(s) be located on? ☐ Unstable areas ☐ Connected headwall swales (14 CCR 895.1 "Connected Headwall Swale" ☐ Both **If YES, address pursuant to 14 CCR 923.1 [943.1, 963.1](d)**
r. [☐]Yes [**X**] No	Will any landing construction be located across 100 feet or more lineal distance on? ☐ Slopes over 65% ☐ Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake.

ROAD RECONSTRUCTION	
	If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)
s. [☐]Yes [**X**] No	Will any Landing(s) be deactivated?
[☐]Yes [**X**] No	Will any Landing(s) be abandoned? **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)**

LANDING RECONSTRUCTION	
t. [☐]Yes [**X**] No	**Will any Landing(s) be RECONSTRUCTED?**
u. [☐]Yes [**X**] No	Will any landings be reconstructed within? ☐ Class I Watercourse or Lake ☐ Class II Watercourse or Lake ☐ Class III Watercourse or Lake ☐ Class IV Watercourse or Lake ☐ A Watercourse and Lake Protection Zone (WLPZ) ☐ Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging roads crossing(s) - Logging road watercourse crossing(s) to be constructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. **If YES, address per 14 CCR 923 [943, 963](c)**

SIGNIFICANT EROSION SITE(S)	
v. [**X**]Yes [☐]No	Are there any significant erosion sites? ☐ Existing ☐ Potential ☒ Both Associated within the logging area at? ☒ Logging road(s) ☐ Landing(s) ☒ Watercourse crossing(s) in the logging area? Per 14 CCR 923.1 [943.1, 963.1](e)(1) – (5). Also see 923.9 [943.9, 963.9](a) **If YES, for each significant existing or potential erosion site, provide the following:** ➢ Describe current condition of the site. ➢ Identify which sites can be feasibly treated, and which sites cannot. ➢ Specify mitigations for those sites that can be feasibly treated. ➢ Indicate logical order of treatment for those which have feasible treatments

SIGNIFICANT EROSION SITE(S)	
	NOTE: Consider providing a MAP POINT TABLE which identifies the erosion site by mapped referenced identifier consistent with mapped locations.

Map Points with High Implementation Priority are significant existing and potential erosion sites.

CSDS sites with Moderate and Low IP are controllable but failure is not imminent.

All rip rap size is D50.

MITIGATION AND/OR MANAGEMENT MEASURES: If needed, provide additional details of site; and/or describe proposed treatment
*NOTE: Write "NA" or "---" if a box is not applicable to the map point

MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC) inches	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)
MP: 1.0	**SD**: CSDS, CRP, CP, CRN	**WC**: I	**EC**: 30x2	**PC**: Excavate Deactivate	**Geo Used**? No	**1600**? Yes	**PSD**: 20	**IP**: High
	Mitigation/Management Measures: Existing double culvert crossing is buried under stream bed material. The crossing is usually dry at this location. Fish were found in upstream pools during a survey in 1996. Flow is subsurface as it approaches the crossing but flows over the road with enough precipitation. *Crossing and Map Point 1.0 is entirely on the neighboring property. Any work done would be in cooperation with the owner of that parcel. The timberland owner of this NTMP has deeded right of way which assumes the right to conduct maintenance and improvements but the work would require the consent of the neighboring property owner.*							
MP: 1.1	**SD**: CDR, OK	**WC**: NA	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Culvert is in good shape and is functioning properly. Monitor and maintain.							
MP: 1.2	**SD**: F	**WC**: III	**EC**: Native Surface	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Very low flow runs down road before fully crossing onto flat vegetated area. No channel or rilling is present. Dip out where flagged, critical dip where flagged. If used for hauling, rock surface.							
MP: 1.3	**SD**: CRP, OK	**WC**: II	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Culvert is in good shape and is functioning properly. Monitor and maintain.							
MP: 1.4	**SD**: CRP, OK	**WC**: II	**EC**: 50	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: Shows light rust coloring but is overall in good shape and functioning properly. Monitor and maintain.							

MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC) inches	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)
MP: 1.5	**SD**: CRP, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Class III is diverted by the road and runs down it, causing rilling. Dip out road in natural stream location where flagged. Dip should be equal to the size of the upslope stream channel. *Place 14" riprap at outlet.*							
MP: 1.6	**SD**: CRP, OK	**WC**: III	**EC**: 30	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 25	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Large fill 74 cu. yds. Stabilized. Monitor and maintain.							
MP: 1.7	**SD**: CRP, OK	**WC**: III	**EC**: 30	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 25	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Large fill 74 cu. yds. Stabilized. Monitor and maintain.							
MP: 1.8	**SD**: CRP, OK	**WC**: III	**EC**: 36	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 30	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Large fill 79 cu. yds. Stabilized. Monitor and maintain.							
MP: 1.9	**SD**: CRP, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Fill is 31 cu. yds. Stabilized. Monitor and maintain.							
MP: 1.10	**SD**: CDR, OK	**WC**: NA	**EC**: 10	**PC**: 18	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Wood box ditch relief culvert. Monitor. Replace with plastic or metal when used for operations.							
MP: 1.11	**SD**: C, OK	**WC**: NA	**EC**: 18	**PC**: NA	**Geo Used**?	**1600**? No	**PSD**: 5	**IP**: Low

					No			
	Mitigation/Management Measures: Ditch relief culvert.							
MAP POINT (MP) Identifier	**SITE DESCRIPTION (SD) (See Key)**	**Watercourse CLASS (WC) or feature**	**EXISTING Culvert Diameter Size (EC) inches**	**PROPOSED Culvert Diameter Size (PC) inches**	**Geologist used? Yes or No**	**1600? Yes or No**	**Potential Sediment Discharge (PSD) in cu. yds. (See Key)**	**Implementation Priority (IP) (See Key)**
MP: 1.12	**SD**: CDR, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 3	**IP**: Low
	Mitigation/Management Measures: Culvert drains inside ditch. Culvert is in good shape and functioning Monitor and maintain.							
MP: 2.0	**SD**: CDR, OK	**WC**: NA	**EC**: 14	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Culvert drains inside ditch. Culvert is in good shape and functioning Monitor and maintain.							
MP: 2.1	**SD**: CRP, CF	**WC**: II	**EC**: 36	**PC**: 30	**Geo Used**? No	**1600**? No	**PSD**: 7	**IP**: High
	Mitigation/Management Measures: Culvert bottom is showing rust with some visible holes. It is still currently functioning. Replace culvert per standard detail R1 *using 12" riprap*.							
MP: 2.2	**SD**: F, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Rock-filled ford crossing. Monitor and maintain.							

MP: 2.3	**SD**: CRP, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: Culvert is in good shape and is functioning properly. Monitor and maintain							
MP: 2.4	**SD**: CRP, OK	**WC**: III	**EC**: 30	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 3	**IP**: Low
	Mitigation/Management Measures: Bank seep contained by inside ditch and drained by CMP. Culvert is in good shape and is functioning. Monitor and maintain.							
MP: 2.5	**SD**: CRP, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 30	**IP**: Low
	Mitigation/Management Measures: Unstable area leading to a fill slope failure. Cut bank seeps have created two wet spots on the road surface. This road will not be used. *Create a cross drain using a shovel or other hand tool to dry out the wet spots.*							

MP: 3.1	**SD**: CRP, C	**WC**: III	**EC**: 30	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**:5	**IP**: Low
	Mitigation/Management Measures: 30" CMP is in good shape set at grade with adequate rip-rap. Some material built up at the inlet. Removal with hand tools would be sufficient.							
MP: 3.2	**SD**: RD	**WC**: Wet spot	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: None	**IP**: Low
	Mitigation/Management Measures: Rolling dip at wet spot in road. The outboard edge for the dip has been armored with rip-rap. If wet during operations rock the running surface of the road while maintaining the existing dip.							
MP: 3.3	**SD**: CRP, C	**WC**: III	**EC**: 18	**PC**: 24	**Geo Used**? no	**1600**? Yes	**PSD**: 8	**IP**: Low
	Mitigation/Management Measures: 18" CMP drains a small class III swale. The pipe is short reducing road surface width and is placed high in the fill. Replace culvert per standard detail C1 *using 6" riprap*.							
MP: 3.4	**SD**: CRP, C	**WC**: III	**EC**: 30"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 8	**IP**: Low
	Mitigation/Management Measures: 30" CMP in good condition functioning properly. Monitor and maintain.							
MP: 3.5	**SD**: CRP, C	**WC**: III	**EC**: 30"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: 30" CMP in good condition and functioning properly. Monitor and maintain.							
MP: 3.6	**SD**: CRP, C	**WC**: III	**EC**: 24"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: 24" CMP in good condition and is functioning properly. Monitor and maintain.							
MP: 3.7	**SD**: CRP, C	**WC**: III	**EC**: 24"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: 24" CMP in good condition and is functioning properly. Monitor and maintain.							

MP: 3.8	**SD**: CRP, C, TR	**WC**: III	**EC**: 18"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: 18" CMP in good condition and is functioning properly. Monitor and maintain.							
MP: 3.9	**SD**: CRP, C	**WC**: II	**EC**: 48"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: 48" CMP in good condition and is functioning properly. Monitor and maintain.							
MP: 3.10	**SD**: CRP, C, TR	**WC**: III	**EC**: 18"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: 18" CMP in good condition and is functioning properly. Rebar added as trash rack Monitor and maintain.							
MP: 3.11	**SD**: CRP, C	**WC**: III	**EC**: 24"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: 24" CMP in good condition and is functioning properly. The culvert has been placed at grade with adequate riprap on the fill slope. Uphill from the culvert there are 2 wet spots on the road that may require rock if used for operations. Monitor and maintain.							
MP: 3.12	**SD**: C	**WC**: Spring	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Cut bank spring captured by inside ditch that flows into large redwood stump. If road surface is wet during operations rock road surface.							
MP: 3.13	**SD**: CSDS, CUTF	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 4	**IP**: Low
	Mitigation/Management Measures: 28" Douglas-fir has slid down the cut bank with a mass of material blocking the road. Remove fir and stabilize root wad below the road. Incorporate material into road surface.							
MP: 3.14	**SD**: CRP, C, OK	**WC**: II	**EC**: 60"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: 60" CMP Placed low in the stream creating a "live channel" throughout the culvert. Signs of rust are showing. Monitor and maintain.							

MP: 4.0	**SD**: OK, O	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: The top of the watercourse is below road edge.							
MP: 4.1	**SD**: OK, CRP, C	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 25	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Fill is 85 cu. yds. Stabilized.							
MP: 4.2	**SD**: C, OK, O	**WC**: NA	**EC**: 12	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 25	**IP**: Low
	Mitigation/Management Measures: Ditch relief culvert CMP. Partially filled with sediment but functioning. Down spout approximately 10 feet long. Monitor and maintain							
MP: 4.3	**SD**: CRP, C, OK	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Monitor and maintain.							
MP: 4.4	**SD**: CRP, C, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Monitor and maintain.							
MP: 4.5	**SD**: C, OK	**WC**: NA	**EC**: 12	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch relief culvert. Monitor and maintain. Waterbar downhill of DRC is breached on the inside edge and flow coming off hillside above. This flow crosses the road at a low point onto an old skid trail creating a channel/gully. Relocate dip down the road to catch the hillside flow and drain above the trail and channel/gully.							

MP: 4.6	**SD**: O	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Seepy road cut bank drains across road at low point. Top of Class III watercourse 100 feet below road edge. Dip out upon completion of operations. Log crib on outside road edge, Douglas-fir, unsound. Replace cribbing with redwood if needed for road width or remove cribbing if enough width for skidding.							
MP: 4.7	**SD**: O	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Channel above road. No channel below. Dip out upon completion of operations.							
MP: 4.8	**SD**: F, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Rocked ford. Class II spring above road. No surface water through crossing or below road.							
MP: 4.9	**SD**: C, OK	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Metal culvert. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.10	**SD**: C, OK, O	**WC**: NA	**EC**: 18	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch Relief Culvert. Metal. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.11	**SD**: C, OK	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Metal. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.12	**SD**: C, OK, O	**WC**: NA	**EC**: 24	**PC**: NA	**Geo Used?** No	**1600?** No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch relief culvert. Metal. Recently upgraded. Rock armor inlet and outlet.							

MP: 4.13	**SD**: C, OK	**WC**: III	**EC**: 36	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Metal. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.14	**SD**: C, OK, O	**WC**: NA	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch relief culvert. Plastic. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.15	**SD**: C, OK, O	**WC**: NA	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch relief culvert. Recently upgraded. Rock armor inlet and outlet.							
MP: 4.16	**SD**: C, OK	**WC**: III	**EC**: 36	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Rock armor inlet and outlet.							
MP: 4.17	**SD:** F, OK	**WC:** NA	**EC:** NA	**PC:** NA	**Geo Used?** No	**1600?** No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Rock ford recently upgraded in 2018 No Action necessary.							
MP: 4.17A	**SD:** F, OK	**WC:** NA	**EC:** NA	**PC:** NA	**Geo Used?** No	**1600?** No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Rock ford recently upgraded in 2018 No Action necessary.							
MP: 4.18	**SD**: F, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: Rock ford recently upgraded in 2018 No Action necessary.							

MP: 4.19	**SD:** F, OK	**WC:** III	**EC:** NA	**PC:** NA	**Geo Used?** No	**1600?** No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Rock ford recently upgraded in 2018 No action necessary.							
MP: 4.19A	**SD:** RD, OK	**WC:** NA	**EC:** NA	**PC:** NA	**Geo Used?** No	No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Rocked rolling dip.							
MP: 4.19B	**SD:** RD, OK	**WC:** NA	**EC:** NA	**PC:** NA	**Geo Used?** No	**1600?** No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Rocked rolling dip.							
MP: 4.20	**SD:** F, OK	**WC:** III	**EC:** NA	**PC:** NA	**Geo Used?** No	**1600?** No	**PSD:** 0	**IP:** Low
	Mitigation/Management Measures: Recently installed rock ford with dip. No action necessary.							
MP: 4.21	**SD**: C, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Plastic Monitor and maintain.							
MP: 4.22	**SD**: C, OK	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 20	**IP**: Low
	Mitigation/Management Measures: Recently upgraded. Plastic Monitor and maintain.							
MP: 4.23	**SD**: C, OK	**WC**: II	**EC**: 54"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low

	Mitigation/Management Measures: Recently installed 54" plastic culvert with rock armored inlet and outlet. Critical dip is located over the top of the culvert. The road surface is rocked 50' each side of the culvert. Monitor and maintain.							
MP: 4.24	**SD**: F, OK, O	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 15	**IP**: Low
	Mitigation/Management Measures: Rock ford recently constructed. No action necessary.							
MP: 4.25	**SD**: C, OK	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 15	**IP**: Low
	Mitigation/Management Measures: Metal Culvert is in good condition and functioning well. Monitor and maintain.							
MP: 4.26	**SD**: C, OK, O	**WC**: NA	**EC**: 12	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Ditch Relief culvert. Monitor and maintain							

MP: 5.0	**SD**: CSDS, CRP, CRF	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 2	**IP**: Moderate
	Mitigation/Management Measures: Install larger broader dip. Native soil is rocky. Remove perched fill from downstream outfall left bank only. Do not reduce road width. Install 6" rip rap armor or log armor notched and keyed in at outfall.							
MP: 5.1A	**SD**: CSDS, CRP, CRF	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 5	**IP**: Moderate
	Mitigation/Management Measures: Install larger broader dip. Native soil is rocky. Remove perched fill from both downstream banks. Do not reduce road width. Install 6" rip rap armor or log armor notched and keyed in at outfall.							
MP: 5.1B	**SD**: CRP, CRF	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: Install larger broader dip. Native soil is rocky. Remove perched fill from outer edge. Okay to reduce road width to 12 feet. Install 6" rip rap armor or log armor notched and keyed in at outfall.							
MP: 5.2A	**SD**: CRP	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Drains to 5.2B. Redirect straight across road with larger broader dip to swale below. Install 6" rip rap armor or log armor notched and keyed in at outfall.							
MP: 5.2B	**SD**: CSDS, CRT, CRF	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 1	**IP**: Moderate
	Mitigation/Management Measures: Lay back downstream banks through fill. Install 6" rip rap armor or log armor notched and keyed in at outfall.							
MP: 5.3	**SD**: CSDS, CRP, CP, CU	**WC**: III	**EC**: 7	**PC**: 24	**Geo Used**? No	**1600**? Yes	**PSD**: 5	**IP**: Moderate
	Mitigation/Management Measures: Culvert undersized and needs replacement. Install new culvert per standard detail R1. Install critical dip where flagged.							

MP: 5.4	**SD**: CR	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Install rock-fill crossing with *6" riprap base*. Disconnect seep and ditch from crossing with dip above where flagged.							
MP: 5.5	**SD**: CSDS, C, CS, CNA	**WC**: II	**EC**: 18	**PC**: 24	**Geo Used**? No	**1600**? Yes	**PSD**: 20	**IP**: Moderate
	Mitigation/Management Measures: Culvert misaligned, undersized, and shotgunned. Replace existing culvert with 24-inch culvert aligned with channel, *12" riprap at outlet*.							
MP: 5.6	**SD**: O	**WC**: Seep/Spring	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Moderate
	Mitigation/Management Measures: Install dip and rock surface.							
MP: 5.7	**SD**: CSDS, CRT	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Install dip and rock surface.							
MP: 5.8	**SD**: CSDS, CRT	**WC**: II	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? Yes	**PSD**: 15	**IP**: High
	Mitigation/Management Measures: Stream crosses road at a flat location that was dipped out in the past. The watercourse still flows over the road. Install a rock filled ford per standard detail RF-2 using minimum 12" riprap.							
MP: 5.9	**SD**: CSDS, CRT	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Moderate
	Mitigation/Management Measures: Stream crosses road with no permanent infrastructure. If used for operations, install a rock filled ford per standard detail RF-2 using 6" riprap.							

MP: 5.10	**SD**: CRT	**WC**: II spring	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Small stream and Class II spring showing some sign of waterflow across road. If used for operations rock road at this location. 3" minus rock minimum.							
MP: 5.11	**SD**: CSDS, CRT	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 3	**IP**: Low
	Mitigation/Management Measures: Small stream showing some sign of waterflow across road. If used for operations rock road at this location. 3" minus rock minimum.							
MP: 5.12	**SD**: CSDS, CRP, CF, CNG	**WC**: III	**EC**: 24	**PC**: 24	**Geo Used**? No	**1600**? Yes	**PSD**: 25	**IP**: High
	Mitigation/Management Measures: Culvert is on old growth log buried in the road. Trash rack present, replace culvert. Culvert on old growth log unknown size, difficult to properly grade around stump. Critical dip into redwood clump.							
MP: 5.13	**SD**: CRT, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Dip out upon completion.							
MP: 5.13A	**SD**: CRT, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Flows over steep embankment, monitor regularly.							
MP: 5.14	**SD**: CRT, OK	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Signs of water crossing the road. Create a rock filled ford with critical dip using 12" rock base. See Standard Detail RF-2.							

MP: 5.14A	**SD**: FF	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: Fill slope failure weakening outboard edge of road. If road is used for operations add 18" Riprap to fill failure and stabilize the fill.							
MP: 5.15	**SD**: C, OK	**WC**: NA	**EC**: 18"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 0	**IP**: Low
	Mitigation/Management Measures: 18" culvert placed in swale. The swale at this location is wide and shows no sign of concentrated waterflow. The culvert is in great condition. Monitor and maintain.							
MP: 5.16	**SD**: CSDS	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: Water flowing across road from swale above and concentrating below. The flow has degraded the outboard edge of the road. Create a rock filled ford with critical using minimum 10" rock base. See Standard Detail RF-2.							
MP: 5.17	**SD**: C, CS, OK	**WC**: III	**EC**: 18"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 15	**IP**: Low
	Mitigation/Management Measures: 18" CMP is installed with a shotgunned outlet. The pipe is in good condition and is functioning. Cut off excess shotgunned pipe and install downspout.							
MP: 5.18	**SD**: C, CF	**WC**: NA	**EC**: 18"	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 20	**IP**: Moderate
	Mitigation/Management Measures: 18" CMP plugged in the past causing water to run down the road. Remove culvert and replace with rock filled ford using minimum 10" rock. See Standard Detail RF-2.							
MP: 5.18A	**SD**: UA	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: Undetermined	**IP**: Low
	Mitigation/Management Measures: Unstable area S5 is related to the plugged culvert at site 5.18. This slide has removed the road prism making the road *inoperable for timber operations*. Based on the age of the trees on the slide it is estimated to *have occurred 15-20 years ago*. If amended for use for operations, the amendment shall constitute a substantial deviation and will include consultation with a professional geologist.							

MAP POINT (MP) Identifier	SITE DESCRIPTION (SD) (See Key)	Watercourse CLASS (WC) or feature	EXISTING Culvert Diameter Size (EC) inches	PROPOSED Culvert Diameter Size (PC) inches	Geologist used? Yes or No	1600? Yes or No	Potential Sediment Discharge (PSD) in cu. yds. (See Key)	Implementation Priority (IP) (See Key)
MP: 6.1	**SD**: CSDS, CR	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Stream flowing across road causing minimal erosion. Construct rock armored ford with 12" riprap as per standard detail RF-1.							
MP: 6.2	**SD**: CSDS, CR	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Stream flowing across road causing minimal erosion. Construct rock armored ford with 14" riprap as per standard detail RF-1.							
MP: 6.3	**SD**: CSDS, CRP, C	**WC**: Cut Bank Spring	**EC**: 12"	**PC**: 24"	**Geo Used**? No	**1600**? No	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Cut bank seep is drained by 12 CMP. The culvert is aging but is still functioning. Maintain and monitor. When operations affect this location replace culvert per standard detail R1.							
MP: 6.4	**SD**: CSDS, CRP, C, OK	**WC**: II	**EC**: 36"	**PC**: 60"	**Geo Used**? No	**1600**? Yes	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: Culvert is aged with rusted bottom and some visible holes. It is currently functioning. Replace culvert per standard detail R1.							
MP: 6.4A	**SD**: F, OK	**WC**: II	**EC**: N/A	**PC**: N/A	**Geo Used**? No	**1600**? Yes	**PSD**: 2	**IP**: Low
	Mitigation/Management Measures: Road crosses old stream channel via rock filled ford. The channel does not show signs of any recent water movement. Monitor and maintain.							

MP: 6.5	**SD:** CSDS	**WC:** II	**EC:** 48" open	**PC:** 48" open	**Geo Used?** No	**1600?** Yes	**PSD:** 150	**IP:** Low
	Mitigation/Management Measures: An earthen dam was constructed around the turn of the century to support the historic Doller-fuller Mill that existed between 1890-1923. The dam is roughly 160 feet in length and 40 feet tall, over time sediment has filled in what was once the pond creating a marsh like habitat. Vegetation has grown in with some trees 20+ years of age, the mainstream currently flows down the eastern side of the sediment buildup to the top of the dam where it is directed into a culvert overflow and piped 55' down the dam's face where it drops back into the natural stream channel at the base of the dam. The overflow is constructed of pieces of a 48" CMP split in two and linked together creating a flume. This overflow has now rusted out 20' down the face of the dam allowing water to gully out material below the overflow. Remove CMP overflow and reconstruct the flume using 48" plastic culvert. Where gulling has begun place 2.5' rock to restrict continued erosion from the previously created gully.							

