California Regional Water Quality Control Board
North Coast Region

ORDER NO. R1-2016-0004

Waste Discharge Requirements

For

Nonpoint Source Discharges and Other Controllable Water Quality Factors Related to Timber Harvesting and Associated Activities Conducted by Humboldt Redwood Company, LLC In the

Upper Elk River Watershed

Humboldt County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter Regional Water Board) finds that:

OVERVIEW

1. The Elk River, one of the primary tributaries of Humboldt Bay and an important salmon spawning and rearing habitat, was identified in 1998 as impaired due to excessive sedimentation/siltation and was subsequently placed on the federal Clean Water Act section 303(d) list. The Upper Elk River (UER) Watershed has been utilized primarily for timber harvesting since the 1850s. Water quality impacts resulting from this history of timber management activities include:

    a. Sedimentation and threat of sedimentation;
    b. Impaired domestic and agricultural water quality;
    c. Impaired spawning habitat; and
    d. Increased frequency and depth of flooding due to sediment.

2. The 44.2 square mile Upper Elk River (Attachment A) watershed is predominantly timberland. Humboldt Redwood Company (HRC) is the largest landowner, with 79 percent ownership. This comprises 11% of HRC's total ownership of 209,300 acres in the North Coast region. Discharges from most of HRC's ownership are permitted under the General Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region (General WDRs), Order No. R1-2004-0030, or Categorical Waiver of WDRs, Order No. R1-2014-0011. Cumulative impacts in Elk River, Freshwater Creek, Bear Creek, Jordan Creek, and Stitz Creek Watersheds, require watershed-specific permitting. In 2006, the Regional Water Board adopted WDRs for Pacific Lumber Company (PALCO) in Elk River (R1-2006-0039) and Freshwater Creek (R1-2006-0041), which were subsequently

transferred to HRC in 2008. In 2011, the Regional Water Board adopted R1-2011-0100, Bear Creek WDRs, and in 2014 adopted R1-2014-0036, Jordan Creek WDRs for HRC. No harvesting activities are currently taking place in Stitz Creek.

3. On September 22, 2015, pursuant to Water Code section 13260(a), HRC submitted a report of waste discharges (ROWD) for its timber harvesting and related management activities. The ROWD includes HRC's proposed long term strategy, including measures designed to prevent or minimize water quality impacts from activities