MP: 6.6	**SD**: CSDS, CRP, C, OK	**WC**: II	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 9	**IP**: Low
	Mitigation/Management Measures: Class II Spring uphill provides year-round flow at this site. The current CMP is functioning with light material buildup at the inlet. Clear inlet. Monitor and maintain.							
MP: 6.7	**SD**: CSDS	**WC**: Cut Bank Spring	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 3	**IP**: Low
	Mitigation/Management Measures: Cut bank seep creates a wet spot on the road. A ditch was constructed to flow the water past the switchback. Cattle activity has eroded the ditch structure. Clean out and reshape ditch in the same location.							
MP: 6.8	**SD**: CSDS, CR	**WC**: III	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: Cut bank seep creating wet spot on the road. If wet during operations out slope road and rock surface.							
MP: 6.9	**SD**: CSDS, CRP, CF	**WC**: II	**EC**: 36"	**PC**: 36"	**Geo Used**? No	**1600**? Yes	**PSD**: 20	**IP**: Low
	Mitigation/Management Measures: Culvert is aging with visible rust and some holes. At the outlet tires have been used as energy dissipators. The culvert is still functioning. When operations affect this site, replace culvert per standard detail R1. Replace tires with 16" rock.							
MP: 6.9A	**SD**: FF	**WC**: NA	**EC**: NA	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 15	**IP**: Low
	Mitigation/Management Measures: The outboard edge of the road has slumped down 2-3ft for a distance of 30 ft, narrowing the width of the road. Log hauling across this map point is not possible in its current condition. This area was determined to be a shallow landslide in a geologic report from 2001 which is summarized in Item 38 of this NTMP. No other recent movement has occurred.							
MP: 6.10	**SD**: CSDS, CRP, C	**WC**: III	**EC**: 18	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 21	**IP**: Low
	Mitigation/Management Measures: Class III draining pasture above. Culvert showing signs of light rust but is functioning normally.							

	Monitor and maintain.

MP: 6.11	**SD**: CSDS, CRP, C	**WC**: III	**EC**: 30	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 81	**IP**: Low
	Mitigation/Management Measures: Class III stream drains pasture. 30" CMP is functioning. There is a large rock that has been lodged into the inlet. Remove rock from inlet. Monitor and maintain.							
MP: 6.12	**SD**: CSDS, CRP, C, OK	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 10	**IP**: Low
	Mitigation/Management Measures: Class III draining pasture above. Culvert is in good shape and is functioning. Monitor and maintain.							
MP: 6.13	**SD**: CSDS	**WC**: Cut Bank Spring	**EC**: 6"	**PC**: 18"	**Geo Used**? No	**1600**? No	**PSD**: 1	**IP**: Low
	Mitigation/Management Measures: 2 Cut bank springs are contained in short ditch and are drained across the road via a 6-inch Sewer pipe. Construct a ditch that captures both springs on the inside edge of the road. at the lowest point install an 18" culvert as per standard detail R7.							
MP: 6.14	**SD**: CRP, C	**WC**: III	**EC**: 24	**PC**: NA	**Geo Used**? No	**1600**? No	**PSD**: 5	**IP**: Low
	Mitigation/Management Measures: Class III turns into a swale with little sign of water moving through the pipe. The pipe is in good condition and is functioning. Monitor and maintain.							

INSTRUCTIONS FOR FILLING OUT MAP REFERENCE TABLE FOR PLANNED WORK AND MITIGATION

The Map Reference/Work Order Table is designed to be used in Timber Harvesting Plans (THPs), Nonindustrial Timber Management Plans (NTMPs), and Notices of Timber Operations (NTOs). It has been designed to eliminate the need to repeatedly provide the same information separately for THPs/NTMPs, Erosion Control Plans, and 1600 applications. Instead, the table can be referenced under appropriate THP/NTMP item numbers, RWQCB Erosion Control Plans (ECP)'s, and/or 1600 permit applications included in the THP/NTMP.

All map points (e.g. unstable areas, exception and in lieu points, watercourse crossings, mitigation sites, etc.) can be identified in the table. Acronyms from the "Map Key" (see below) can be utilized for the "Site Description" and "Implementation Priority" found on the table. It is suggested that you include the Map Key, Map Reference Table, and associated map together in Section II of the Plan.

To add additional rows in the Map Reference Table: copy the full row which is established for each map point (composed of two lines); and add to the bottom of your table.

If you are submitting an NTO, please update your Map Reference Table to reflect current information. If a map point has been addressed under a previous NTO, indicate that (e.g. "Addressed under previous NTO") and include any additional maintenance information, if applicable, for that map point. If you add new map points to the NTO table, they must have been amended to the NTMP first, UNLESS they are maintenance points only.

MAP POINT / WORK ORDER TABLE KEY			
SITE DESCRIPTION			
OK	Functional Site	**CROSSING TYPES**	
CSDS	Controllable Sediment Discharge Site	**B**	Bridge
UA	Unstable Area	**CR**	Crossing site
O	Other descriptions than below (describe under "Measures" on table)	**CRF**	Crossing failure
		CRP	Crossing- EXISTING permanent
ROAD / SKID TRAILS		**CRT**	Crossing- EXISTING temporary
CRN	Critical dip needed	**C**	Culvert (also see below)
CUTF	Cutbank failure	**F**	Ford
FF	Fill failure	**HCR**	Humboldt crossing
FP	Fill perched	**LSB**	Log stringer bridge
G	Gully	**RRD**	Rocked Rolling Dip
L	Landing	**SCR**	Spitler crossing
IDE	inside ditch eroding		
RA	Road abandonment	**CULVERT CONDITIONS**	
RC	Road construction	**CAM**	Culvert attachments missing (e.g. trash racks, downspouts, etc.)
RR	Road Reconstruction	**CD**	Damaged inlet or outlet
RD	Rolling dip	**CDR**	Ditch relief needed
SK	Skid trail	**CF**	Failed / failing
WB	Waterbar	**CFB**	Fish barrier
		CFD	French Drain
WLPZ and WATERCOURSES		**CNA**	Culvert not aligned
AP	Alternative practice	**CNG**	Culvert not installed to grade
FB	Fish barrier	**CE**	Outlet erosion
HE	Habitat enhancement	**CS**	Outlet shotgunned
IL	In lieu practice	**CP**	Culvert plugged
WD	Water drafting	**CU**	Culver undersized
WCD	Watercourse diversion	**TR**	Trash Rack
WDP	Woody debris project		
IMPLEMENTATION PRIORITY (IP)			
HIGH	Mitigation applied in: **First NTO under approved plan**		
MED.	Mitigation applied: **Concurrent with operations affecting site.**		
LOW	Mitigations applied: **Evaluate annually & update status every 2 years with required ECP monitoring or shall be corrected during the life of the NTMP.**		
POTENTIAL SEDIMENT DISCHARGE			
If located in the Region of the North Coast Regional Water Quality Control Board, provide the following information in the associated table for each Controllable Sediment Discharge Source (CSDS) map point			
• Potential Sediment Discharge (PSD): expressed in total cubic yards			

ITEM #25

NOTE: If any item listed above is checked "YES" Provide:

- **Operations Instructions to the LTO,** in accordance with the respective rule requirement(s) in **SECTION II** of the THP.
- Any required **explanation and justification** should be included in **SECTION III**

Operation instructions to the LTO:

Refer to the instructions for Significant Existing and Potential Erosion Map Points 1.0, 2.1, 5.8, and 5.12 in the Table in Item 24.

ONLINE SYSTEM WILL HAVE A BOX TO ALLOW FOR THE EXPLANATION AND EXPLANATION TO BE COMPLETED IN SECTION II BUT WILL POPULATE IN SECTION THREE WHEN PRINTED

ASP WATERSHEDS	
a. [X]Yes [☐] No	Will hauling on roads and landings be limited to those which are Hydrologically disconnected from watercourses to the extent feasible, and exhibit a stable operating surface? **If NO, address the exception pursuant to 923.6 [943.6,963.6] (h)(3).**

ADDRESS THE FOLLOWING AS IT APPLIES TO ASP WATERSHEDS OR IMMEDIATELY UPSTREAM AND CONTIGUOUS TO, ANY WATERSHED WITH LISTED ANADROMOUS SALMONIDS

- When logging road(s) or landing(s) construction or reconstruction is proposed identify:

1) How the proposed operations will fit into the systematic layout pattern.
Per 14 CCR 923.1 [943.1. 963.1](g)
The proposed operations will utilize existing layout of roads and landings which were designed to optimally access all areas of the NTMP.

2) What, if any, offsetting mitigation measures (including but not limited to, abandonment of logging road(s) and landing(s)) are need to minimize potential adverse impacts to watersheds from the road system.
Per 14 CCR 923.1 [943.1. 963.1](g)
No logging roads or landings will be abandoned.
Road and watercourse crossing upgrades are proposed in the Map Points Table in Item 24.

- Provide specific provisions for the protection of salmonid habitat for all logging road(s) construction:

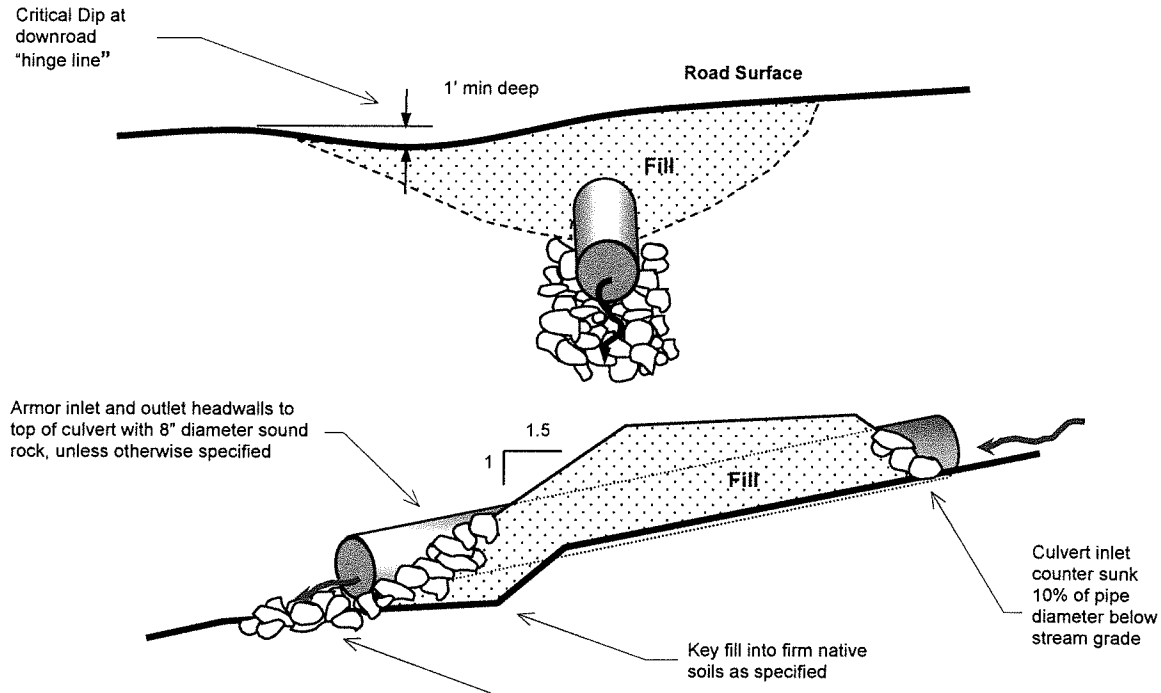
No logging road construction is proposed.

3) On slopes, greater than 50% with access to a watercourse or lake.
Per 14 CCR 923.4 [943.4, 963.4](s)(1) No logging road construction is proposed.

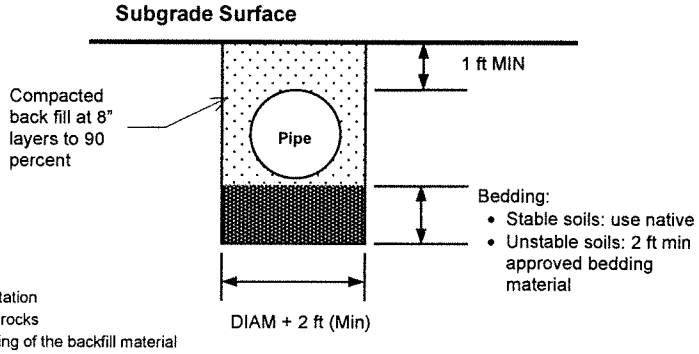
- Provide specific erosion control measures for all permanent and seasonal roads:
  - Repairs will be conducted as described in the Map Points Table. Waterbars and rolling dips will be installed as needed. Crossings will be inspected and kept clear of debris that could divert flow.
  - During repairs, no sidecasting of soil will occur. No perched fill will be left in place.
  - No in-lieu practices are proposed.
  - Trees are to be felled away from watercourses.

4) With a grade of 15% or greater which extends 500 feet or more.
Per 14 CCR 923.5 [943.5, 963.5](q)(2) None

PERMANENT CULVERT



Discharge onto rock apron (unless otherwise specified)
- Use 18" minimum diameter sound durable rock unless otherwise specified
- Imbed rock minimum of 6" into firm native soil and extend downstream 2 times culvert diameter.
- Place rock prior to laying pipe



PIPE SPECIFICATIONS

Diameter	Specifications
<= 48"	Smooth bore, double wall ABS Plastic (ADS N-12 or Equivalent)

NOTES
- Culverts should be installed at the natural stream level, grade and orientation
- The culvert bed shall be clean and free of large woody debris and large rocks
- The width of trenches shall permit satisfactory joining and through tamping of the backfill material
- The inlet to the culvert should be a slightly below the streambed so that the water falls into the culvert inlet
- Culverts distorted more than 10% of normal dimension, ruptured or broken shall be replaced
- Unsuitable foundation material (highly plastic material – "blue goo") shall be excavated below the inlet elevation of the culvert to an approximate depth of 2 feet and a width of at least the culvert diameter plus 4 feet
- Fill shall be keyed and bench into firm native soils. Areas to receive fill shall be striped to remove all vegetation, roots, brush, highly organic soils and other unsuitable fill material. Depth of stripping is assumed to be minimum of 6 to 12 inches.
- Onsite soils may be reused as engineered fill. Backfill should consist of select structural back fill consisting of 50 percent of the material being retained on the #200 sieve, the fines portion being non-expansive, no rock or cobbles greater than 3 inches in size, and free of organic material. Any imported fill should consist of non-expansive soil.
- Fill shall be placed in maximum 8 inch thick horizontal lifts and compacted to a a degree greater than the surrounding soils. Soil moisture shall be adequate to achieve suitable compaction.
- Critical dip shall be installed at the hinge line
- On running streams, water will be pumped or diverted past the crossing and into the down stream channel during the construction process.
- Inlet and outlet shall be appropriately armored to protect the fill from the hydrologic energy of the stream.
- Conform to Department of Fish and Game 1600 permit where applicable

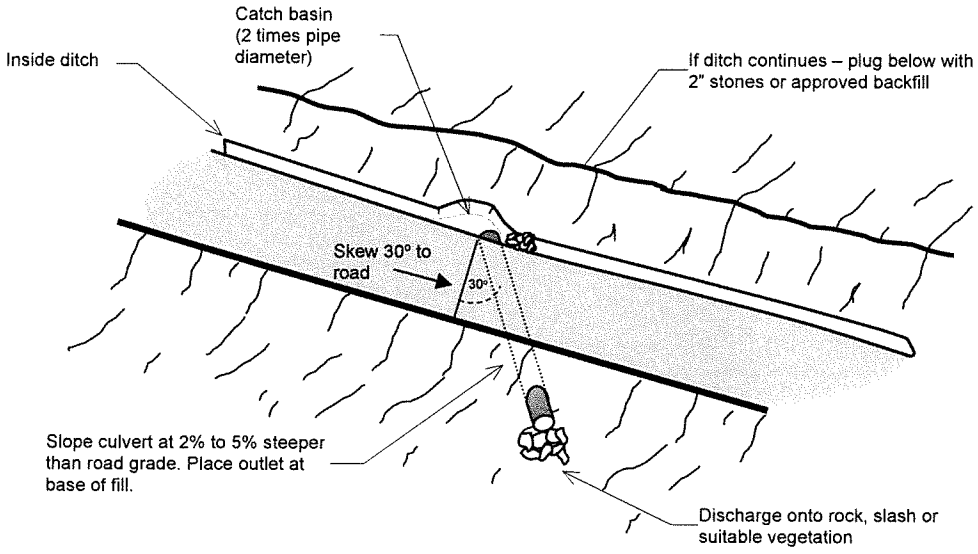
TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425-5832 (831) 425 5830 fax

PERMANENT WATERCOURSE CROSSING STANDARD PLAN

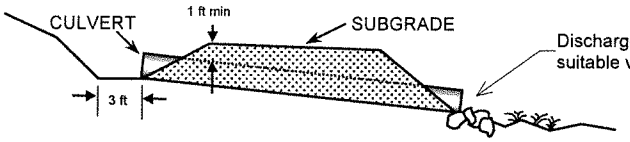
Standard Detail R1

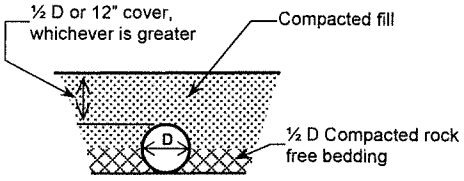
Date: January 7, 2008

DITCH RELIEF CUVLERT

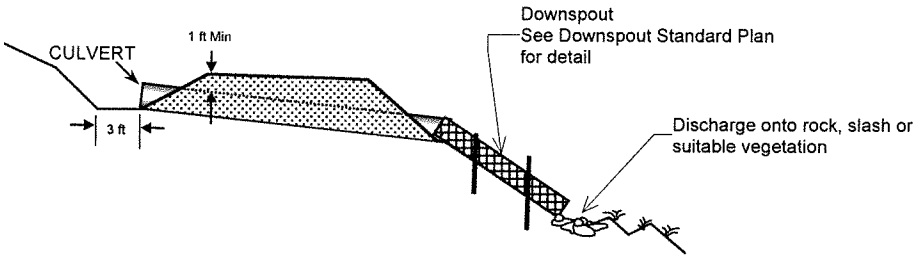


TYPE "A" DITCH RELIEF CULVERT (no downspout)

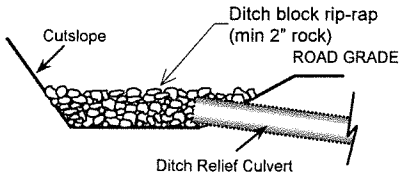




TYPE "B" DITCH RELIEF CULVERT (with downspout)



TYPICAL DITCH BLOCK SECTION



NOTES

- Culverts should extend a minimum of 1' beyond base of road fill, or flume used to carry flow beyond fill.
- Backfill shall be adequately compacted throughout the entire process to 90 percent ASTM 1557 unless otherwise specified.
- Rock, slash or suitable vegetation should be used at discharge point as directed or specified

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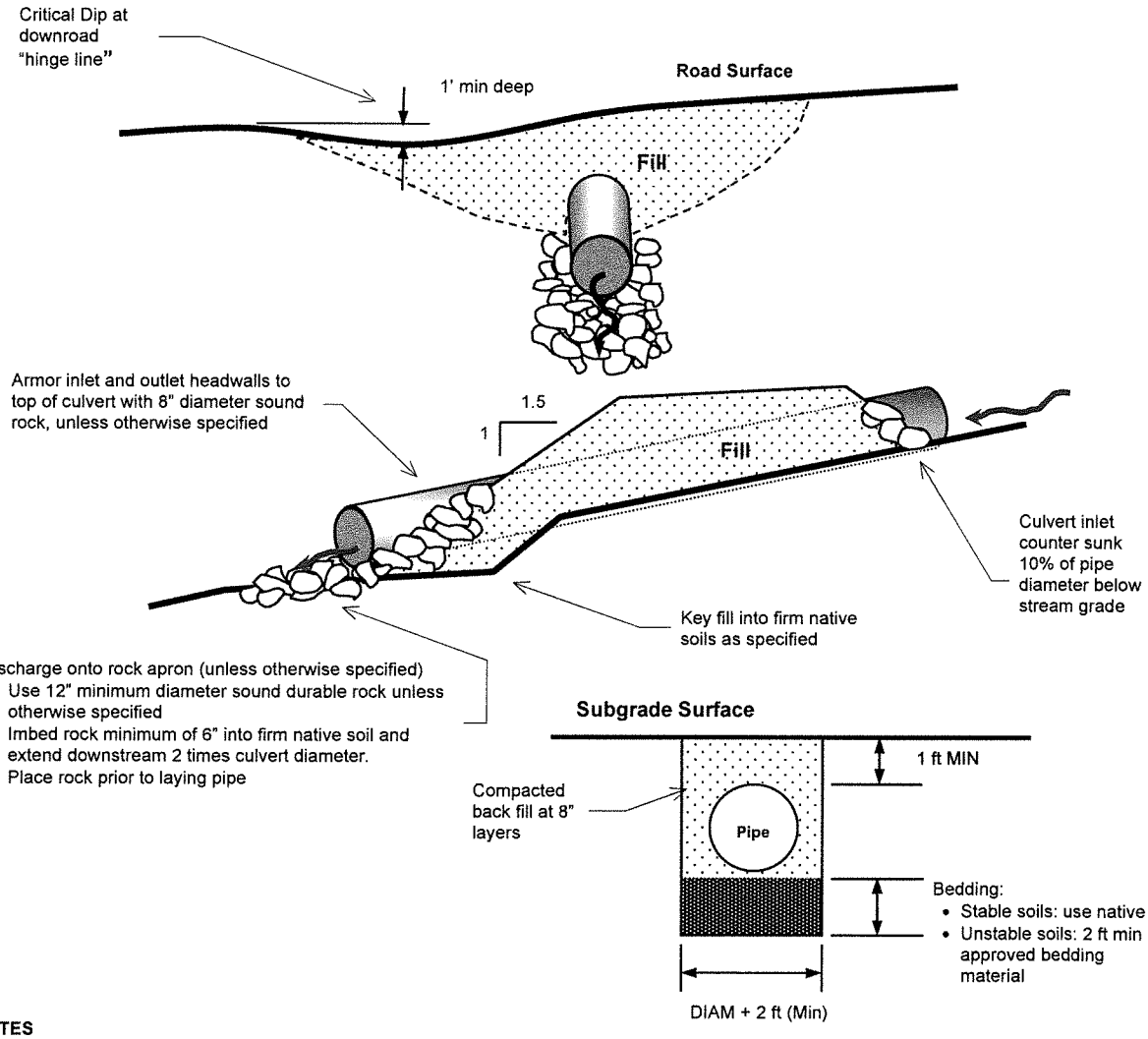
DITCH RELIEF CULVERT STANDARD PLAN

Standard Detail R7

Date: December 22, 2007

PERMANENT CULVERT

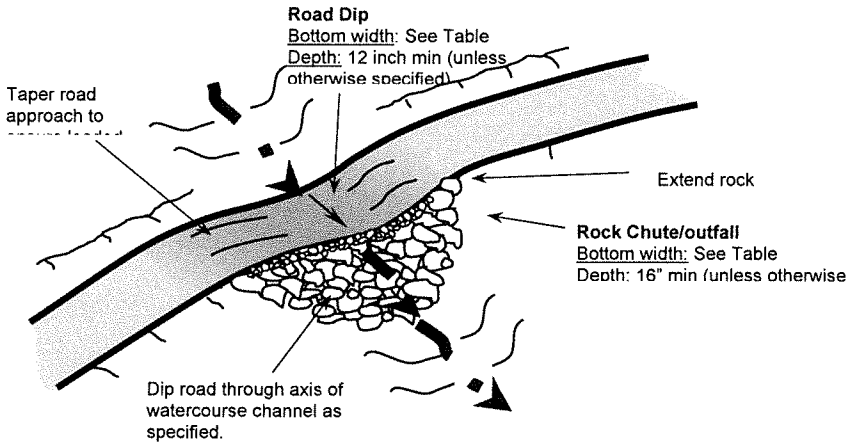


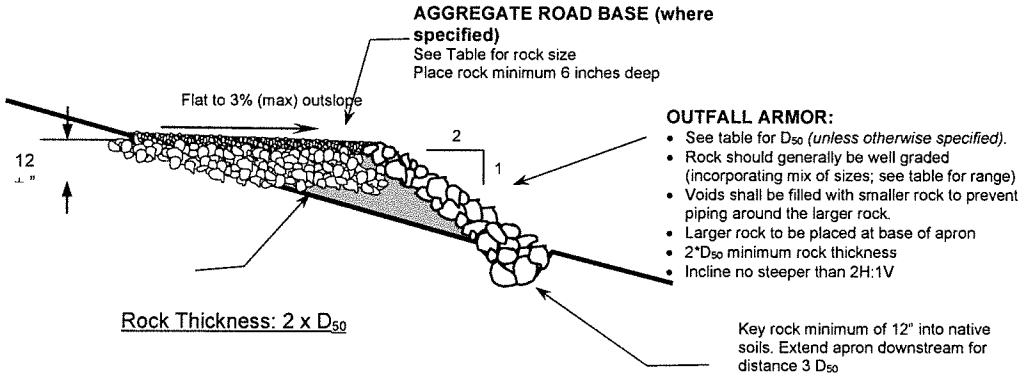
NOTES

- Culverts should be installed at the natural stream level, grade and orientation.
- The culvert bed shall be clean and free of large woody debris and large rocks.
- The width of trenches shall permit satisfactory joining and thorough tamping of the backfill material.
- The inlet to the culvert should be slightly below the streambed so that the water falls into the culvert inlet.
- Culverts distorted more than 10% of normal dimension; ruptured or broken shall be replaced.
- Unsuitable foundation material (highly plastic material – "blue goo") shall be excavated below the inlet elevation of the culvert to an approximate depth of 2 feet and a width of at least the culvert diameter plus 4 feet.
- Fill shall be keyed and benched into firm native soils. Areas to receive fill shall be stripped to remove all vegetation, roots, brush, highly organic soils and other unsuitable fill material. Depth of stripping is assumed to be a minimum of 6 to 12 inches.
- Onsite soils may be reused as fill. Backfill should consist of select structural back fill, no rock or cobbles greater than 3 inches in size, and free of organic material. Any imported fill should consist of non-expansive soil.
- Fill shall be placed in maximum 8 inch thick horizontal lifts and compacted to a degree greater than the surrounding soils. Soil moisture shall be adequate to achieve suitable compaction.
- Critical dip shall be installed at the hinge line.
- On running streams, water will be pumped or diverted past the crossing and into the downstream channel during the construction process.
- Inlet and outlet shall be appropriately armored to protect the fill from the hydrologic energy of the stream.
- Conform to Department of Fish and Game 1600 permit where applicable.

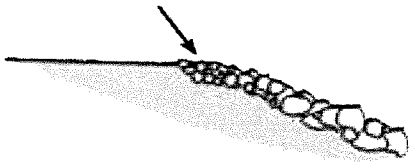
PERMANENT WATERCOURSE CROSSING STANDARD PLAN	Standard Detail C1
	Date: April 2009

ROCK FORD – ARMORED FORD



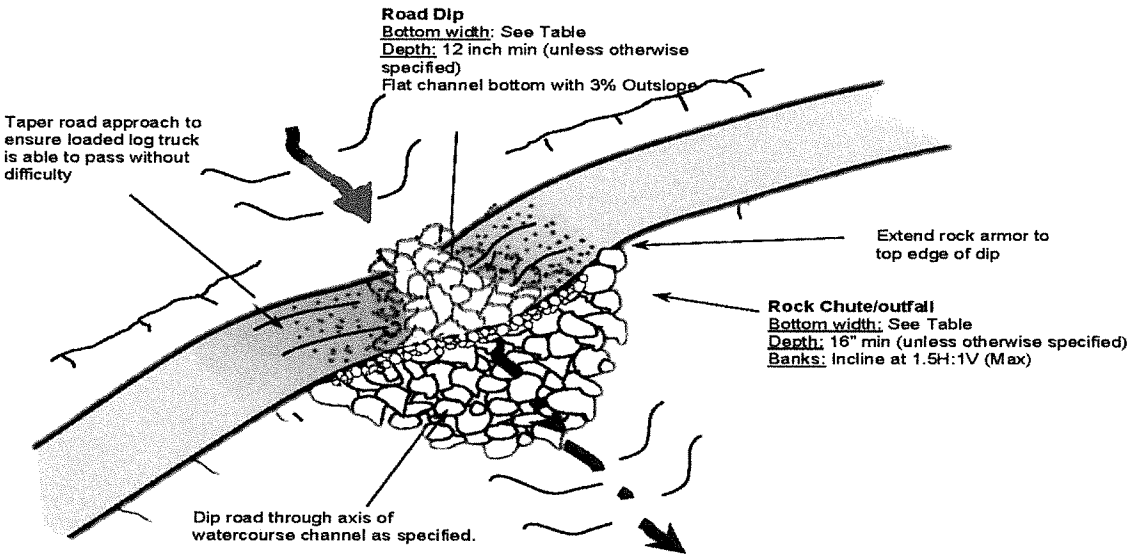


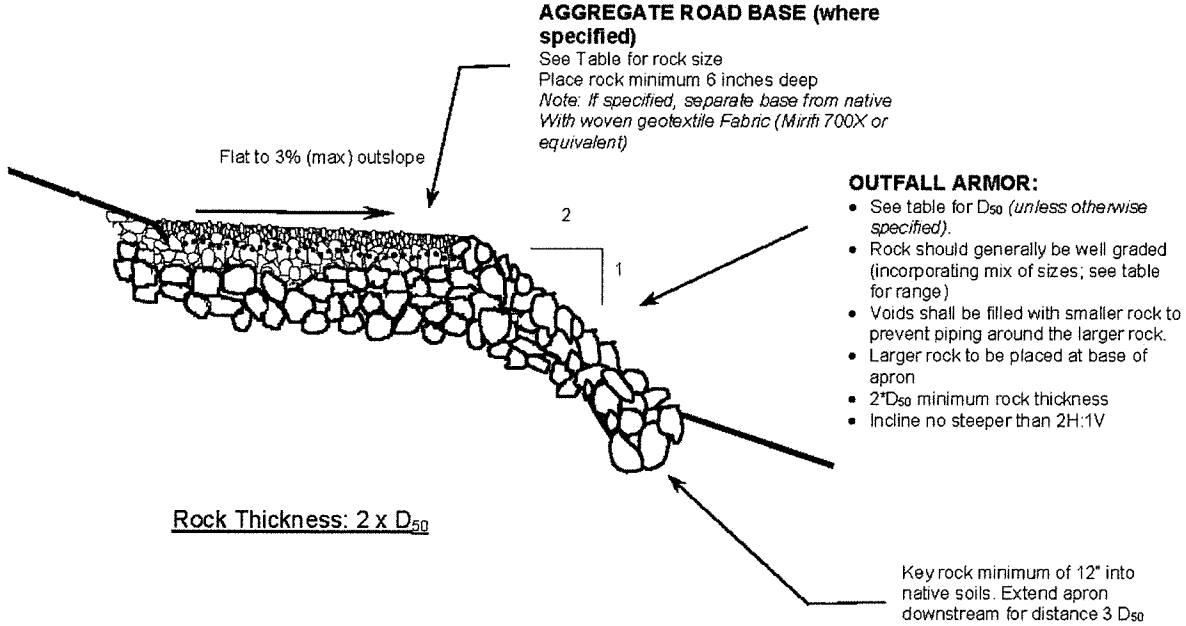
- Use smaller rock at the lip of the ford.
- Voids shall be filled with smaller rock to prevent piping around the larger material



ROCK FORD – ARMORED FORD TYPICAL SPECIFICATIONS	Standard Detail RF-1
	Date: August 2022

ROCK FORD- FILLED FORD





ROCK FORD – FILLED FORD TYPICAL SPECIFICATIONS	Standard Detail RF-2
	Date: August 2022

Berry's Knotfarm NTMP
Culvert Sizing Calculations
100-year Flood Flows

Rational Method

Recommended for watershed drainage areas less than 200 acres.

$Q_{100} = CIA$

Where:

	Q_{100}	Predicted peak runoff (cfs) 100-year storm
C = 0.2	C	Runoff coefficient (0.1 for sandy/gravelly soils, 0.3 for loams w/o impeding layers, 0.4 for heavy clay or with shallow imeding layer, or shallow soil over bedrock)
I = 4.464	I	Rainfall intensity (inches per hour) for the 10 *Use 100-yr precipitation of duration similar to Tc or for 10 min, whichever is larger, convert to in/hr for input as "I"
	A	Basin drainage area (acres)

Time of Concentration (Kirpich)

New Equation $Tc = ((11.9xL^3)/H)^0.385$

Where:

	Tc	Time of Concentration (hours)
	L_m	Length of the channel in miles from the head of the watershed to the crossing
	H_f	Elevation difference in feet between the highest point in the watershed and the crossing
	Tc_m	Time of concentration in minutes, match to closest m with current DDFstation data
m = 10	m	minute Rainfall-depth-duration-frequency data from NOAA
r = 0.74	r	rainfall-depth-duration-frequency data from NOAA

*Map Point 1.0 is only crossing with Tcm greater than 10, calculated as Tcm =20 using same NOAA data

Map Point	Drainge Area (ft²)	L (feet)	L_m	H_f	Tc_h	Tc_m	C	I	A (Acres)	$Q_{100\ (cfs)}$	CULVERT SIZE CALC Q_{100} (cfs) Hwdepth=1	Q_{100} (cfs) Hwdepth=0.67	Culvert Diameter Current	Culvert Diameter Proposed	Rock Size D50 (in)
1.0	22564080	7575	1.435	789	0.302	18.1	0.20	3.039	518.00	314.8	82	98	30x2	96	See Attached
1.5	283140	1230	0.233	70	0.094	5.6	0.20	4.464	6.50	5.8	18	24			14
2.1	837223.2	1661	0.315	315	0.074	4.5	0.20	4.464	19.22	17.2	36	36	36	36	See Attached
2.5	32670	160	0.030	147	0.007	0.4	0.20	4.464	0.75	0.7	12	12		24	6
3.3	30492	360	0.068	161	0.016	1.0	0.20	4.464	0.70	0.6	12	12	18	24	6
4.3	152460	1275	0.241	545	0.044	2.7	0.20	4.464	3.50	3.1	15	21	24	24	10
4.4	151153.2	1275	0.241	545	0.044	2.7	0.20	4.464	3.47	3.1	15	21	18	24	10
4.8	81892.8	800	0.152	250	0.035	2.1	0.20	4.464	1.88	1.7	12	15		24	6
5.0	82764	500.0	0.095	259.0	0.020	1.2	0.20	4.464	1.90	1.7	12	15		24	6
5.1A	95396.4	638	0.121	305	0.025	1.5	0.20	4.464	2.19	2.0	15	18		24	6
5.1B	41382	465	0.088	243	0.019	1.1	0.20	4.464	0.95	0.8	12	12		24	6
5.2A	20037.6	242	0.046	143	0.011	0.7	0.20	4.464	0.46	0.4	12	12		24	6
5.2B	29185.2	325	0.062	190	0.014	0.8	0.20	4.464	0.67	0.6	12	12		24	6
5.3	52272	467	0.088	189	0.021	1.3	0.20	4.464	1.20	1.1	15	18	7	24	6
5.4	25264.8	245	0.046	112	0.012	0.7	0.20	4.464	0.58	0.5	12	12		24	6
5.5	311018.4	983	0.186	790	0.029	1.7	0.20	4.464	7.14	6.4	20	24	18	24	12
5.6	82764	524	0.099	300	0.020	1.2	0.20	4.464	1.90	1.7	12	15		24	6
5.7	91476	420	0.080	351	0.015	0.9	0.20	4.464	2.10	1.9	15	18		24	6
5.8	1045440	1419	0.269	445	0.054	3.3	0.20	4.464	24.00	21.4	33	42		33	See Attached
5.9	55321.2	516	0.098	287	0.020	1.2	0.20	4.464	1.27	1.1	15	18		24	6
5.10	59677.2	526	0.100	628	0.015	0.9	0.20	4.464	1.37	1.2	15	18		24	6
5.11	66646.8	482	0.091	240	0.020	1.2	0.20	4.464	1.53	1.4	12	18		24	6
5.12	94089.6	590	0.112	290	0.023	1.4	0.20	4.464	2.16	1.9	18	15	24	24	6
5.13	180774	895	0.170	290	0.038	2.3	0.20	4.464	4.15	3.7	18	24		24	10
5.13A	26136	370	0.070	220	0.015	0.9	0.20	4.464	0.60	0.5	12	12		24	6
5.14	215622	845	0.160	320	0.034	2.0	0.20	4.464	4.95	4.4	15	21		24	12

5.16	25264.8	300	0.057	175	0.013	0.8	0.20	4.464	0.58	0.5	12	12		24	6
5.17	83635.2	410	0.078	185	0.018	1.1	0.20	4.464	1.92	1.7	15	18	18	24	6
5.18	60112.8	250	0.047	60	0.016	0.9	0.20	4.464	1.38	1.2	12	12	18	24	6
6.1	246985.2	1165	0.221	645	0.038	2.3	0.20	4.464	5.67	5.1	21	27			12
6.2	304920	1000	0.189	545	0.034	2.0	0.20	4.464	7.00	6.2	21	24			14
6.3	43560	15	0.003	15	0.001	0.1	0.20	4.464	1.00	0.9	21	24	12	24	6
6.4	3920400	1675	0.317	600	0.059	3.5	0.20	4.464	90	80.4	40	56	36	60	See Attached
6.6	21780	222	0.042	110	0.011	0.7	0.20	4.464	0.50	0.4	12	12	18	24	6
6.7	3920.4	85	0.016	51	0.005	0.3	0.20	4.464	0.09	0.1	12	12			6
6.9	370260	1321	0.250	392	0.053	3.2	0.20	4.464	8.50	7.6	21	27	36	36	16
6.10	21780	400	0.076	160	0.019	1.1	0.20	4.464	0.50	0.4	15	18	18	24	6
6.11	43560	375	0.071	150	0.018	1.1	0.20	4.464	1.00	0.9	12	12	30	24	6
6.12	13068	170	0.032	65	0.010	0.6	0.20	4.464	0.30	0.3	12	12	24	24	6
6.13	76230	318	0.060	143	0.015	0.9	0.20	4.464	1.75	1.6	12	15	6	18	6
6.14	103237.2	675	0.128	115	0.039	2.3	0.20	4.464	2.37	2.1	15	18	24	24	6

References: California Department of Forestry and Fire Protection, Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment, August 2017
California Department of Forestry and Fire Protection, Sizing Watercourse Crossings for 100-year Flood Flows, Protection for Threatened and Impaired Watersheds, 2000
California Geological Survey, California Rainfall and Runoff CD, February 200: California Department of Water Resources, Rainfall depth-durataion-frequency for California

Berry's Knotfarm NTMP
Culvert Sizing Calculations
100-year Flood Flows

USGS Magnitude and Frequency Equation

Recommended for watershed drainage areas greater than 100 acres.

(Waananen and Crippen, 1977)

North Coast Equation

New Equation $Q100 = 48.5\ A^{0.866}\ P^{0.556}$ $Q_{50} = 8.57\ A^{0.87}\ P^{0.96}\ H^{-0.08}$

Where:

	Q_{100}	Predicted peak runoff (cfs) 100-year storm
	A	Drainage area above the crossing (mi^2)
53	P	Mean annual precipitation (inches)
9.08325180	$P^{0.556}$ =	for 100 year
45.13541554	$P^{0.96}$ =	for 50 year
0.5	H	for 50 year - Altitude index in thousands of feet (ex. 2,000 = 2.0)
1.057018041	$H^{-0.08}$	for 50 year

Map Point	Drainge Area (ft^2)	Acres	A	$A^{0.866}$	$Q_{100\ (cfs)}$	Diameter Hwdepth=1	Diameter Hwdepth=0.67	Stream Class	Diameter Current
1	22564080.00	518.00	0.8094	0.83264085	366.8	96	124	I	30x2
6.4	3506580.00	80.50	0.1258	0.16606090	73.2	52	64	II	36

Design of riprap for overtopping flow, Design Guideline 5 - HEC 23 - FHWA (Lagasse et al., 2006)

$$H = \left(\frac{Q_{100}}{C*L}\right)^{\frac{2}{3}} \qquad \text{Eq. 3}$$

Where:

- H = Head or overtopping depth above the chute (ft)
- Q_{100} = Estimated 100-year storm flow (ft^3/s)
- L = Width of outfall or chute (ft)
- C = Weir flow coefficient ($ft^{0.5}/s$), assumed to be 2.84.

$$d50 = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g \cos\alpha - 1)(\cos\alpha \tan\varphi - \sin\alpha)}\right)^{1.11} \qquad \text{Eq. 4}$$

Where:

- d50 = Median rock size (ft)
- K_u = Riprap sizing equation coefficient, equal to $0.525 s^{0.52}/ft^{0.04}$
- q_f = Unit discharge at failure ($ft^3/s/ft$)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- φ = Angle of repose of the riprap, degrees

$$V_i = 2.48\sqrt{gd50}\left(\frac{S^{0.58}}{C_u^{2.22}}\right) \qquad \text{Eq. 5}$$

Where:

- V_i = Interstitial velocity (ft/s)
- g = Acceleration due to gravity, 32.2 ft/s^2
- d50 = Median rock size (ft)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)

$$V_{ave} = \eta V_i \qquad \text{Eq.6}$$

Where:

- V_{ave} =Average flow velocity (ft/s)
- η =Porosity of the riprap
- V_i =Interstitial flow velocity (ft/s

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Rock-armored Crossing Riprap Design

	Rock riprap Parameter:			Hydrologic/hydraulic Parameters:		
Input parameters *	Angle of repose, phi	40	degrees	Q100, cfs	286	cfs
	Porosity, *n*	0.4		Minimum width of rock chute, L.	14	ft.
	Uniformity Coef., Cu	0.9				
	Embankment Slope, S (not to exceed 0.5 ft/ft)	0.33	ft/ft			
Other parameters	Units constant, Ku	0.525		Unit Discharge**, qf	20.429	cfs/ft
	Specific gravity, Sg	2.65				
	Acceleration due to gravity, g	32.2	ft/s^2			
	Embankment Slope angle	18.3	degrees			
	Wier flow coefficient,C	2.840				
Design Steps with computations	Step 1: Determine the overtopping depth (Eq. 3):					
	Overtopping depth, H	3.73	ft			
	Step 2: Compute smallest possible median rock size (Eq. 4):					
	D50 rock size	2.31	ft	2*D50	4.63	ft.
	Step 3: Select riprap size class or source that has the correct d50 size.					
	Step 4: Compute the interstitial and average velocity (Eq. 5 and Eq. 6):					
	Interstitial velocity, Vi	14.2	ft/s			
	Average velocity, Vave	5.7	ft/s			
	Step 5: Compute the average flow depth (y) and test if flow is contained within the thickness, t, of the riprap (i.e. t≤2d50):					
	Average flow depth, y (y=qf/Vave)	3.59	ft			
	Test:	PASS	If "PASS" record d50 and riprap thickness from Step 2 above; If "FAIL", continue below.			
	If the test in Step 5 "FAILS", increase size of riprap and repeat Steps 2-5 until the design achieves a "PASS", see below:					
	Stone size increase*** (factor)	1.05	Increase factor above 1 in increments of 0.05 (eg. 1.05, 1.10, …) until the design receives a "PASS"			
	Increased D50 rock size	2.4	ft	2*D50	4.86	
	Interstitial velocity, Vi.	14.6	ft/s			
	Average velocity, Vave (Vave=*n* Vi)	5.8	ft/s			
	Average flow depth, y (y=qf/Vave)	3.51	ft			
	Test:	PASS	If "PASS" record increased d50 and riprap thickness above.			

Notes:
* All parameters requiring user input are highlighted in "Yellow"
**Caution should be used in the event the unit flows exceed 10 cfs/ft .
***Must increase size of riprap to ensure the water runs interstitially within the layer of riprap.

Map Point 1.0

Rock size proposed for use is 24 inch as it is only for stream bank armor. There is no headwall and outfall is at stream bed level, no fill.

Design of riprap for overtopping flow, Design Guideline 5 - HEC 23 - FHWA (Lagasse et al., 2006)

$$H = \left(\frac{Q_{100}}{C*L}\right)^{\frac{2}{3}} \qquad \text{Eq. 3}$$

Where:

- H = Head or overtopping depth above the chute (ft)
- Q_{100} = Estimated 100-year storm flow (ft^3/s)
- L = Width of outfall or chute (ft)
- C = Weir flow coefficient ($ft^{0.5}/s$), assumed to be 2.84.

$$d50 = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g\cos\alpha - 1)(\cos\alpha\tan\varphi - \sin\alpha)}\right)^{1.11} \qquad \text{Eq. 4}$$

Where:

- d50 = Median rock size (ft)
- K_u = Riprap sizing equation coefficient, equal to $0.525 s^{0.52}/ft^{0.04}$
- q_f = Unit discharge at failure ($ft^3/s/ft$)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- φ = Angle of repose of the riprap, degrees

$$V_i = 2.48\sqrt{gd50}\left(\frac{S^{0.58}}{C_u^{2.22}}\right) \qquad \text{Eq. 5}$$

Where:

- V_i = Interstitial velocity (ft/s)
- g = Acceleration due to gravity, 32.2 ft/s^2
- d50 = Median rock size (ft)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)

$$V_{ave} = \eta V_i \qquad \text{Eq.6}$$

Where:

- V_{ave} =Average flow velocity (ft/s)
- η =Porosity of the riprap
- V_i =Interstitial flow velocity (ft/s

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Rock-armored Crossing Riprap Design

Input parameters *

Rock riprap Parameter:			Hydrologic/hydraulic Parameters:		
Angle of repose, phi	40	degrees	Q100, cfs	10.6	cfs
Porosity, *n*	0.4		Minimum width of rock chute, L.	3	ft.
Uniformity Coef., Cu	0.9				
Embankment Slope, S (not to exceed 0.5 ft/ft)	0.33	ft/ft			

Other parameters

Units constant, Ku	0.525		Unit Discharge**, qf	3.5333 cfs/ft
Specific gravity, Sg	2.65			
Acceleration due to gravity, g	32.2	ft/s^2		
Embankment Slope angle	18.3	degrees		
Wier flow coefficient,C	2.840			

Design Steps with computations

Step 1: Determine the overtopping depth (Eq. 3):

Overtopping depth, H	1.16	ft

Step 2: Compute smallest possible median rock size (Eq. 4):

D50 rock size	0.93	ft	2*D50	1.86 ft.

Step 3: Select riprap size class or source that has the correct d50 size.

Step 4: Compute the interstitial and average velocity (Eq. 5 and Eq. 6):

Interstitial velocity, Vi	9.0	ft/s
Average velocity, Vave	3.6	ft/s

Step 5: Compute the average flow depth (y) and test if flow is contained within the thickness, t, of the riprap (i.e. t≤2d50):

Average flow depth, y (y=qf/Vave)	0.98	ft

Test: **PASS** If "PASS" record d50 and riprap thickness from Step 2 above; If "FAIL", continue below.

If the test in Step 5 "FAILS", increase size of riprap and repeat Steps 2-5 until the design achieves a "PASS", see below:

Stone size increase*** (factor)	1.05	Increase factor above 1 in increments of 0.05 (eg. 1.05, 1.10, …) until the design receives a "PASS"		
Increased D50 rock size	1.0	ft	2*D50	1.95
Interstitial velocity, Vi.	9.2	ft/s		
Average velocity, Vave (Vave=*n* Vi)	3.7	ft/s		
Average flow depth, y (y=qf/Vave)	0.96	ft		

Test: **PASS** If "PASS" record increased d50 and riprap thickness above.

Notes:
* All parameters requiring user input are highlighted in "Yellow"
**Caution should be used in the event the unit flows exceed 10 cfs/ft .
***Must increase size of riprap to ensure the water runs interstitially within the layer of riprap.

Map Point 2.1

Design of riprap for overtopping flow, Design Guideline 5 - HEC 23 - FHWA (Lagasse et al., 2006)

$$H = \left(\frac{Q_{100}}{C * L}\right)^{\frac{2}{3}} \qquad \text{Eq. 3}$$

Where:

- H = Head or overtopping depth above the chute (ft)
- Q_{100} = Estimated 100-year storm flow (ft^3/s)
- L = Width of outfall or chute (ft)
- C = Weir flow coefficient ($ft^{0.5}/s$), assumed to be 2.84.

$$d50 = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g \cos\alpha - 1)(\cos\alpha \tan\varphi - \sin\alpha)}\right)^{1.11} \qquad \text{Eq. 4}$$

Where:

- d50 = Median rock size (ft)
- K_u = Riprap sizing equation coefficient, equal to $0.525 s^{0.52}/ft^{0.04}$
- q_f = Unit discharge at failure ($ft^3/s/ft$)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- φ = Angle of repose of the riprap, degrees

$$V_i = 2.48\sqrt{gd50}\left(\frac{S^{0.58}}{C_u^{2.22}}\right) \qquad \text{Eq. 5}$$

Where:

- V_i = Interstitial velocity (ft/s)
- g = Acceleration due to gravity, 32.2 ft/s^2
- d50 = Median rock size (ft)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)

$$V_{ave} = \eta V_i \qquad \text{Eq.6}$$

Where:

- V_{ave} =Average flow velocity (ft/s)
- η =Porosity of the riprap
- V_i =Interstitial flow velocity (ft/s

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Rock-armored Crossing Riprap Design

Input parameters *

Rock riprap Parameter:			Hydrologic/hydraulic Parameters:		
Angle of repose, phi	40	degrees	Q100, cfs	13.2	cfs
Porosity, *n*	0.4		Minimum width of rock chute, L.	3	ft.
Uniformity Coef., Cu	0.9				
Embankment Slope, S (not to exceed 0.5 ft/ft)	0.33	ft/ft			

Other parameters

Units constant, Ku	0.525		Unit Discharge**, qf	4.4 cfs/ft
Specific gravity, Sg	2.65			
Acceleration due to gravity, g	32.2	ft/s^2		
Embankment Slope angle	18.3	degrees		
Wier flow coefficient,C	2.840			

Design Steps with computations

Step 1: Determine the overtopping depth (Eq. 3):

Overtopping depth, H	1.34	ft

Step 2: Compute smallest possible median rock size (Eq. 4):

D50 rock size	1.04	ft	2*D50	2.08 ft.

Step 3: Select riprap size class or source that has the correct d50 size.

Step 4: Compute the interstitial and average velocity (Eq. 5 and Eq. 6):

Interstitial velocity, Vi	9.5	ft/s
Average velocity, Vave	3.8	ft/s

Step 5: Compute the average flow depth (y) and test if flow is contained within the thickness, t, of the riprap (i.e. t≤2d50):

Average flow depth, y (y=qf/Vave)	1.15	ft

Test: **PASS** If "PASS" record d50 and riprap thickness from Step 2 above; If "FAIL", continue below.

If the test in Step 5 "FAILS", increase size of riprap and repeat Steps 2-5 until the design achieves a "PASS", see below:

Stone size increase*** (factor)	1.05	Increase factor above 1 in increments of 0.05 (eg. 1.05, 1.10, …) until the design receives a "PASS"		
Increased D50 rock size	1.1	ft	2*D50	2.19
Interstitial velocity, Vi.	9.8	ft/s		
Average velocity, Vave (Vave=*n* Vi)	3.9	ft/s		
Average flow depth, y (y=qf/Vave)	1.13	ft		

Test: **PASS** If "PASS" record increased d50 and riprap thickness above.

Notes:
* All parameters requiring user input are highlighted in "Yellow"
**Caution should be used in the event the unit flows exceed 10 cfs/ft .
***Must increase size of riprap to ensure the water runs interstitially within the layer of riprap.

Map Point 5.8

Design of riprap for overtopping flow, Design Guideline 5 - HEC 23 - FHWA (Lagasse et al., 2006)

$$H = \left(\frac{Q_{100}}{C*L}\right)^{\frac{2}{3}} \qquad \text{Eq. 3}$$

Where:

- H = Head or overtopping depth above the chute (ft)
- Q_{100} = Estimated 100-year storm flow (ft^3/s)
- L = Width of outfall or chute (ft)
- C = Weir flow coefficient ($ft^{0.5}/s$), assumed to be 2.84.

$$d50 = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g \cos\alpha - 1)(\cos\alpha \tan\varphi - \sin\alpha)}\right)^{1.11} \qquad \text{Eq. 4}$$

Where:

- d50 = Median rock size (ft)
- K_u = Riprap sizing equation coefficient, equal to $0.525 s^{0.52}/ft^{0.04}$
- q_f = Unit discharge at failure ($ft^3/s/ft$)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- φ = Angle of repose of the riprap, degrees

$$V_i = 2.48\sqrt{gd50}\left(\frac{S^{0.58}}{C_u^{2.22}}\right) \qquad \text{Eq. 5}$$

Where:

- V_i = Interstitial velocity (ft/s)
- g = Acceleration due to gravity, 32.2 ft/s^2
- d50 = Median rock size (ft)
- C_u = Coefficient of uniformity of the riprap (d60/d10)
- S = Slope of the embankment (ft/ft)

$$V_{ave} = \eta V_i \qquad \text{Eq.6}$$

Where:

- V_{ave} =Average flow velocity (ft/s)
- η =Porosity of the riprap
- V_i =Interstitial flow velocity (ft/s

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Rock-armored Crossing Riprap Design

	Rock riprap Parameter:			Hydrologic/hydraulic Parameters:		
Input parameters *	Angle of repose, phi	40	degrees	Q100, cfs	110	cfs
	Porosity, *n*	0.4		Minimum width of rock chute, L.	5	ft.
	Uniformity Coef., Cu	0.9				
	Embankment Slope, S (not to exceed 0.5 ft/ft)	0.33	ft/ft			
Other parameters	Units constant, Ku	0.525		Unit Discharge**, qf	22	cfs/ft
	Specific gravity, Sg	2.65				
	Acceleration due to gravity, g	32.2	ft/s^2			
	Embankment Slope angle	18.3	degrees			
	Wier flow coefficient,C	2.840				
Design Steps with computations	Step 1: Determine the overtopping depth (Eq. 3):					
	Overtopping depth, H	3.92	ft			
	Step 2: Compute smallest possible median rock size (Eq. 4):					
	D50 rock size	2.40	ft	2*D50	4.81	ft.
	Step 3: Select riprap size class or source that has the correct d50 size.					
	Step 4: Compute the interstitial and average velocity (Eq. 5 and Eq. 6):					
	Interstitial velocity, Vi	14.5	ft/s			
	Average velocity, Vave	5.8	ft/s			
	Step 5: Compute the average flow depth (y) and test if flow is contained within the thickness, t, of the riprap (i.e. t≤2d50):					
	Average flow depth, y (y=qf/Vave)	3.79	ft			
	Test:	PASS	If "PASS" record d50 and riprap thickness from Step 2 above; If "FAIL", continue below.			
	If the test in Step 5 "FAILS", increase size of riprap and repeat Steps 2-5 until the design achieves a "PASS", see below:					
	Stone size increase*** (factor)	1.05	Increase factor above 1 in increments of 0.05 (eg. 1.05, 1.10, …) until the design receives a "PASS"			
	Increased D50 rock size	2.5	ft	2*D50	5.05	
	Interstitial velocity, Vi.	14.9	ft/s			
	Average velocity, Vave (Vave=*n* Vi)	5.9	ft/s			
	Average flow depth, y (y=qf/Vave)	3.70	ft			
	Test:	PASS	If "PASS" record increased d50 and riprap thickness above.			

Notes:
* All parameters requiring user input are highlighted in "Yellow"
**Caution should be used in the event the unit flows exceed 10 cfs/ft .
***Must increase size of riprap to ensure the water runs interstitially within the layer of riprap.

Map Point 6.4

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

ITEM #26 WATERCOURSES

Per 14 CCR 916, 936, 956 – Intent of Watercourse and lake Protection [ALL DISTRICTS] – The purpose of this article is to ensure that timber operations do not potentially cause significant adverse site-specific and cumulative impacts to the beneficial uses of water, native aquatic and riparian-associated species, and the beneficial functions of riparian zones; or result in an unauthorized take of listed aquatic species; or threaten to cause violation of any applicable legal requirements. This article also provides protection measures for application in watersheds with listed anadromous salmonids and watersheds listed as water quality limited under Section 303(d) of the Federal Clean Water Act.

It is the intent of the Board to restore, enhance, and maintain the productivity of timberlands while providing appropriate levels of consideration for the quality and beneficial uses of water relative to that productivity…. Further, it is the intent of the Board that the evaluations that are made, and the measures that are taken or prescribed, be documented in a manner that clearly and accurately represents those existing conditions and those measures.

a. [**X**]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 apply)*		
		Within plan area	Adjacent to plan area
	[**X**] Class I:	[**X**]	[**X**]
	[**X**] Class II:	[**X**]	[**X**]
	[**X**] Class III:	[**X**]	[**X**]
	[☐] Class IV:	[☐]	[☐]
	[☐] Lakes:	[☐]	[☐]
	[**X**] Other (Springs, Seeps)	[**X**]	[**X**]

If YES, to above question list: *(in table below)*

- 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. [**X**]Yes [☐] No	Will Class III or IV watercourses be protected with a WLPZ or ELZ? **If YES, describe below.**

Class I

Zone	Width Feet	Protection Measures
Core Zone	30	916.9(f)(2)(A): No timber operations with limited exceptions
Inner Zone	70	916.9(f)(2)(B), and codes (A)(D)(G) below

If YES, to above question list: *(in table below)*

- 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

Class II-S				
	Width Feet			
Zone	<30%	30-50%	>50%	Protection Measures
Core Zone	15	15	15	916.9(g)(2)(A): No timber operations with limited exceptions
Inner Zone	35	60	85	916.9(g)(2)(B)1, and codes (B)(E)(I) on subsequent page.

Class II-L				
	Width Feet			
Zone	<30%	30-50%	>50%	Protection Measures
Core Zone	30	30	30	916.9(g)(2)(A): No timber operations with limited exceptions
Inner Zone	70	70	70	916.9(g)(2)(B)2, and codes (B)(E)(I) on subsequent page.

Class III		
Slope Class	Equipment Limitation Zone (ELZ)	Protection Measures
<30%	30	916.9(h)1 codes (C)(F)(H)(J) On subsequent page
>30%	50	916.9(h)1 codes (C)(F)(H)(J) On subsequent page

There are no Class IV watercourses associated with the NTMP.

Definition of Protection Measure Codes as specified in 14CCR 916.5, 916.9, and as modified for this NTMP:

(A) WLPZ shall be clearly identified on the ground by an RPF or supervised designee, with paint, flagging, or other suitable means prior to the pre-harvest inspection. For NTMP's, sample identification of the WLPZ prior to the preharvest inspection may be allowed. The Director shall determine if the sample identification is adequate for plan evaluation during the preharvest inspection. If sample identification is allowed, the remaining WLPZ shall be identified by an RPF or supervised designee prior to the start of timber operations within or adjacent to the WLPZ. The RPF shall notify the Department when the WLPZ has been identified.

(B) WLPZ shall be clearly identified on the ground by an RPF or supervised designee, with paint, flagging, or other suitable means prior to the start of timber operations. In watersheds with listed anadromous salmonids, on the ground identification of the WLPZ shall be completed prior to the preharvest inspection. For NTMP's, sample identification of the WLPZ prior to the preharvest inspection may be allowed. The Director shall determine if the sample identification is adequate for plan evaluation during the preharvest inspection. If sample identification is allowed, the remaining WLPZ shall be identified by an RPF or supervised designee prior to the start of timber operations within or adjacent to the WLPZ. The RPF shall notify the Department when the WLPZ has been identified.

(C) In site-specific cases, the RPF may provide in the plan, or the Director may require that the WLPZ be clearly identified on the ground with flagging or by other suitable means prior to the start of timber operations.

(E) To ensure retention of shade canopy filter strip properties of the WLPZ and the maintenance of a multi-storied stand for protection of values described in 14CCR916.4(b), residual or harvest trees shall be marked, including a base mark below the cut line, within the WLPZ by the RPF or supervised designee. For NTMPs, sample marking of the WLPZ prior to the preharvest inspection may be allowed. The Director shall determine if the sample mark is adequate for plan evaluation during the preharvest inspection. If sample marking is allowed, the remaining WLPZ shall be marked by the RPF, or supervised designee, prior to the start of timber operations within or adjacent to the WLPZ. The RPF shall notify the Department when the WLPZ has been identified.

(F) Residual or harvest tree marking within the WLPZ may be stipulated in the NTMP by the RPF or required by the Director in site-specific cases to ensure retention of filter strip properties or to maintain soil stability of the zone. Harvest tree marking is used in these zones.

(H) At least 50% of the understory vegetation present before timber operations shall be left living and well distributed within the WLPZ to maintain soil stability.

(I) To protect water temperature, filter strip properties, upslope stability, and fish and wildlife values, (per 916.9(g)(2)(B) 2. (iii)) the postharvest stand shall have a minimum 80% overstory canopy and shall be left in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of operations. The postharvest canopy may be composed of both conifers and hardwood species and shall have at least 25% overstory conifer canopy.

(J) Where operations occur adjacent to Class III watercourses, an equipment limitation zone (ELZ) of at least 25 feet where side slope is less than 30% and at least 50 feet where sideslope is 30% or greater. This ELZ will not be flagged.

All Watercourses

In accordance with 14CCR 916.9(a):
Goal – Every timber operation shall be planned and conducted to protect, maintain, and contribute to restoration of properly functioning salmonid habitat and listed salmonid species. To achieve this goal, every timber operation shall be planned and conducted to:

1. Comply with the terms of the Total Maximum Daily Load.
2. Prevent significant sediment load increase to a watercourse system or lake.
3. Prevent significant instability of a watercourse channel or of a watercourse or lake bank.
4. Prevent significant blockage of any aquatic migratory routes for any life stage of anadromous salmonids or listed species.
5. Prevent significant adverse effects to streamflow.
6. Consistent with the requirements of 14CCR 916.9, subsections (f), (g), (h), and (v), protect, maintain, and restore trees (especially conifers), snags, or downed woody debris that currently, or may in the forseeable future, provide large woody debris recruitment needed for instream habitat structure and fluvial geomorphology functions.
7. Consistent with the requirements of 14CCR 916.9, subsections (f), (g), (h), and (v), protect, maintain, and restore the quality and quantity of vegetative canopy needed to:
    a. Provide shade to the watercourse or lake to maintain daily and seasonal water temperatures within the preferred range for anadromous salmonids or listed species where they are present or could be restored, and;
    b. Provide a deciduous vegetation component to the riparian zone for aquatic nutrient inputs.
8. Prevent significant increases in peak flows or large flood frequency.

In accordance with 14CCR 916.9(c):
Any timber operation or silvicultural prescription within any watercourse or lake protection zone shall have protection, maintenance, or restoration of the beneficial uses of water, and properly functioning salmonid habitat and listed aquatic or riparian-associated species as significant objectives. Specific objectives are described below.

(1) Core Zone: The primary objective for this zone is streamside bank protection to promote bank stability, wood recruitment by bank erosion, and canopy retention. Timber operations are generally excluded from this zone and limited to actions which meet the objectives stated above or improve salmonid habitat consistent with 14CCR 916.9 subsections (a) and (c).

(2) Inner Zone: The primary of objective for this zone is to develop a large number of trees for large wood recruitment, to provide additional shading, to develop vertical structural diversity, and to provide a variety of species (including hardwoods) for nutrient input. This is accomplished through the establishment of high basal area and canopy retention by retaining or more rapidly growing a sufficient number of large trees. Additional specific objectives include locating large trees retained for wood recruitment nearer to the Core Zone and maintaining or improving salmonid habitat on flood prone areas and CMZs when present.

(3) Outer Zone: The primary objectives include: wind resistance, wood recruitment, microclimate control, riparian habitat, and sediment filtration, but this zone is not applicable to this plan.

(4) A primary objective for all WLPZs is to implement practices to maintain, protect and contribute to restoration of properly functioning salmonid habitat and repair conditions detrimental to the species or species habitat. Practices to meet this objective include, but are not limited to, thinning for increased conifer growth; felling or yarding trees for wood placement in the channel; restoration of conifer deficient areas; management to promote a mix of conifers and hardwoods; abandonment and upgrading of non-functioning or high risk roads, watercourse crossings, tractor roads, and landings; and fuel hazard reduction activities that will reduce fire hazards and stand replacing wildfires which would result in significant adverse effects to salmonid species or riparian habitat.

In accordance with 14CCR 916.9(e)(1):
There shall be no timber operations within the channel zone with the following exceptions:

A) Actions directed to improve salmonid habitat with review and concurrence by DFW.
B) Actions necessary for the construction, reconstruction, removal, or abandonment of approved watercourse crossings.
C) Actions necessary for the protection of public health, safety and general welfare. This includes actions necessary to protect infrastructure facilities including, but not limited to, roads, bridges, powerlines, utilities, water drafting structures, homes, and other legally permitted structures.
D) Actions to allow for full suspension cable yarding when necessary to transport logs through the channel zone.
E) Class III watercourses consistent with 14CCR 916.9(h)(7).
F) Actions reviewed by the RWQCB which seek to correct or remediate adverse impacts to the beneficial uses of water.

In accordance with 14CCR 916.9(e)(2):
In all instances where trees are proposed to be felled within the channel zone, a base mark shall be placed below the cut line of the harvest trees within the zone. Such marking shall be completed by the RPF that prepared the plan, or a supervised designee, prior to the preharvest inspection.

In accordance with 916.3:
During timber operations, the timber operator shall not place, discharge, or dispose of or deposit in such a manner as to permit to pass into the water of this state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, or the quality and beneficial uses of water.

In accordance with 916.3(b):
Accidental depositions of soil or other debris below the watercourse transition line shall be removed immediately after deposition.

In accordance with 916.3(e):
Trees cut within the WLPZ shall be felled away from the watercourse by pulling or other mechanical methods if necessary, in order to protect the residual vegetation in the WLPZ.
Exception proposed by RPF is where necessary to avoid excess breakage, to protect property and public safety, or to facilitate feasible removal by yarding equipment.

In accordance with 916.4(b)(6):
Within the WLPZ, at least 75% surface cover and undisturbed area shall be retained to act as a filter strip for raindrop energy dissipation, and for wildlife habitat.

In accordance with 916.4(c)(3):
Soil deposited during timber operations in a Class III watercourse, other than at a temporary crossing, shall be removed and debris deposited during timber operations shall be removed or stabilized before October 15. Temporary crossings shall be removed as soon as practicable before November 15, or as specified in the winter operating plan.

In accordance with 14CCR 916.4(d): Heavy equipment shall not be used in timber falling, yarding, or site preparation within the WLPZ.

In accordance with 916.9(j): All operations on slopes exceeding 65% within an inner gorge of a Class I or Class II watercourse shall be reviewed by a Registered Geologist prior to plan approval, regardless of whether they are proposed within a WLPZ or outside of a WLPZ.

In accordance with 916.9(u): No salvage logging is allowed in a WLPZ, except for emergency notices.

Class I Watercourses

In accordance with 916.9(f)(1)(A-E):
(A): Timber operations within the Class I WLPZ Inner Zone shall be carried out to conform with the goals of 14CCR 916.9(a) and 916.2(a) for the protection of the beneficial uses of water and riparian functions.

- Tree cutting shall conform to 14CCR 916.9(e) such that there shall be no timber operations within the channel zone and conform to 14CCR 916.9(f)(2)(B), including thinning from below, minimum postharvest overstory canopy of 80% (composed of both conifers and hardwoods and shall have at least 25% overstory conifer canopy), retain the 13 largest conifer trees (live or dead) on each acre, and of the residual canopy trees retain those most conducive to recruitment to provide for the beneficial functions of riparian zones.
- Harvest trees shall either be long lined from outside the WLPZ, long-lined from a seasonal road within the WLPZ, or cable yarded.

(B): There are no new crossings of Class I watercourses proposed as part of this NTMP.

(C): Timber harvesting within the inner zone shall be directed toward developing large trees for large woody debris recruitment, develop structural diversity, and to provide for increased nutrient inputs. This is accomplished by retaining a high basal area and retaining or more rapidly growing sufficient numbers of large trees.

In accordance with 916.9(f)(2)(A): Core Zone
The minimum width of the Core Zone shall be 30 feet measured from the watercourse transition line. No timber operations are permitted in this zone except for those listed in 14CCR 916.9, subsection (e)(1)(A-F), or those approved pursuant to 14CCR 916.9(v). Sanitation salvage is prohibited except as provided in 14CCR 916.9, subsections (s), (t), and (u).

In accordance with 916.9(f)(2)(B): Inner Zone
The minimum width of the Inner Zone shall be 70 feet measured from the landward edge of the Core Zone. Timber operations are permitted in this zone when conducted to meet the goals of this section, objectives for the Inner Zone in 14CCR 916.9(c)(2), pursuant to 14CCR 916.9(e)(1)(A-F), or pursuant to 14CCR 916.9(v). Harvesting prescriptions should focus on practices that use thinning from below. Silvicultural systems for harvesting in this NTMP are limited to the use of single tree selection modified to meet the following requirements:

1. Not applicable as commercial thinning is not a silvicultural method identified for use in this NTMP;
2. Sanitation-Salvage is prohibited except as provided in 14CCR 916.9, subsections (s), (t), and (u).
3. Postharvest stand shall have a minimum 80% overstory canopy cover. The postharvest canopy may be composed of both conifers and hardwood species and shall have at least 25% overstory conifer canopy.
4. Postharvest stand shall retain the 13 largest conifer trees (live or dead) on each acre of the area that encompasses the Core and Inner Zones.
5. Large trees retained that are the most conducive to recruitment to provide for the beneficial functions of riparian zones are to be given priority to be retained as future recruitment trees.

14CCR 916.4 (a) (2)

Sheephouse Creek spawning and rearing habitat.

Main stem Sheephouse Creek
51% flatwater, 23% pools, 22% riffles, 4% dry streambed

Willig Gulch (Sheephouse tributary)
8% flatwater, 5% pools, 8% riffles, 79% dry streambed

Class II-S Watercourses

In accordance with 916.9(g)(2)(B)1:
Class II-S watercourses shall receive protection in conformance with 14CCR 916 through 916.7 in addition to the requirements listed under 14CCR 916.9(g)(2)(A) and (B), with Core Zone and Inner Zone widths as specified in NTMP Item 26a.

In accordance with 14CCR 916.3(g): Recruitment of large woody debris for instream habitat shall be provided by retaining at least two living conifers per acre at least 16 inches diameter breast height and 50 feet tall within 50 feet of Class II-S watercourses.

Class II-L Watercourses

In accordance with 916.9(g)(2)(B)2:
Single tree selection silviculture is proposed for use and modified to meet the following requirements:

(i) When commercial thinning is used, the QMD of conifer trees greater than 8 inches dbh in the preharvest project area shall be increased in the postharvest stand.

(ii) Sanitation-Salvage is prohibited except as provided in 14 CCR § 916.9 [936.9, 956.9], subsections (s), (t) and (u).

(iii) Postharvest stand shall have a minimum 80% overstory canopy cover in the Coast District.

(iv) Postharvest stand shall retain the 13 largest conifer trees (live or dead) on each acre of the area that encompasses the Core and Inner Zones.

(v) Large trees retained to meet 14 CCR § 916.9 [936.9, 956.9], subsections (g)(2)(B)(2.)(i) and (iii) above that are the most conducive to recruitment to provide for the beneficial functions of Riparian

zones (e.g., trees that lean towards the channel, have an unimpeded fall path toward the Watercourse, are in an advanced state of decay, are located on unstable areas or downslope of such unstable areas, or have undermined roots) are to be given priority to be retained as future recruitment trees.

Class III watercourses

In accordance with 916.9(h):

1. Establish a 30 foot wide Equipment Limitation Zone (ELZ) on both sides of the watercourse for slopes less than 30% and an additional 20 feet ELZ where sideslopes are >30%. The ELZ is measured from the watercourse transition line. 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 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 14CCR 912.7 within the ELZ.
7. Retain all trees in the ELZ and 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.
8. Exceptions pursuant to 14CCR 916.9, subsections (e)(1)(A-F) are permitted in any ELZ and channel zone

Springs and Wet Areas

The following minimum protection measures shall be applied to springs and wet areas that have visible signs of surface water at the time of timber operations:

WLPZ width is 25 feet; Permanent and seasonal road use and maintenance is exempt. Should California Red Legged Frogs be present, WLPZ width will be increased to 50 feet.

To protect water temperature, filter strip properties, upslope stability, and fish and wildlife values, within the WLPZ 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.

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:

- Soil deposited into Class III watercourses shall be removed prior to the completion of operations or October 15th, whichever comes first, except as noted in the winter operating plan.
- Per 916.4(c)(3) - Slash deposited into Class III watercourses shall be removed or stabilized prior to the completion of operations or October 15th, whichever comes first, except as noted in the

winter operating plan. If slash is stabilized it shall be stabilized (such that the debris does not create the potential for diversion of the watercourse or the potential buildup of excess sediment in amounts greater than found in the watercourse where there is no logging associated debris).

c. [☐]Yes [**X**] No	Is there any tractor road watercourse crossings that require mapping per 14 CCR 1034(x)(7)
[☐]Yes [**X**] No	Will TRACTOR road watercourse crossings involve the use of a culvert? **If YES, per 14 CCR 914.8[934.8, 954.8](e) state the minimum diameter and length for each culvert.**

Map Reference Points (MRP)	Culver Diameter	Culvert Length
-		
-		
-		
-		

d. [☐]Yes [**X**] No	Is there a Master Agreement for Timber Operations (MATO) for Streambed Alteration Agreement (SAA) approved by the Department of Fish and Wildlife for any portion of this plan? MATO or SSA Number: _____ **If YES, provide a list of the crossings, water drafting sites, or other water features to be used during operations and provide the conditions to be utilized and or consider from the MATO or SAA as operational instruction to the LTO in SECTION II.**
MATO or SAA INSTRUCTIONS TO LTO	
Specific water feature under MATO or SAA (crossings, drafting sites, etc.)	Conditions of MATO or SAA to be utilized at each specific feature
-	
-	
e. [☐]Yes [**X**] No	Is this NTMP Review Process to be used to meet Department of Fish and Wildlife CEQA review requirements? **If YES, attach the required 1611 Addendum at the end of SECTION II and include any supporting information and analysis in SECTION III.** A notification will be submitted prior to submission of a Notice of Timber Operations. **List instructions to the LTO in SECTION II for installation, protection measures, and mitigation measures, per NTMP from instructions or CDF Mass Mailing (07/02/1999) "Fish and Game Code 1611 Agreements and NTMP Documentation."**
LTO INSTRUCTIONS: Refer to the Map Points Table, Item 24.	

f. [☐]Yes [**X**] No	Are any exceptions provided under F & G code 1600 et seq. and made an enforceable part of plan? **If YES, per 14 CCR 923 [943,963](d) identify the exceptions and provide the enforceable standards as instructions to the LTO in SECTION II.**

g. [☐]Yes [***X***] No	Will new drainage structures and facilities on watercourses that support fish or listed aquatic species be constructed? **If YES, per 14 CCR 914.8[934.8, 954.8](c) and 923.9 [943.9, 963.9](c). Structures and facilities shall be fully described and allow unrestricted passage and natural movement of bedload. Provide operational instructions to the LTO in SECTION II.**

Berry's Knotfarm NTMP ITEMs 26 – WATERCOURSES

Per 14 CCR 1090.5(w)(7) – The location of all EXISTING and NEW permanent constructed and reconstructed, and temporary logging road watercourse crossings, including those crossings to be abandoned or deactivated, SHALL be shown on a map. If the structure is a culvert intended for permanent use, the minimum diameter of the culvert and the method(s) used to determine the culvert diameter SHALL be specified in the plan,	
h. [**X**]Yes [☐] No	Are there any EXISTING logging road watercourse crossings requiring mapping
[☐]Yes [**X**] No	Are there any NEW PERMANENT constructed logging road watercourse crossings requiring mapping?
[**X**]Yes [☐]No	Are there any NEW RECONSTRUCTED logging road watercourse crossings requiring mapping?
[☐]Yes [***X***] No	Are there any watercourse crossings to be ABANDONED or DEACTIVATED?
	If YES, to the above questions these crossing shall be shown on a map in section II per 14 CCR 1090.5(gg)
	If any watercourse crossing has a culvert intended for permanent use, identify the method(s) used to determine culvert diameter and state the size for each culvert. ***(SIZE CAN BE STATED IN THE TABLE LISTED UNDER ITEM 25, f above)***
	Method for sizing culvert: • Culvert sizes were calculated using the Rational Method for basins < 100 acres and USGS Magnitude and Frequency Method for basins > 100 acres. • Culverts all sized for 100-year flood flow and a headwall depth of .67.
i. [☐]Yes [**X**] No	Is there any exception to flagging or otherwise identifying the location of any constructed or reconstructed road watercourse crossing prior to the pre-harvest inspection? **If YES, per 14 CCR 923.9[943.9, 963.9](j) provide the explanation and justification in SECTION III.**
j. [☐]Yes [**X**]No	Will other methods for diversion of overflow at culvert crossings be utilized (<u>other than critical dips</u>) in the construction or reconstruction of logging road watercourse crossings which culverts? **If YES, per 14 CCR 923.9[943.9, 963.9](j) provide instructions to the LTO in SECTION II identifying the methods to be used for the diversion of overflow at watercourse crossings.**
Per 14 CCR 923.9[943.9, 963.9](k) watercourse crossings and associated fills and approaches SHALL be constructed and maintained to prevent diversion of stream overflow down the road, and to minimize fill erosion should the drainage structure become obstructed.	
k. [**X**]Yes [☐] No	Are there any <u>existing</u> watercourse crossings that are located on logging roads within the logging area?
[☐]Yes [**X**] No	Are there any watercourse crossing <u>proposed</u> for construction located on logging roads within the logging area?
	If YES, per 14 CCR 923.9[943.9, 963.9](k) identify the crossing and provide the methods to mitigate or address the diversion of stream overflow at the crossing.
l. [**X**]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 outlets of crossings shall be adequately sized to resist mobilization of soil and significant sediment discharge. The range of Rock size shall be described within the plan as instruction to the LTO in SECTION II indicate the range of the rock dimensions to be used.**

Watercourses CONT.	
m.[☐]Yes [**X**] No	Watercourse crossing proposed to be reconstructed or removed are there any significant volumes of sediment accumulated upstream of the watercourse crossing? **If, YES per 14 CCR 923.9[943.9, 963.9](n) provide instructions to the LTO, in SECTION II, describing how the material will be stabilized, removed (the extent feasible), and in conformance with CDFW agreements, where applicable.**
n. [☐]Yes [**X**] No	Do logging road watercourse crossing drainage structures and other erosion control features have I high historical fail rate within the project area?
[**X**]Yes [☐] No	Do/will existing watercourse crossings utilizing a culvert have large amounts of fill material covering the culvert making up the crossing?
	If, YES per 14 CCR 923.9[943.9,963.9](o) drainage structures and erosion control features shall be oversized, designed for low maintenance, reinforced, or removed before the completion of timber operations or as specified in the approved plan. **Provide instruction to the LTO in SECTION II identifying these crossings, providing instruction of how these crossings will be treated.** Large fill crossings include 1.6, 1.7, 1.8, and 4.1. Instructions are in Item 24.

Guidance on reducing the potential for failure at high-risk watercourse crossings may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk crossings" (1st Edition, revised 10/27/14)

o. [☐]Yes [**X**] No	Will any logging road watercourse crossing be removed? **If YES, provide instructions to the LTO, in SECTION II, describing the removal plan pursuant to the standards per 14 CCR 923.9[943.9, 963.9](p)(1)-(4)**

FOR PLANS LOCATED WITHIN AN ASP WATERSHED	
p. [☐]Yes [**X**] No	Will timber operations occur within a class I WLPZ?
[☐]Yes [**X**] No	Will timber operations occur within a WLPZ adjacent to a restorable Class I watercourse?
	If YES, Address per 14 CCR 916.9[936.9, 956.9](f)(2)(A)-(E).
Per 14 CCR 916.9[936.9, 956.9](e)(1)(A)-(E) there shall be NO timber operations within a channel zone with the exception of those conditions listed within 916.9[936.9, 956.9](e)(1)(A)-(E)	
q. [☐]Yes [**X**] No	Will there be any timber operations within the channel zone of any watercourse? **If YES, Indicted the location and type of timber operations to be conducted and provide instructions to the LTO in SECTION II.**
Per 14 CCR 923.1[943.1, 963.1](h) NO logging road(s) or landing(s) shall be planned for construction or reconstruction in the CMZ or Core Zone of a Class I watercourse or within 150 feet of a watercourse transition line. with the exception of those conditions listed within 916.9[936.9, 956.9](e)(1)(A)-(E) and 916.9[936.9, 956.9](v)	
[☐]Yes [**X**] No	Will there be any logging road(s) or landing(s) constructed in the CMZ or Core Zone of a Class I?
	If Yes, indicate the location and provide instructions to the LTO in SECTION II.
Per 14 CCR 923.9[943.9, 963.9](d) Watersheds with listed anadromous salmonids. A description of all existing permanent Class I watercourse crossings shall be provided, where fish are always or seasonally present or fish passage is restorable.	
r. [☐]Yes [**X**] No	Are there existing permanent Class I crossings where fish are always present?
[**X**]Yes [☐] No	Are there existing permanent Class I crossings where fish are seasonally present?
[**X**]Yes [☐] No	Are there existing permanent Class I crossings where fish passage is restorable?
	If YES, provide a description of the existing permanent Class I watercourse crossings. Indicate in the description where the current crossing conditions may be adversely affecting fish passage and identify the proposed measures, if feasible, to address the conditions. Crossing X1 crosses a Class I watercourse due to fish found in pools upstream during electrofishing for an assessment by CDFG in 1996. Whether those fish have access to the crossing is unknown. The gradient is approximately 3%. When the culverts are plugged, passage would be over the crossing. When the culverts are open passage would be through the culverts. Often, even in winter, flows are too low to facilitate fish passage. There are no other barriers from the crossing to the confluence with Sheephouse Creek. The crossing will be deactivated by excavating to accommodate 100-year flow which would provide fish passage through the crossing.
s. [☐]Yes [**X**] No	Will water drafting occur in association with the timber operations?
	If YES, timber operations shall comply with Fish and Game Code Section 1600, et seq. Water will be obtained from private wells off-site as negotiated by the plan submitter or the LTO.
t. [☐]Yes [**X**] No	Is there a Fish and Game Code Section 1600 Mater Agreement for Timber Operations which addresses water drafting? **If YES, provide the operational restrictions from the Master Agreement in SECTION II as instructions to the LTO.** **If NO, describe the water drafting site conditions and proposed water drafting activity in the plan. Per 14 CCR 923.7[943.7, 963.7](I)(2)(A)-(F) *(See Below)***

Berry's Knotfarm NTMP ITEMs 26 – WATERCOURSES

Per 14 CCR 923.7[943.7, 963.7](I)(2)(A)-(F) the description of water drafting site conditions and proposed water drafting activity shall include:
General description of proposed site:
Watercourse Classification:
Drafting parameters including:
Month(s) of use –
Estimated volume needed per day –
Estimated maximum instantaneous drafting rate and filling time –
Other water drafting activities in same watershed –
Drainage area (acres) above point of diversion –
Estimated:
Unimpeded stream flow –
Pumping rate –
Drafting duration –
A discussion of the effects on aquatic habitat downstream from the drafting site(s) of single pumping operations, or multiple operations at the same location, and at other locations in the same watershed:

ITEM #27– WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

ITEM #27	**WLPZ IN-LIEU OR ALTERNATIVES**
Per 14 CCR 916.1[936.1, 956.1] (In-Lieu Practices) – In rule sections where provision is made for site specific practices to be proposed by the RPF, approved by the Director and included in the NTMP in lieu of a standard rule, the RPF shall: • Reference the standard rule • Explain and describe each proposed practice • Explain how it differs from the standard practice, • Explain and justify how the protection provided by the proposed practice is a t least equal to the protection provided by the standard rule. • Identify the specific location where it shall be applied. 14 CCR 1034(x)(15) and (16) Per 14 CCR 916.6[936.6, 956.6] (Alternatives) – Alternative prescription for the protection of watercourses and lakes may be developed by the RPF or proposed by the Director on a site specific basis provided the following conditions are complied with and the alternative prescription will achieve compliance with the standards set forth in 14 CCR 916.3[936.3, 956.3] and 916.4[936.4, 956.4](b) The alternative prescription shall include in the NTMP information per 14 CCR 916.6[936.6, 956.6]a)(1)-(3)	
a. [☐]Yes [**X**] No	Are there any site-specific practices proposed in-lieu of, or as an alternative, to the prohibition of the construction or 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. 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 • At new and existing tractor 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)**
b. [☐]Yes [**X**] No	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)**

Berry's Knotfarm NTMP ITEMs 27 – WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

ITEM #27	WLPZ IN-LIEU OR ALTERNATIVES
c. [☐]Yes [**X**] No	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 SECTION II. Proved the explanation and justification in SECTION III, (see table below)**
d. [☐]Yes [**X**] No	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)**
e. [☐]Yes [**X**] No	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)**

f. [**X**]Yes [☐] No	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 NTMP 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 Section III, Addendum to Item 27(f) and the table below.
g. [☐]Yes [**X**] 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).**

Berry's Knotfarm NTMP ITEMs 27 – WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

h. [☐]Yes [**X**] 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 [**X**] 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 [**X**] 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)**

Explanation and justification table for in-lieu WLPZ practices. SECTION III This table is consistent with the table provided in the CalTREES online submission.				
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?**
L1	916.4, 936.4, 956.4(d)&(f)	Landing L1 is existing and partially within the WLPZ of a Class II watercourse.	Standard practice is that heavy equipment shall not be used for yarding within the WLPZ. In lieu of the prohibition, logs are proposed to be skidded into the landing which is within a Class II WLPZ.	The landing is the only suitable location which is flat enough to allow for a landing along the entire lower haul road. The landing is existing and in good condition. A filter strip of vegetation and duff is present between the edge of the landing and the stream bank. The landing serves approximately three miles of seasonal road. The landing was reviewed during the PHI for THP 1-12-040 SON and was approved for use. The landing will be straw mulched upon completion of operations. • L1 shall not be expanded. Following operations: • The surface shall be drained to a stable location with a vegetative filter strip. • Waterbars shall be installed on the road above and below the landing where flagged. • The landing surface within the WLPZ shall be treated with non-reproducing grass seed and straw mulch.

ITEM # 28-29 – DOMESTIC WATER NOTIFICATIONS

ITEM # 28 DOMESTIC WATER NOTIFICATIONS	
Per 14 CCR 1090.2(g) referencing 1032.10 – The NTMP submitter shall provide notice by letter to all other landowners within 1,000 feet downstream of the NTMP boundary whose ownership adjoins or includes a Class I, II, or IV watercourse(s) which receives surface drainage from the proposed timber operations. The notice shall request that the NTMP submitter be advised of surface domestic water use from the watercourse, within the NTMP or within 1,000 feet downstream of the NTMP boundary. When required to notice by letter, publication shall also be given one time by the NTMP submitter in a newspaper of general circulation in the area affected by the proposed project. Such letter and publication shall notify the adjoining party: • of the proposed timber operation • describe its legal location • identify the name, if any, of the watercourse it may affect • request a response by the property owner within ten days of the post-marked date on the letter or the date of publication as appropriate The RPF may propose, with justification and explanation, an exemption to such notification requirements, and the Director may agree. Copies of either notice, proof of service and publication, and any responses shall be attached to the NTMP (SECTION V) when submitted. If domestic use is noted, the plan shall contain mitigations necessary to protect domestic water use. **THE PLAN SHALL NOT BE SUBMITTED UNTIL TEN DAYS AFTER THE ABOVE NOTIFICATION(s) HAVE BEEN COMPLETED**	
a. [**X**]Yes [☐] No	Are there any landowners with 1,000 feet downstream of the NTMP boundary whose ownership adjoins or includes a class I, II or IV watercourse(s) which receive surface drainage from the proposed timber operations? **If YES, the requirement of 1090.2(g) and 1032.10. Proof of letter notification shall be included in NTMP SECTION V.** **If NO, notification exemption request below need not be answered.**
b. [☐]Yes [**X**] No [☐] [☐] [☐]	Is an exemption to the notification requirements requested? (check notification requesting to be exempted) Letter Newspaper Both **If YES, provide the explanation and justification for the exemption request in SECTION III of the NTMP.**
c1. [**X**]Yes[☐]No	Was any information received in response to domestic water notifications indicating domestic water supplies may be present within or downstream of the project area?

ITEM # 28 DOMESTIC WATER NOTIFICATIONS	
	In response to the request for information on surface domestic water supplies, *the following responses were received.* A landowner notified the RPF by email that a county municipal domestic water intake is located in Jenner Gulch. It is maintained by the County of Sonoma and it is their primary water source along with other neighboring landowners. A map was obtained from a county website. Subsequent emails with the landowner yielded no further concerns with the watercourse buffers proposed. Another landowner notified the RPF via phone call of the same *Jenner Gulch* water intake. The conversation yielded no further concerns. *Another landowner notified the RPF by letter stating they have the right to divert water from Sheephouse Creek for domestic purposes. The water is used under a pre-1914 claim. Diversion commenced in 1945. They also stated that their neighbor has a similar right. In a follow-up email, the owner stated they did not want to divulge the location of the intake to the public.* Copies of the correspondence and the *Jenner Gulch* water system map are in Section V. The Jenner Gulch intake location is shown on the Operations Map.
c2. [☐]Yes[**X**] No	If YES, are there any additional mitigation measures needed beyond that required by standard watercourse and Lake protection rules? **If YES, provide the site-specific instruction to the LTO in SECTION II.** The domestic water intake is approximately 800 feet downstream of the NTMP boundary.

ITEM #29	**SENSITIVE WATERSHEDS**
[☐]Yes [**X**] No	Is any part of the NTMP area within a Sensitive Watershed as designated by the Board of Forestry and Fire Protection? **If YES, identify the watershed and list the special rules, operating procedures or mitigation that will be used to protect the resources identified at risk.**

WATERSHED	**SPECIAL RULE**	**MITIGATION MEASURES PROTECTING RESOURCES IDENTIFIED AT RISK**
	-	
	-	
	-	
	-	

ITEM # 30 – HAZARD REDUCTION

ITEM #30 HAZARD REDUCTION	
Per 14 CCR 917, 937, 957 - Hazard reduction shall provide standards for the treatment of snags and logging slash in order to reduce fire and pest safety hazards in the logging area, to protect such area from potential insect and disease attack, and to prepare the area for natural or artificial reforestation while retaining wildlife habitat. Per 14 CCR 917.2, 937.2, & 957.2 – The following standards shall apply to the treatment of slash created by timber operations within the plan area and on roads adjacent to the plan area.	
a. [**X**]Yes [☐] No	Will slash treatment occur within 100 feet of the edge of the traveled surface of a PUBLIC road? ***All Slash and debris created by the current operations and within 300 ft. of Highway 116 shall be lopped and scattered, chipped, or crushed, prior to April 1st of the year following its creation, so that no material generally remains more than thirty (30) inches above the ground.***
b. [☐]Yes [**X**] No	Will slash treatment occur within 50 feet of the edge of the traveled surface of PERMANENT private roads open for public use where permission to pass is not required?
c. [☐]Yes [☐] No	[SOUTHERN only] Will slash treatment occur within 50 feet of the edge of the traveled surface of SEASONAL private roads open for public use where permission to pass is not required?
	If YES, to any of the above, slash created or trees knocked down by road construction or timber operations shall be treated by: (Select all that apply) [**X**] lopping for Fire hazard reduction per (14 CCR 895.1) [**X**] Piling and burning per (14 CCR 917.2, 937.2, 957.2(a)(1-3)) [**X**] chipping [**X**] burying [**X**] removal [☐] Other (explain)
d. [☐]Yes [**X**] No	Are there any permanently located structures maintained for human habitation in the project area requiring slash treatment? **If YES, identify distance slash treatment will occur and indicate the method of treatment** [☐] Within 100 feet of permanent structure [☐] Removed [☐] Piled and burned per (14 CCR 917.2, 937.2, 957.2(a)(1-3)) [☐] Other (explain) [☐] Between 100-200 feet of permanent structure [☐] Lopped for fire hazard reduction (per 14 CCR 895.1) [☐] removed [☐] chipped [☐] Piled and burned per (14 CCR 917.2, 937.2, 957.2(a)(1-3)) [☐] Other (explain)

ITEM #30 HAZARD REDUCTION	
e.[☐]Yes [**X**] No	Has the RPF or Director determined there is an unusual fire risk or other hazard exists within the proposed project area? **If YES then lopping is required within 100-200 feet of permanent structures.**

f. [☐]Yes [**X**] No	Is the RPF proposing any alternatives to treating slash along roads and within 200 feet of structures. **If YES, the RPF shall explain and justify in the plan how equal fire protection will be provided. The explanation and justification shall include:**
	Description of the alternative treatment(s):
	Estimated amount / distribution of slash:
	Type of remaining vegetation:
	Topography:
	Climate:
	Degree of public exposure fire history:
	Provide a description of where the alternative will be used: (mapping area(s) is suggested)

g.X]Yes [☐] No	Will piling and burning be used for hazard reduction? **If YES, refer to 14 CCR 917.2, 937.2, 957.2(a)(1-3).** (select all that apply) [**X**] Piles created prior to September 1 shall be treated not later than April 1 of the year following its creation, or within 30 days following climatic access after April 1 of the year following its creation. [**X**] Piles created on or after September 1 shall be treated not later than April 1 of the second year following its creation, or within 30 days following climatic access after April 1 of the second year following its creation.
h.[☐]Yes [**X**] No	Is the RPF proposing any alternatives to piling and burning from those required in 14 CCR 917.2, 937.2, 957.2(a)(1-2)? **If YES, the RPF shall provide and explanation and justification in the plan to be approved by the director.**

ITEM # 32 – BIOLOGICAL RESOURCES

ITEM #32 LISTED PLANT or ANIMAL SPECIES INCLUDING HABITAT	
a. [**X**]Yes [☐] No	Are there any ANIMAL SPECIES, including their habitat(s), which are listed as rare, threatened or endangered under Federal or state law, or a sensitive species by the Board of Forestry associated with the NTMP area? **If YES, identify the animal species and the provisions to be taken for the protection of the species.**

Listed and Sensitive Animal Species Table

Animal Species	**Species type** Mammal / bird / reptile / amphibia / fish / Invertebrate	**FEDERAL** Threatened / endangered /	**STATE** Threatened / endangered / candidate	**BOF** Sensitive	**Protection measures**
- California red-legged frog (*Rana draytonii)*	Amphibian	T			See below

Red-legged frogs (RLF) have been detected in Sheephouse Creek, along the east boundary of the NTMP. Jenner Gulch contains marginal habitat for RLF as there is little stream bank vegetation. Sawmill Gulch contains suitable habitat. Willig Gulch contains marginal habitat as there are pools but without cover.

USFWS Guidelines, March 25, 2008:

Definitions:

a) Wet Season starts with the first frontal rain system depositing a minimum of .25 inches of rain after Oct. 15 and ends on April 15.
b) Dry Season starts April 16 and ends with the first frontal rain system…
c) Suitable California Red-legged Frog (CRLF) Habitat:
    1) Permeant water (Class I or II Watercourses or ponds/wetlands) that is more than 12 inches deep;
        OR
    2) Permeant water (Class I or II Watercourses or ponds/wetlands) that is less than 12 inches deep if suitable shelter/cover habitat is available, e.g. over-hanging vegetation, emergent vegetation, over-hung banks, root wads, rock piles, log debris, etc.;
        OR
    3) permanent wet ground (e.g., seep) with vegetative cover.
        OR
    4) Intermittent water that persists through late July.

For all known existing habitat and if at any time additional suitable CRF habitat is discovered within the NTMP area, the following two scenarios and subsequent conditions shall apply:

Scenario III: Suitable habitat within 2 miles of harvest units or in units and harvest activities are planned within 300 feet of suitable habitat during the wet season. No take is estimated only under the following conditions:

i. For Class III watercourses, when dry, maintain a 30-foot no cut buffer, trees felled away from watercourse.

Listed and Sensitive Animal Species Table					
ii. For Class II watercourse and intermittent ponds/wetlands that meet the definition of suitable habitat, where water is present, maintain a 300-foot no cut buffer; where dry, maintain a 30-foot no cut buffer. No equipment operations within 75 feet of the annual high watermark; trees are to be felled away from suitable habitat. iii. Class I watercourses and permanent ponds/wetlands that meet the definition of suitable habitat, timber falling and equipment operations within 300 feet of suitable habitat is prohibited. Scenario IV: Suitable habitat within 2 miles of harvest units or in units and harvest activities planned within 300 feet of suitable habitat during the dry season. i. Timber falling and equipment operations within 30 feet of suitable habitat are prohibited. During both the wet and dry seasons, the following operational restrictions shall apply. 1. Pile burning must be outside the 300-foot buffer of suitable habitat. 2. Use of herbicides within 300 feet of suitable habitat is prohibited, except for direct application to stumps. 3.Roads and landings, if constructed, must be at least 300 feet from suitable habitat, and construction must occur during the dry season. Log hauling and road maintenance is proposed within 300 of suitable habitat during the dry season and is subject to the following conditions. 1. Prior to each log truck trip leaving or entering the NTMP area and prior to conducting road maintenance, a trained individual will walk or quad the road segment to be used along Sheephouse Creek to inspect for CRLF. 2. If a CRLF is discovered, road use will not commence until it moves out of the way on its own and the sighting shall be reported to CDFW on the same day. LTO Training: Prior to commencement of operations, an individual familiar with CRLFs shall meet with the LTO, crew, and truck drivers to provide the following information: • A physical description with color photos showing the identifying features. • Directions to contact the RPF. • Instructions to the LTO not to handle or harass an individual if seen in the road. Frogs will be allowed to pass on their own.					
Foothill yellow-legged frog (Rana boylii)	Amphibian				Suitable habitat is present in Sheephouse Creek and Jenner Gulch. According to the Fish and Game Commission Notice of Findings for the Foothill yellow-legged frog dated March 2020, the listing of the Northwest/North Coast clade is not warranted at this time. Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect stream habitat for these species. If a Foothill yellow-legged frog is located within the NTMP, CDFW will be consulted to assist with developing protection measures. Suitable habitat is present in Sheephouse Creek. Jenner Gulch

Listed and Sensitive Animal Species Table					
					contains high quality habitat with many riffles, consistently flowing shallow water, rocky substrate, and banks open to sunlight. Sawmill gulch contains marginal habitat with low flow, little rocky substrate, and high shade. Willig Gulch contains poor habitat with no flow during summer months or low rainfall periods, and high shade.
Burrowing owl (Athene cunicularia)	Bird		C,E		Coastal prairie and Coastal scrub are present within and adjacent to the NTMP. Only existing roads and landings will be used for operations. If observed, the LTO shall cease operations within 500 feet of the observation and CDFW will be consulted.
Coho Salmon (*Oncorhynchus kisutch)* central CA coast ESU	Fish	E	E		The Willow Creek Watershed is within the ESU of Coho and Chinook salmon and Steelhead of the north coast. Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect downstream habitat.
California Freshwater shrimp	Invertebrate	E	E		Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect stream habitat for this species. If California Freshwater Shrimp is located within the NTMP, CDFW will be consulted to assist with developing protection measures.
Steelhead (*Oncorhynchus mykiss irideus)*	Fish	T			The Willow Creek Watershed is within the ESU of Coho and Chinook salmon and Steelhead of the north coast. Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect downstream habitat for these species.
Bank Swallow (Riparia Riparia)	Bird		T		"Bank swallow" is noted on a map in Section II of THP 1-12-040 SON on the opposite side of Sheephouse Creek from the NTMP and labeled 1964. CNDDB shows a detection of a colony of four burrows in 1960, in the vicinity of the NTMP, exact location unkown. WLPZ protection measures will protect this species. If observed, the LTO shall cease operations within 500 feet of the

Listed and Sensitive Animal Species Table					
					observation and CDFW will be consulted.
Osprey (Pandion haliaetus)	Bird			S	An osprey nest was identified in Willig Gulch but has not been detected since 2002. Osprey nests have been documented in the Russian River corridor. Nests are large and if found, no operations will be conducted within 300 feet and a qualified biologist and CDFW will be contacted for recommendations.
Longfin Smelt (Spirinchus thaleichthys)	Fish	C	T		Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect downstream habitat for these species.
Myrtle's silverspot butterfly (Speyeria zerene myrtleae)	Invertebrate	E			If this species is observed the LTO shall cease operations within 500 feet and contact the RPF. The RPF shall contact DFW to determine the proper protection measures.
Western bumble bee (Bombus occidentalis)	Invertebrate		C,E		A detection is recorded in CNDDB near the confluence of Willow Creek and the Russian River. The NTMP contains a pasture which is included because an existing haul route bisects it with existing landings along the roads. Operations are proposed to utilize existing infrastructure to minimize new disturbances. The pasture contains flowering shrubs and forbes but not in relative abundance. Due to these circumstances, significant impacts to bumble bee populations are not expected. If western bumble bee is identified within the NTMP, CDFW will be notified for developing protection measures.
Grey wolf (Canis Lupus)			E		Wolves are habitat generalists and historic abundance and distribution is unknown. This NTMP lies outside the current known range of the gray wolf and it is not likely to occur in the NTMP area. Breeding occurs in winter and young are born in February. Sightings of wolves shall be immediately reported to CAL FIRE and CDFW. Detections of den sites shall be

Listed and Sensitive Animal Species Table					
					immediately reported to CAL FIRE and CDFW; Operations will halt and a 500-foot buffer established until consultation with CDFW and CAL FIRE has occurred and the results of that consultation have been amended into the NTMP.
Northern Spotted Owl (Strix occidentalis)	Bird	T	E	Y	Below

Northern Spotted Owls

The plan area is located within the range of the Northern Spotted Owl (NSO).

Future NSO survey documents, including habitat maps will be sent to r3timber@wildlife.ca.gov (or other method as requested by CDFW) for review prior to submittal of each Notice of Timber Operations, or CDFW will be notified by email when the documents have been submitted to CAL FIRE and are available in CalTREES.

- This plan utilizes USFWS No Take Scenario # 4 and Attachment A.
- NSO surveys will be conducted using current USFWS protocol (USFWS 02FEB11 and revised 09JAN12)
- NSO surveys will be amended into the NTMP prior to submittal of each NTO.
- The most up to date NSO protocols and Take Avoidance documents will be used prior to future Notices of Timber Operations, NTOs.

Additional NSO information is located in NTMP Section V.

USFWS Recommended Habitat Protection and Operational Protection Measures for NSO:
Within the 0.7 mile radius (985 acres) of each Activity Center:

1) Retain habitat to maximize attributes desirable for NSO.
2) Retain at least 500 acres of suitable (Nesting/Roosting/Foraging) NSO habitat post-harvest, as follows:
   a) Retain 200 acres of Nesting/Roosting habitat within a 0.7 mile radius of the Activity Center consisting of:
      i. 100 acres of the 200 acres of Nesting/Roosting habitat retained should be contiguous, or contiguous as possible with the Activity Center.
      ii. An Additional 100 acres of Nesting/Roosting habitat within the 0.7 mile radius:
         (1) For the second 100 acres, maintain Nesting/Roosting habitat with a minimum of 66% of the harvest basal area per acre of trees at least 11" DBH.

If the remaining 100 acres of Nesting/Roosting habitat is not contiguous with the Activity Center, retain at least 300 acres of Suitable NSO habitat, post-harvest, of at least Foraging quality. Remove no more than 1/3 of the remaining suitable habitat in excess of 500 acres within 0.7 mile of an Activity Center as determined by subsequent observations during the life of the timber operations. This NTMP's retention standards do not allow for the reduction of NSO habitat below foraging quality. There will be at least 75 square feet of basal area in trees 11 inches or greater.

Listed and Sensitive Animal Species Table

Identification of active offsite Activity Centers will be determined "where possible [by] the best available information (for example, biophysical, climatic water deficit, Landscape Management Unit [LMU]) to include the most sustainable locations of high-quality nesting and roosting habitat, where such habitat can be resilient to natural disturbances and climate change." USFS Recommended Habitat Protection Measures.

NSO Road Use:
To avoid take of NSO from noise disturbance, road use within 0.25 miles (1,320 feet) of a NSO Activity Center during the breeding season is prohibited until July 10, unless:
1) Non-nesting, or nesting failure at the Activity Center has been determined by a Activity Center Search conducted on or after May 15th, or;
2) The Activity Center is within 165 feet of a major highway that typically has continuous traffic year-round and the appurtenant road is not within 165 feet of the Activity Center.
3) After July 9th until July 31st, season road use within the 100-acre core is restricted to existing road use, maintenance, and map point work.

NSO Timber Harvest Operations:
A 0.25 mile seasonal restriction on timber operations (except road use after July 9th) applies to every known NSO Activity Center during the breeding season (February 1 – July 31), unless it is determined that NSO are not nesting, or nesting failure has occurred. If it cannot be determined whether NSO are nesting, or nesting failure cannot be determined, the 0.25 miles seasonal restriction stays in effect for timber operations until after July 31st.

For all known Activity Centers:
1) Within the 100-acre Core Area of an NSO Activity Center:
   a. Outside the breeding season, limited timber operations (road use and maintenance, map point work, tail hold placement, use of existing skid roads, and loading) may be conducted, provided no trees >11" DBH are cut or removed by the operations, and no logs are yarded through the Core Area.
   b. During the NSO breeding season (February 1 – July 31), timber operations (including use of roads before July 9th), are not allowed within the 100-acre Core Area, except as allowed in subsections 4 and 5 below.

2) Outside the 100-acre Core Area, but within 0.25 miles of an NSO Activity Center:
   a. Outside of the breeding season, timber operations may be conducted.
   b. During the breeding season, no timber operations should proceed unless protocol surveys do not detect nesting NSO.

3) For all NSO Activity Centers, prior to May 15th (until the required May 15 or later survey is completed):
   a. Timber operations may be conducted only on those areas >0.25 mile from the Activity Center.

4) For NSO Activity Centers where reproductive status has been determined to be non-nesting or failed nesting:
   a. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placement, and loading) may be conducted within the 100-acre Core Area of the Activity Center provided that no trees >11" DBH are cut or removed by the operations and no logs are yarded through the Core Area.
   b. Full timber operations may be conducted within 0.25 mile but not within the 100-acre Core Area of the Activity Center.

Listed and Sensitive Animal Species Table

5) For NSO Activity Centers where reproductive status has been determined to be nesting:
   a. For Activity Centers where fledgling status has not been determined, timber operations may be conducted only on those THP area that are >0.25 mile from the Activity Center until the end of the breeding season.

6) For NSO Activity Centers where fledgling status has been determined (either nest failure or fledglings have left the Core Area):
   a. Full timber operations may be conducted within 0.25 mile but not within the 100-acre Core Area of the Activity Center.
   b. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placement, and loading) may be conducted within the 100-acre Core Area of the Activity Center, provided no trees >11" DBH are removed by the operations, and no logs are yarded through the Core Area.

7) For any NSO Activity Center, regardless of reproductive status:
   a. If NSO move to a new location (>1,000 feet from the historical Activity Center) and reproductive behavior is confirmed at the new site, request technical assistance to evaluate the status of the historical Activity Center.

Marbled Murrelet (*Brachyramphus marmoratus)*	Bird	T	E	Y	Below

No suitable habitat was found within the NTMP area and none is known within the BAA. This is corroborated in past plans and consultations on this ownership (1-08-25 SON and 1-12-040 SON).

All observations, detections and/or take, whether or not timber operations are in progress, shall be reported promptly to DFW staff including time, date, and map location. If the detection occurs during timber operations the following shall apply:

1. The breeding period for marbled murrelets is March 24 through September 15, when the highest potential for disturbance exists. If a marbled murrelet is observed during timber operations within the breeding period, operations shall cease within 0.25 miles for the remainder of the breeding period and the supervising RPF shall immediately contact DFW staff for additional consultation.

Further consultation with DFW will be sought, pursuant to FPR § 919.11, if: 1) trees or stands are identified in the plan area that meet the definition of suitable habitat; 2) the location and boundary lines of the proposed NTMP area are modified; or 3) CDFW, the RPF, the property owner, or CAL FIRE receive any new information regarding marbled murrelet occurrences near the proposed plan area.

Suitable habitat is defined as: (1) mature (with or without an old-growth component) and old-growth coniferous forests; and (2) younger coniferous forest that have platforms, which are a relatively flat surface at least 4 inches in diameter and 33 feet high in the live crown of a coniferous tree. Platforms can be created by a wide bare branch, moss or lichen covering a branch, mistletoe, witches brooms, other deformities or structures. Additionally, platforms must be relatively protected by surrounding trees and/or topographic position, such that platforms are protected from excessive exposure to wind, rain, sun, etc., or predators.

b.[**X**]Yes [☐] No	Are there any PLANTS, including their habitat(s), which are listed as rare threatened or endangered under Federal or state law, or a sensitive species by the Board of Forestry associated with the NTMP area? **If YES, identify the species and the provisions to be taken for the protection of the species.**

Plant Species Table				
Plant Species	**FEDERAL** T/E	**STATE** R/T/E	**CRPR** (1A, 1B, 2A, 2B, 3, 4)	**Protection measures**
North coast Semaphore grass (Pleuropogon hooverianus)		T	1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.
Sebastopol meadowfoam (Limnanthes vinculans)	FE	S1	1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.
Sonoma Alopecurus (Alopecurus aequalis var. sonomensis	E		1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.
Two-fork clover (Trifolium amoenum)	E		1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.
Bakers Larkspur (delphinium Bakeri)	E	E	1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.
Golden Larkspur (delphinium luteum)	E	R	1B.1	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.

Plant Species Table				
The Cedars manzanita (arctostaphylos bakeri ssp. sublaevis)		CR	1B.2	If this species is identified within the area of operations a 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.

NON-LISTED SPECIES IMPACTS	
c. [**X**]Yes [☐] No	Are there any NON-LISTED species which will be significantly impacted by the operation? **If yes, identify the species and the provisions to be taken for the protection of the species.**

Non-Listed Species Table		
Species	**Species type**	**Protection measures**
California Giant Salamanders	Amphibian	This species has been detected within and adjacent to the NTMP. Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect stream habitat for this species. If the California Giant Salamander is found outside of protected areas the salamander shall be *allowed to leave the work area of its own volition. If that is not feasible, the salamander shall be moved to prevent harm during operations.*
Western Pond Turtle	Reptile	Protection measures incorporated into Items 18, 23, 25 and 26 of the Plan shall protect stream habitat for this species.
Sonoma Tree Vole	Mammal	CNDDB shows three records of detections adjacent to the NTMP boundary with possible presence within the boundary. No nest sites have been identified in the plan area, however, if a nest site is found, the nest tree will be retained along with 70% of the conifers within 25' of the nest tree. Trees will be felled away from the nest site.
Methuselah's Longbeard lichen. Usnea longissima	Lichen	If this species is identified within the area of operations, the host tree or shrub will be protected. A 25-foot equipment exclusion zone (EEZ) will be established and include directional falling away from the species until a recommendation is made by a qualified botanist or CDFW.

ITEM # 35 –OTHER WILDLIFE PROTECTION REQUIRED BY FOREST PRACTICE RULES

[**X**]Yes [☐] No	Are there any other provisions for wildlife protection required by the rules? **If YES, describe.**
Description: A seasonally appropriate floristic survey, in accordance with current protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (Dated March 20, 2018) and the California Department of Fish and Game Guidelines for Conservation of Sensitive Native Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations (Dated July 2005) will be amended to the NTMP prior to the Submittal of an NTO. If any state or federally listed threatened, endangered, or rare species are identified, species specific operational buffers will be established and CDFW will be consulted. Surveys are considered valid for a period of 5 years.	

[**X**]Yes [☐] No	Are there any other provisions for wildlife protection required by the rules? **If YES, describe.**

Required NSO surveys (2 Years) will be conducted and amended to the NTMP prior to submittal of each NTO.

Prior to submission of any NTO, scoping for current listed endangered, threatened, sensitive, or rare plant and animal species shall be conducted. If new listed species are identified during the scoping process, CDFW will be consulted for any necessary mitigations.

Should a listed species, plant or animal, be found within or adjacent to the NTMP area, a Native Species Occurrence form will be submitted to the CNDDB.

Nest protection measures and inspection and observation requirements are in Item 14(f).

ITEM # 33 – SNAGS

ITEM #33	**SNAGS**
Per 14 CCR 919, 939, 959 – Timber operations shall be planned and conducted to maintain suitable habitat for wildlife species as specified by the provisions of Article 9 of the Forest Practice Rules. **Within the logging area all snags shall be retained to provide wildlife habitat with the exception of snags for safety reasons Per 14 CCR 919.1, 939.1, 959.1(a)-(f)**	
a.[**X**]Yes [☐] No	Are there any snags which must be felled for fire protection or safety reasons? Snags will be retained for wildlife purposes whenever possible, except under those situations listed under 14 CCR 919.1(b)
b.[☐]Yes [**X**] 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 NTMP map.**
c. [☐]Yes [**X**] No	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) [☐] Public road(s) [☐] Permanent road(s) [☐] Landing(s) [☐] Railroad(s)
d.[**X**]Yes [☐] No	Will snags be felled where federal and state safety laws and regulations require the felling of snags? There are no known snags that are required to be felled.
e.[☐]Yes [**X**] No	Will snags be felled within 100 feet of structures maintained for human habitation?
f. [☐]Yes [**X**] No	Will merchantable snags be felled in any location as provided for in the plan?
g.[☐]Yes [**X**] 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 [**X**] No	Are any Late Successional Forest stands proposed for harvest? **If YES, describe measures to be implemented by the LTO to avoid long-term significant adverse effects on fish, wildlife and listed species known to be primarily associated with late successional forests.**
Describe:	

ITEM # 36 – CULTURAL RESOURCES

ITEM #36 ARCHAEOLOGICAL / HISTORICAL	
a. [**X**]Yes [☐] No	Has an archaeological / historical survey been made for the NTMP area?
b. [**X**]Yes [☐] No	Has a current archaeological / historical records check been conducted for the NTMP area?
c. [**X**]Yes [☐] No	During pre-field research and surveys were archaeological or historical sites identified within the plan area? **If YES, THIS INFORMATION IS CONFIDENTIAL AND NOT AVAILABLE TO REVIEW AGENCIES, OTHER THAN CAL FIRE, AND THE GENERAL PUBLIC.** **RPF is advised to complete the Confidential Archaeological Addendum (CAA) and place in Section VI of the NTMP.** Refer to the Section III Addendum to this item for more information.

ITEM # 37 – GROWTH AND YIELD INFORMATION

[**X**]Yes [ ] No	Has any inventory or growth and yield information designated "TRADE SECRET" been submitted in a separate confidential envelope in Section VI of this NTMP? **If YES, THIS INFORMATION IS CONFIDENTIAL AND NOT AVAILABLE TO REVIEW AGENCIES, OTHER THAN CAL FIRE, AND THE GENERAL PUBLIC.**

ITEM # 38 – SPECIAL INSTRUCTIONS OR CONSTRAINTS

CONDITION Flagging codes / water drafting / paint colors etc.	INSTRUCTION
- Solid Pink "Timber Harvest Boundary"	NTO Boundary Location
- Blue and White Stripe "Lake and Watercourse Protection Zone"	WLPZ Buffer Boundary Location
- Solid Blue	Center line of Class III watercourses
- Solid Yellow "Skid Trail"	Skid trail locations
Solid Orange "Truck Road"	Center line of proposed truck road or location of existing haul road proposed for re-use
Lime Green	Edges of group harvests.
Orange and white stripe "Special Treatment Zone"	Archaeological sites, listed plant and animal species protection areas.
Solid Pink "DO NOT CUT" or Solid Yellow Equipment Exclusion Zone "EEZ"	Active unstable area protection zones

If group openings are being proposed for harvest, CALFIRE and CDFW shall be notified 10 days prior to the submittal of an NTO to allow possible review of the group opening mark.

Operations of equipment and chainsaws in NTMP Unit 2 shall be limited to the hours between 7:00 AM and 7:00 PM.

All un-merchantable logs generated from current operations shall be left in the harvest area if merchantability is determined prior to yarding. All true oak tree species of (> 18" DBH) and Tan oaks (>24" DBH) shall be retained unless needed to be removed or felled for safety, road right-of-way, or yarding corridors.

14 CCR 916 (b) (1) and (2) At a minimum, the LTO shall not do either of the following during timber operations : Place discharge, or dispose in such a manner as to permit to pass into the waters of the state, any substances of materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water. Remove water, trees or large woody debris from a watercourse or lake, the adjacent riparian area, or the adjacent flood plain in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water.

14 CCR 1035.3 Licensed Timber Operator Responsibilities.

Each affected Licensed Timber Operator shall:

(a) Sign the plan and major amendments to the plan, or sign and file with the Director a facsimile of such plan or amendments, agreeing to abide by the terms and specifications of the plan. This shall be accomplished prior to implementation of the following, which the affected LTO has responsibility for implementing: 1) those operations listed under the plan and 2) those operation listed under any amendments proposing substantial deviations from the plan.

(b) Inform the responsible RPF or plan submitter, whether in writing or orally, of any site conditions which in the LTO's opinion prevents implementation of the approved plan including amendments.

(c) Be responsible for the work of the plan and amendments that apply to their work.

(d) Keep a copy of the applicable approved plan and amendments available for reference at the site of active timber operations. The LTO is not required to possess any confidential addenda to the plan such as the Confidential Archaeological Addendum, nor is the LTO required to keep a copy of such confidential plan addenda at the site of active timber operations.

(e) Comply with all provisions of the Act, Board rules and regulations, the applicable approved plan and any approved amendments to the plan.

(f) In the event that the LTO executing the plan was not available to attend the on-site meeting to discuss archaeological site protection with the RPF or supervised designee familiar with on-site conditions pursuant to Section 929.2 (b), it shall be the responsibility of the LTO executing the plan to inquire with the plan submitter, timberland owner, or their authorized agent, RPF who wrote the plan, or the supervised designee familiar with on-site conditions, in order to determine if any mitigation measures or specific operating instructions are contained in the Confidential Archaeological Addendum or any other confidential addendum to the plan.

(g) Provide the RPF responsible for professional advice throughout the timber operations an on-site contact employee authorized by the LTO to receive RPF advice.

(h) Keep the RPF responsible for professional advice throughout the timber operations advised of the status of timber operation activity. (1) Within five days before, and not later than the day of the start-up of a timber operation, the LTO shall notify the RPF of the start of timber operations. (2) Within five days before, and not later than the day of the shutdown of a timber operation, the LTO shall notify the RPF of the shutdown of timber operations. (A) The notification of the shutdown of timber operations is not required if the period of the shutdown does not extend beyond a weekend, including a nationally designated legal holiday.

(i) Upon receipt of written notice of an RPF's decision to withdraw professional services from the plan, the LTO or on-site contact employee shall cease timber operations, except for emergencies and operations needed to protect water quality, until the LTO has received written notice from the plan submitter that another RPF has visited the plan site and accepts responsibility for providing advice regarding the plan as the RPF of record.

14 CCR 1022.4 Licensed Timber Operator Responsibilities

The person licensed pursuant to this Article, hereinafter referred to as Licensed Timber Operator or LTO, shall be responsible for the work of his or her employees, and all those who the LTO may hire as subcontractors, whether or not such subcontractors are licensed as timber operators, except in the following case. In those cases where a subcontracting LTO is also listed as a responsible LTO on a timber harvesting plan or other harvest permitting document, such LTO shall be responsible for the work of their own employees and subcontractors, and shall be responsible for compliance with the Forest Practice Act, plan and Board rules for the timber operations for which they are designated in the plan. All LTOs shall familiarize all employees and amendments and minor or substantial deviations, or any other harvest permitting document or notice that apply to their work. The LTO shall ensure that such employees and subcontractors comply with all other provisions of the Act and Board rules.

14 CCR 914.5 (a) Equipment used in timber operations shall not be serviced in locations where servicing will allow grease, oil or fuel to pass into lakes or watercourses.

During any time of year use of logging roads, tractor roads, or landings shall not take place at any location where saturated soil conditions exist, where a stable logging road or landing operating surface does not exist, or when visibly turbid water from the road, landing, or tractor road surface or inside ditch may reach a watercourse or lake. Grading to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited.

The LTO is advised that all state and federal regulations pertaining to the handling and storage of fuel must be adhered to during logging operations. These regulations include the California Aboveground Petroleum Storage Act with Amendments and the Environmental Protection Agency Regulations on Oil Pollution Prevention (40 CFR 112). In addition, secondary impermeable containment will be installed at all refueling/servicing areas which are regulated by the abovementioned laws.

UNSTABLE AREAS

S1 – This feature is approximately 300ft long by 100ft wide. The scarp comes right to the edge of the ridgetop road but does not affect the road's running surface. The slide occurred between 2016-2017, visible from satellite imagery and orthophotos. This side was addressed in the previous THP and was given a 100-foot equipment exclusion zone around the unstable area. Vegetation has regrown and heavily covers the slide with Douglas-fir saplings well established. No harvest on this feature.

S2 – This feature is approximately 200 feet long and 100 feet wide. The outside road edge has been degraded and is no longer a functional road. The ground has revegetated and shows no bare mineral soil exposed. Slide is approximately 20+ years old. The road/trail is not proposed for use. No harvest on this feature.

S3 – This feature is approximately 200 feet long and 150 feet wide. This feature has removed 60% of the road prism for 50-60 feet and is only passible by foot. Vegetation has covered the slide except for the steepest areas of the upper scarp, Douglas-fir saplings are established. The slide is estimated to be close to 20+ years old. The road/trail is not proposed for use. No harvest on this feature.

S4 – This feature is approximately 250 feet by 250 feet. At this feature the entire road prism is gone, the ground is very broken, and the class III stream associated with this feature runs through the middle of it. The ground is fully vegetated with a large component of pampas grass. The road/trail is not proposed for use. No harvest on this feature.

S5 – This feature is approximately 300 feet long and 100 feet wide. This feature is associated with a plugged culvert 15 feet up slope on the road, water from the plugged pipe has run down the road and now flows onto the feature. The feature is now heavily vegetated with Doug-fir saplings. From the age of the saplings, it is assumed the slide is 25+ years old. *The road prism is gone. No use of the road is proposed except for upgrades to Map Points in Item 24 which are accessible from Jenner Gulch*. No harvest on this feature.

S6 – The unstable area is approximately 125 feet wide by 225 feet long and is bisected by a road. *No operations are proposed where the road crosses S6. The road will be used to access Jenner Gulch for stream monitoring, road maintenance, and timber falling.* No cracks or other road damage is present. Slopes average 40%. A small scarp exists above the road that may only be attributed to an uprooted tree. The tree may have uprooted due to ground movement as it a particularly hummocky spot. The rest of the feature is covered by leaf litter and trees that are approximately 40 years old. Mature trees are leaning slightly downhill. The road surface is insloped and drains away from the unstable area which will be maintained. No additional measures are necessary to minimize slope instability.

S7- This feature is approximately 150 feet wide, 100 feet long and 10 feet deep. There is vegetation covering the feature, with redwood sprouts off fallen burls that appear to be at least 40 years old and are straight. The slope averages 30%. This feature is Area E identified in the Geologic Evaluation for THP 1-01-105-SON. A spring is at the head of the landslide in that report, which was considered to be a contributing factor to the slide. *The road crosses the toe of the feature. The road is free of cracks and appears stable. This road may be used for seasonal hauling and access to Sawmill Gulch.*

S8 - This feature is approximately 120 feet wide, 350 feet long and 12 feet deep. Vegetation covers the feature but, consists mostly of forbs and shrubs. Several conifers were uprooted and lay within the feature. Trees at the toe of the slide are leaning downslope. The slope averages 30%. This feature was not identified in the Geologic Evaluation for THP 1-01-105-SON, but is visible with LiDAR-derived rasters from the 2013 Sonoma Vegetation Map. The feature crosses a seasonal road *that will not be used for operations.* A 25-foot equipment exclusion zone will be flagged around this feature. No harvest on this feature.

S9 - This feature is approximately 125 feet wide, 40 feet long and 7 feet deep. There is not a visible scarp, but there are conifers approximately 20-30 years old leaning downhill. A seasonal road crosses this feature. The road surface appears stable and shows no cracks. This road is proposed for hauling and seasonal access to Sawmill Gulch. No harvest on this feature.

S10 – This unstable area was amended to THP 1-12-040 SON as Unstable Area X. The RPF reported that the feature developed in February of 2018 and it does not appear to have reactivated. *S10 does not intersect the road*. A field inspection was conducted by CAL FIRE and CGS with the RPF. The recommendation was made that no operations shall occur within *50* feet of the feature.

S11 – This feature is 200 foot long and 95 feet wide and runs along the outboard edge of the road narrowing the running surface making it impassable by log trucks. There are two cutbank seeps associated with this area that form wet spots on the road surface. No harvest on this feature.

S12 – The feature corresponds to Area A, identified in Joyce Associates Geologic Evaluation Report for THP 1-01-105 SON. The report describes the feature being three adjacent shallow landslides. No mitigation measures were proposed in the Report. S12 is largely outside of the NTMP boundary but extends onto and possibly across the road within the NTMP. This appears to be part of Map Point 6.9A which is described as a slump in the road surface. This section of road is impassable by log trucks in its current condition. *No logs will be hauled across S12 unless evaluated by a geologist and amended to the plan.* The area is not forested.

S13 – The feature is referred to as Area D in the 2001 THP Report. It is described as an active landslide in a forested area with leaning trees. It does not appear to be associated with the road. The Report recommends harvesting all of the trees to prevent the trees from uprooting and causing erosion. It also recommends replanting. No harvest and no tractors are proposed within 25 feet of the edge as demarcated by flagging.

S14 – This is Area B in the 2001 Report. Described as a shallow landslide, it is in a swale and is not in a forested area. No mitigations were proposed in the Report. No updates to its condition were observed in the field inspection. *No harvest and no tractor operations are proposed on the feature.*

S15 – This is Area C in the 2001 Report. It is outside or on the boundary of the NTMP. It is an unforested area. No operations or mitigations are proposed.

S16 – The 2001 Report refers to this as Area F, described as braided swales. Although it is not actively eroding, the Report states that it "is likely to be prone to erosion if excessively disturbed." No harvest and no tractors are proposed on S16.

S17 – This is Area G in the 2001 Report, described as a small landslide caused by concentrated runoff from an old railroad grade. The Report recommended removing the material causing diversion of water from the ravine onto the railroad grade. No sliding or diversion was observed in the most recent inspection.

Inner Gorge – All of the area between the road along Jenner Gulch and the Class II watercourse that drains to the Russian River is treated as inner gorge. No operations are proposed within the inner gorge. The inner gorge is entirely within the WLPZ. The road is positioned at the break in slope and appears to be stable. Drainage from tributaries and the road surface do not appear to be affecting the inner gorge. Watercourse crossings will be maintained and upgraded as described in Items 24 & 25. No other operations are proposed between the road and the Jenner Gulch watercourse.

HAZARD REDUCTION

All Slash and debris created by the current operations and within 300 ft. of Highway 116 shall be lopped and scattered, chipped, or crushed, prior to April 1st of the year following its creation, so that no material generally remains more than thirty (30) inches above the ground.

N

1:48,000

0 4,000 Feet

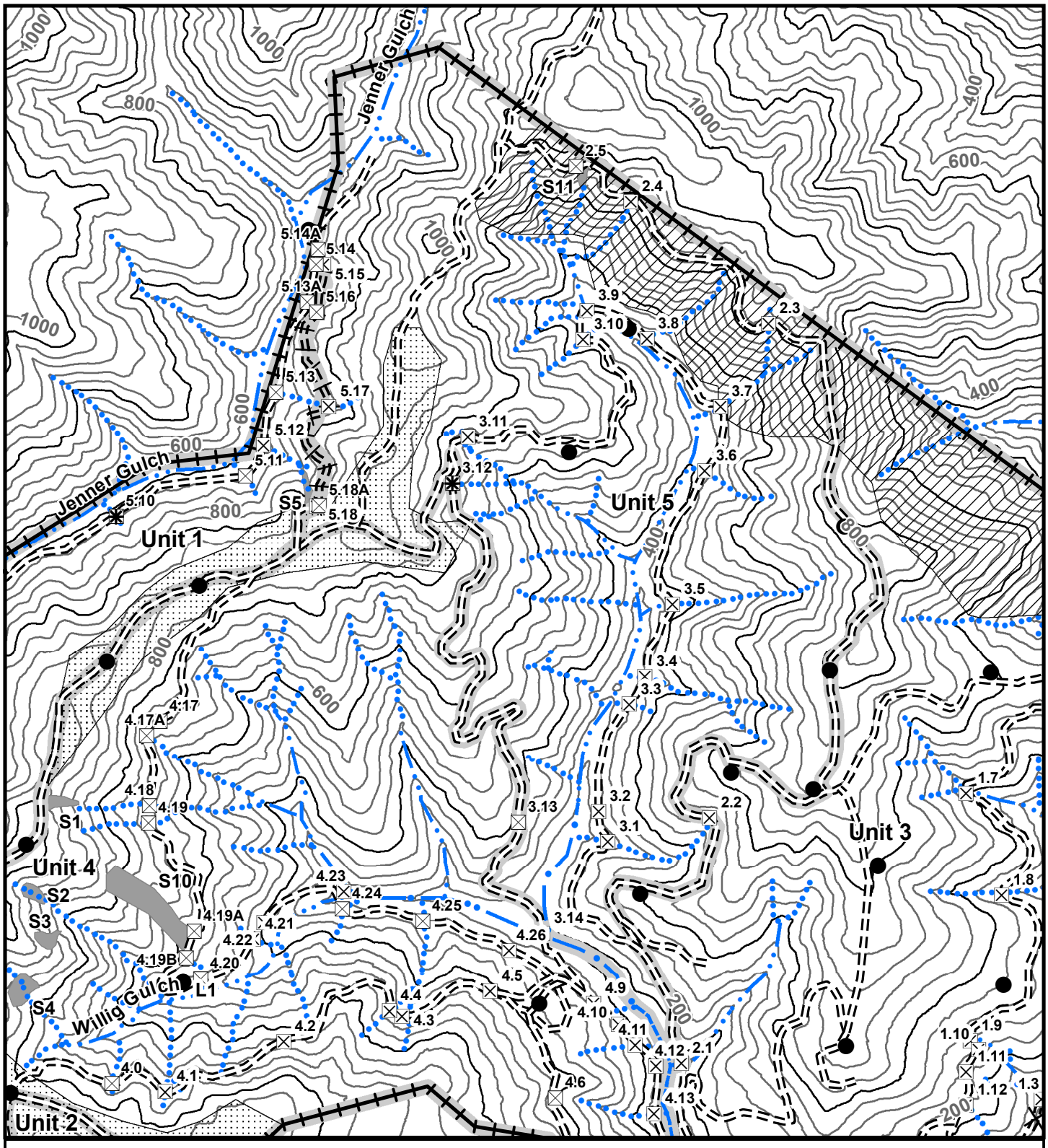
General Location Map
Berry's Knotfarm NTMP

Portion of Muniz Rancho
Portions of Projected Sections 5,7,8,9,17,18
T7N, R 11W
MDB&M
Duncans Mills, CA Quadrangle

Legend

NTMP Boundary

Environmental Resource Solutions, Inc.



N
W E
S

Property/NTMP Boundary
Harvest Unit

1:12,000

0 1,200 Feet

Environmental Resource Solutions, Inc. June 2025

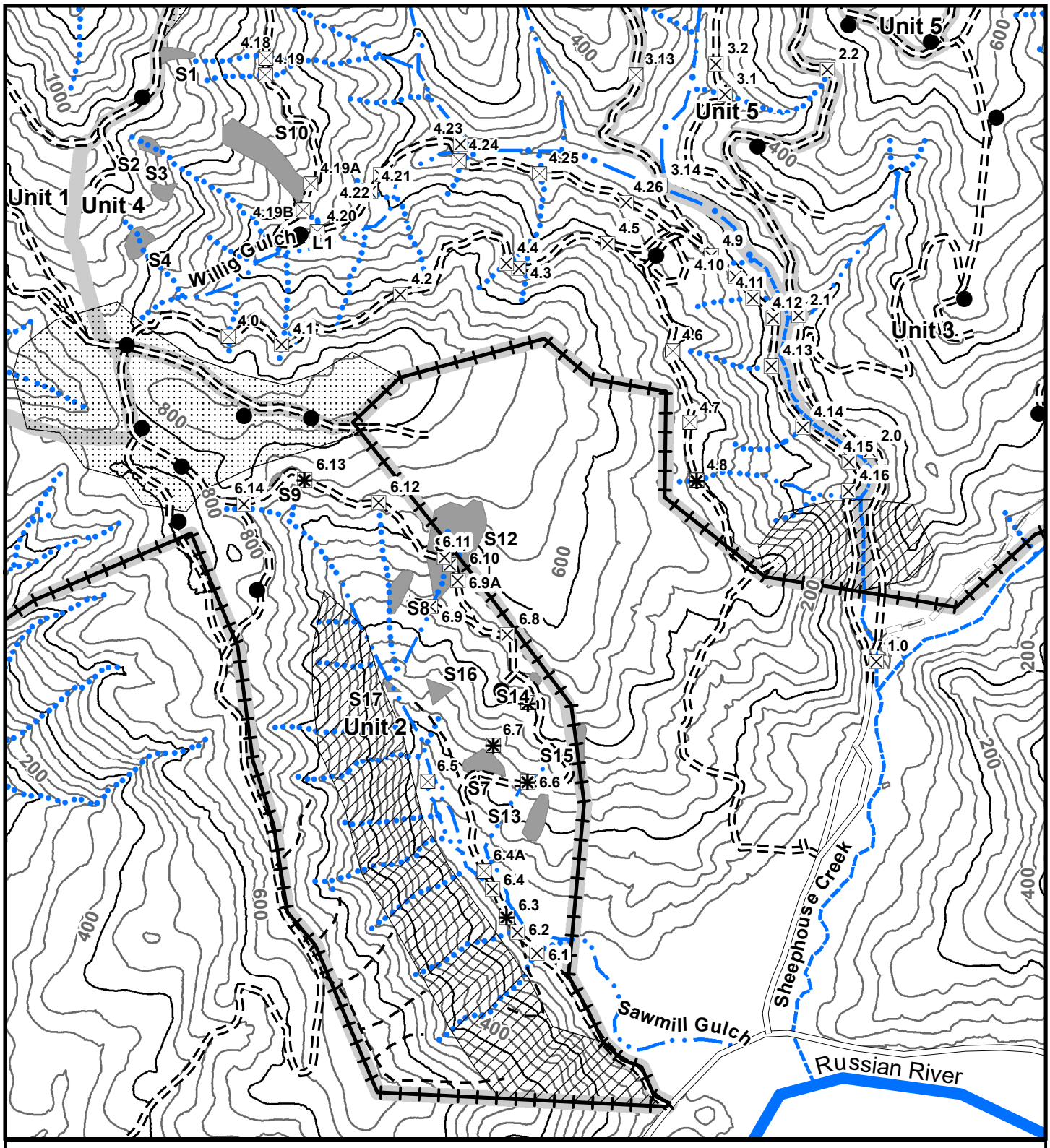
Berry's Knotfarm NTMP
North Operations Map

Portion of Muniz Rancho
Sections 5, 7, 8, 9, 17, 18
T7N R11W MDB&M
Duncans Mills, CA Quadrangle

- Permanent Road
- Seasonal Road
- Non-appurtenant
- Inoperable Road

Watercourse
- Class I
- Class II Large
- Class II Small
- Class III

- Russian River
- Map Points
- Landing
- Unstable Area
- Low EHR
- Moderate EHR
- High EHR
- Spring



N
W E
S

Property/NTMP Boundary
Harvest Unit

1:12,000

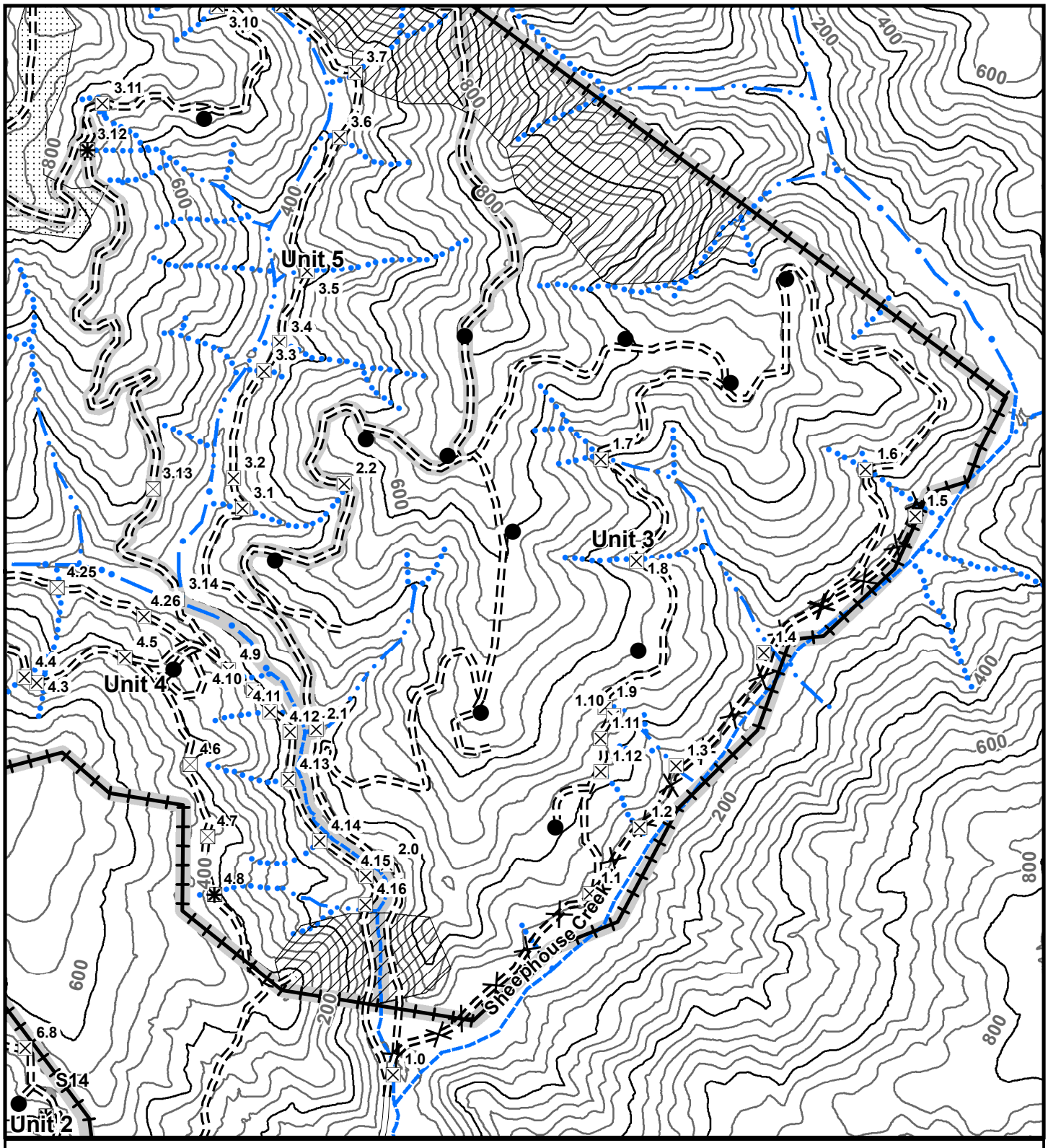
0 1,200 Feet

Berry's Knotfarm NTMP
South Operations Map

Portion of Muniz Rancho
Sections 5, 7, 8, 9, 17, 18
T7N R11W MDB&M
Duncans Mills, CA Quadrangle

Permanent Road
Seasonal Road
Non-appurtenant
Inoperable Road
STA Skid Trail
Watercourse
Class I
Class II Large
Class II Small
Class III
Russian River
Map Points
Landing
Unstable Area
Low EHR
Moderate EHR
High EHR
Spring

Environmental Resource Solutions, Inc. December 1, 2025



Property/NTMP Boundary
Harvest Unit

N
W E
S

1:12,000

0 1,200 Feet

Environmental Resource Solutions, Inc. June 2025

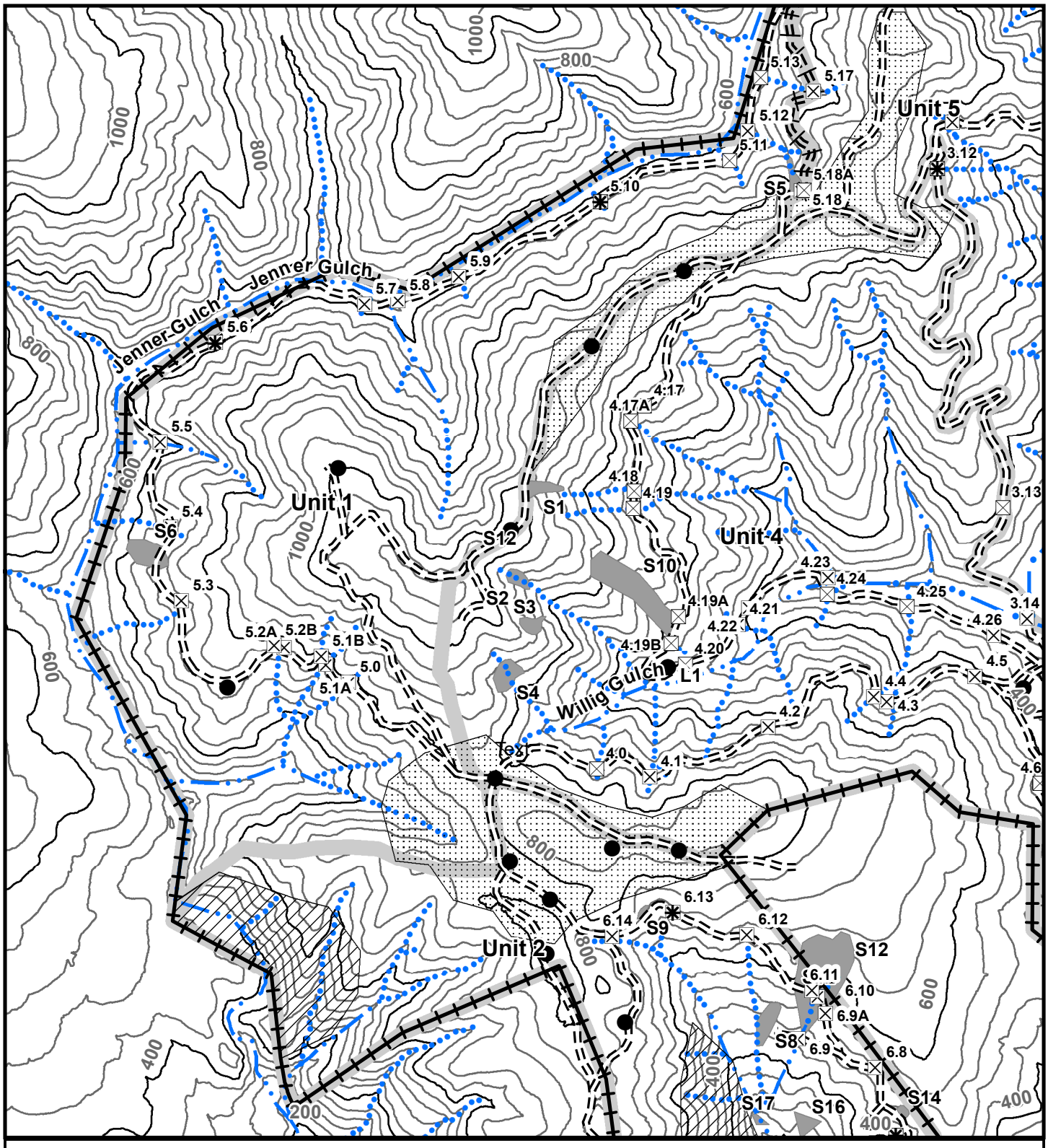
Berry's Knotfarm NTMP
East Operations Map

Portion of Muniz Rancho
Sections 5, 7, 8, 9, 17, 18
T7N R11W MDB&M
Duncans Mills, CA Quadrangle

- Permanent Road
- Seasonal Road
- Non-appurtenant
- Inoperable Road

Watercourse
- Class I
- Class II Large
- Class II Small
- Class III

- Russian River
- Map Points
- Landing
- Unstable Area
- Low EHR
- Moderate EHR
- High EHR
- Spring



Property/NTMP Boundary

Harvest Unit

N

W E

S

1:12,000

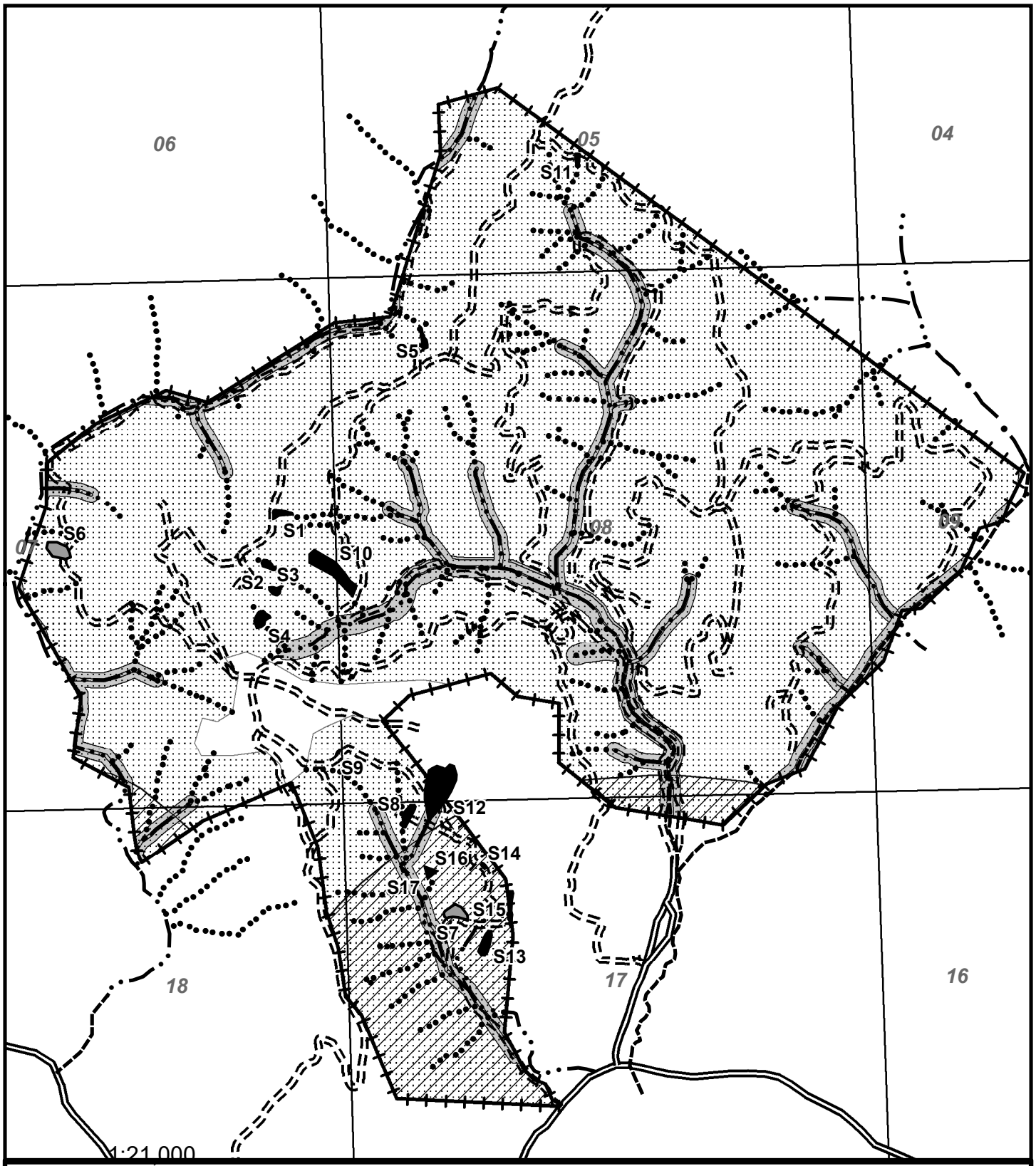
0 1,200 Feet

Berry's Knotfarm NTMP
West Operations Map

Portion of Muniz Rancho
Sections 5, 7, 8, 9, 17, 18
T7N R11W MDB&M
Duncans Mills, CA Quadrangle

Permanent Road
Seasonal Road
Non-appurtenant
Inoperable Road
STA Skid Trail
Watercourse
Class I
Class II Large
Class II Small
Class III
Russian River
Map Points
Landing
Unstable Area
Low EHR
Moderate EHR
High EHR
Spring

Environmental Resource Solutions, Inc. December 1, 2025



Berry's Knotfarm NTMP
Silviculture and Site Class Map

Portion of Muniz Rancho
Secs. 5, 7, 8, 9, 17, 18
T7N R11W, MDB&M
Duncans Mills, CA USGS Quadrangle

All Site Class is considered Site III for stocking purposes within the NTMP Boundary

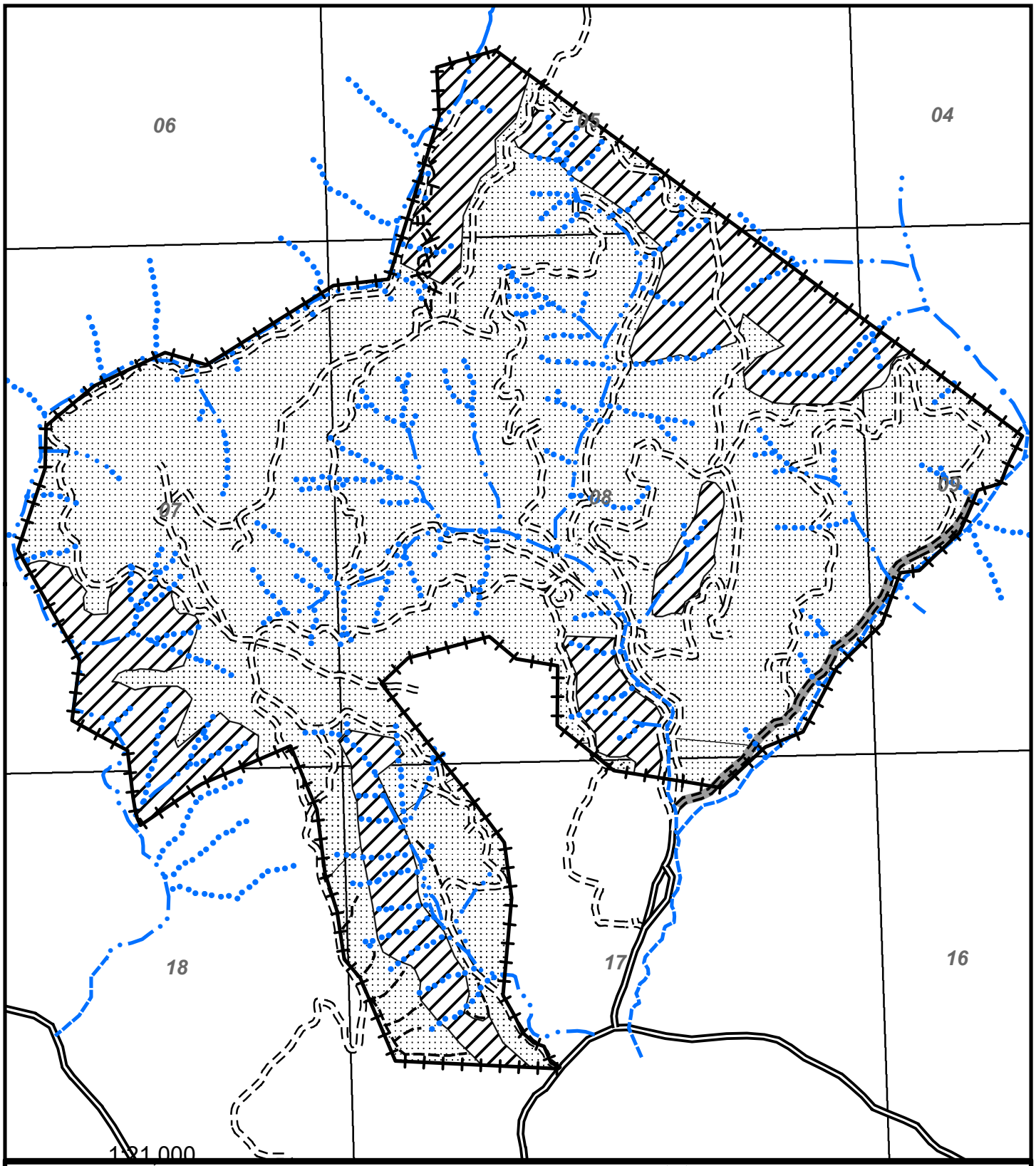
0 1,780 Feet
1:21,000

- Selection
- Coastal Commission STA
- WLPZ Selection
- Unstable Area No Harvest
- Unstable Area Selection
- Unstocked No Harvest

- Permanent Road
- Seasonal Road

Watercourse
- Class I
- Class II Large
- Class II Small
- Class III

Environmental Resource Solutions, Inc. July 2025



Berry's Knotfarm NTMP
Yarding Map

Portion of Muniz Rancho
Secs. 5, 7, 8, 9, 17, 18
T7N R11W, MDB&M
Duncans Mills, CA USGS Quadrangle

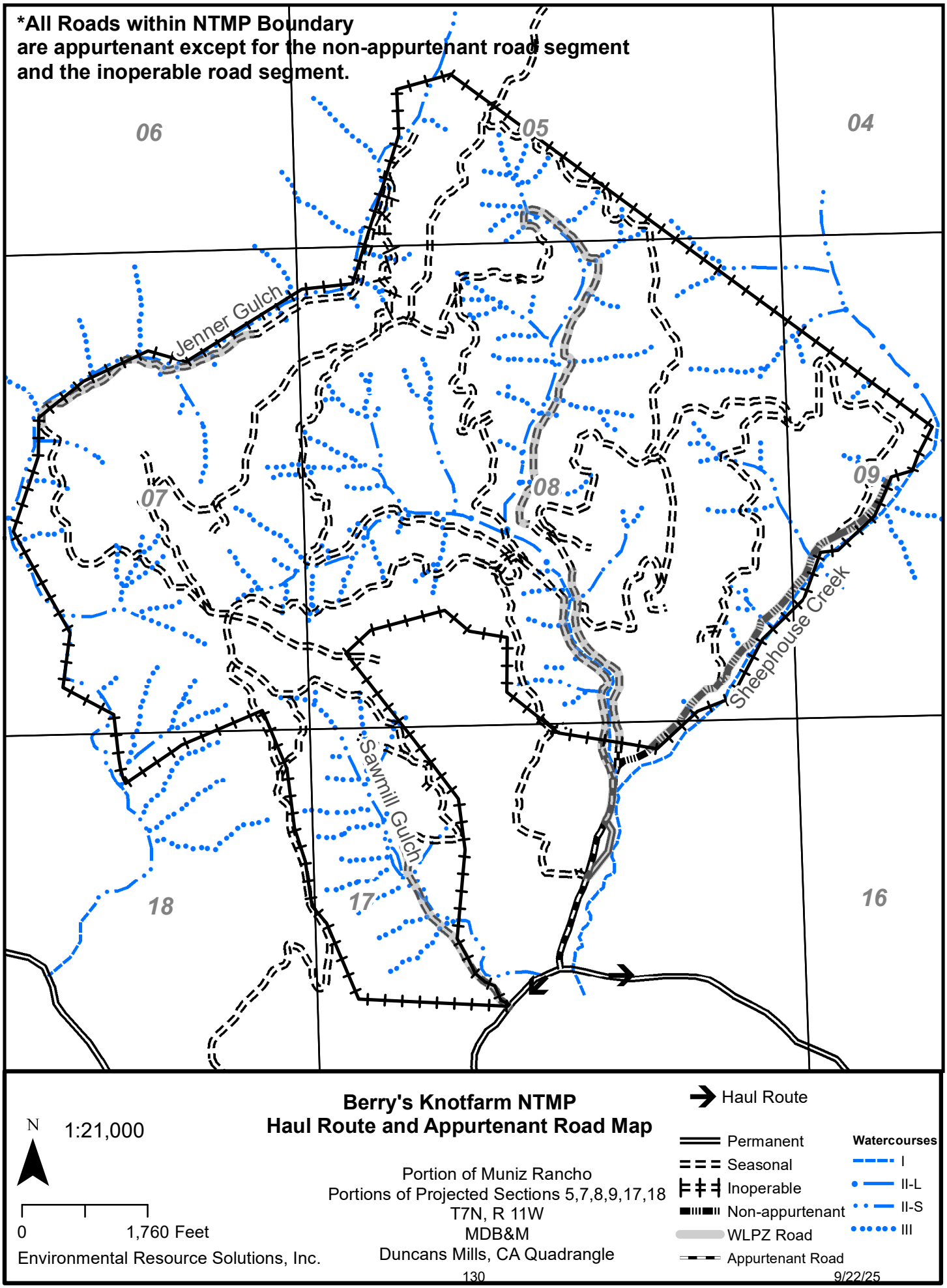
N
W E
S

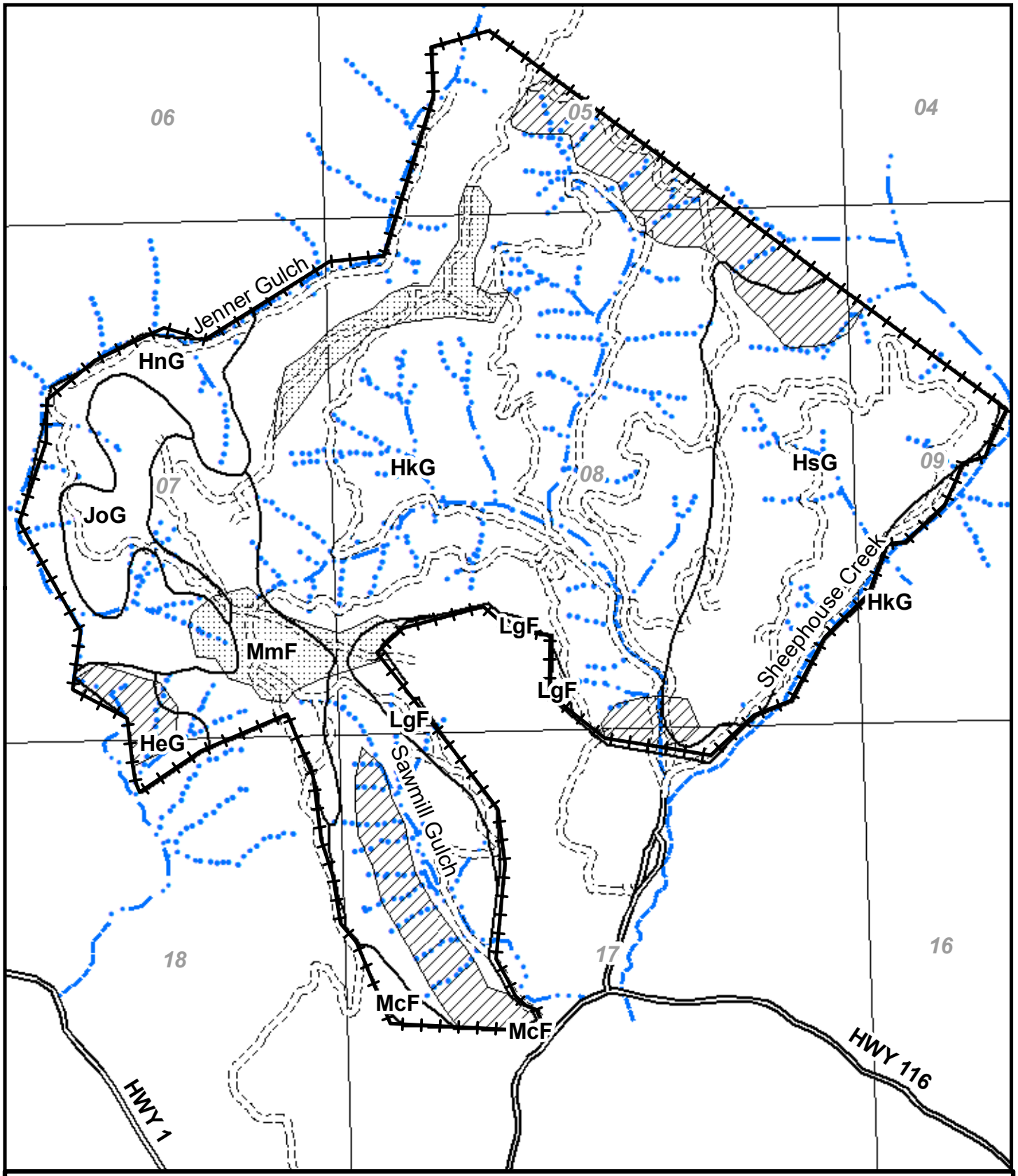
0 1,800 Feet

NTMP_Boundary
Tractor Yarding
Cable Yarding
Skid Trail
Permanent Road
Seasonal Road
Non-appurtenant Road
Inoperable Road

Watercourse
Class I
Class II Large
Class II Small
Class III

Environmental Resource Solutions, Inc. December 3, 2025


*All Roads within NTMP Boundary
are appurtenant except for the non-appurtenant road segment
and the inoperable road segment.
06
05
04
Jenner Gulch
07
08
09
Sheephouse Creek
Sawmill Gulch
18
17
16
Berry's Knotfarm NTMP
Haul Route and Appurtenant Road Map
N
1:21,000
0
1,760 Feet
Environmental Resource Solutions, Inc.
Portion of Muniz Rancho
Portions of Projected Sections 5,7,8,9,17,18
T7N, R 11W
MDB&M
Duncans Mills, CA Quadrangle
Haul Route
Permanent
Seasonal
Inoperable
Non-appurtenant
WLPZ Road
Appurtenant Road
Watercourses
I
II-L
II-S
III
130
9/22/25



N

1:21,000

0 1,750 Feet

Berry's Knotfarm NTMP
Soils and EHR Map

Portion of Muniz Rancho
Portions of Projected Sections 5,7,8,9,17,18
T7N, R 11W
MDB&M
Duncans Mills, CA Quadrangle

NTMP Boundary

Road Class
- Seasonal
- Permanent

- Low EHR
- Moderate EHR
- High EHR
- Soil Series Labled

Watercourse
- Class I
- Class II-L
- Class II-S
- Class III

Environmental Resource Solutions, Inc.

9/22/25

N

1:22,000

0 1,840 Feet

Special Report 120
Landslide Map
Berry's Knotfarm NTMP

Portion of Muniz Rancho
Portions of Projected Sections 5,7,8,9,17,18
T7N, R 11W
MDB&M
Duncans Mills, CA Quadrangle

Legend

NTMP Boundary

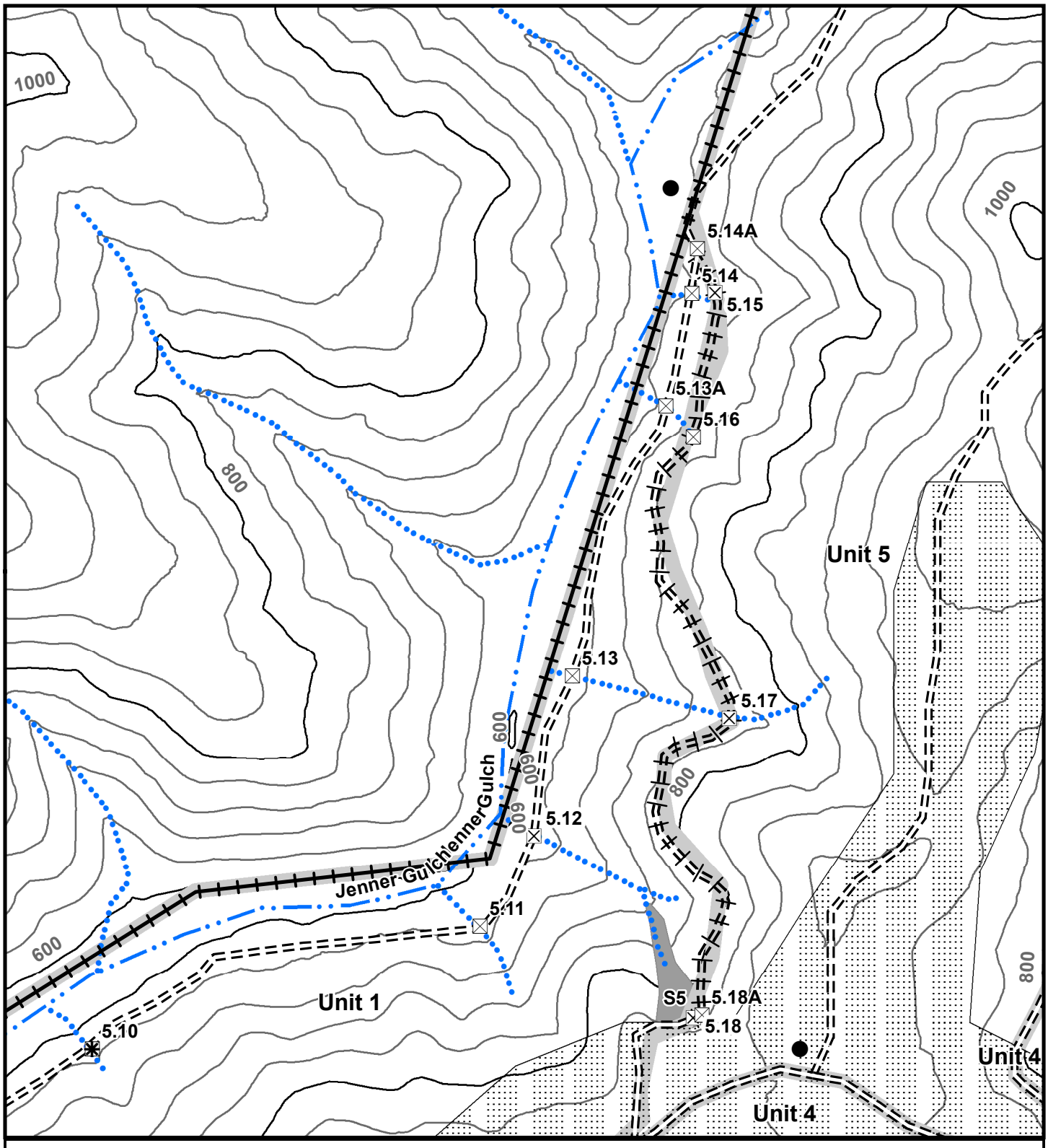
Road Class

Seasonal

Permanent

9/22/25

Environmental Resource Solutions, Inc.



Berry's Knotfarm NTMP
S5 Detail Map

Portion of Muniz Rancho
Sections 5, 7, 8, 9, 17, 18
T7N R11W MDB&M
Duncans Mills, CA Quadrangle

N
W E
S

Property/NTMP Boundary
Harvest Unit

1:4,000

0 600 Feet

Permanent Road
Seasonal Road
Non-appurtenant
Inoperable Road
STA Skid Trail
Watercourse
Class I
Class II Large
Class II Small
Class III
Russian River
Map Points
Landing
Unstable Area
Low EHR
Moderate EHR
High EHR
Spring

Environmental Resource Solutions, Inc. October 2025

132.1

DIRECTOR OF FORESTRY AND FIRE PROTECTION

This Non-Industrial Timber Management Plan conforms to the rules and regulations of the Board of Forestry and Fire Protection and the Forest Practice act.

By:

(Signature)	(Date)
(Printed Name)	(Title)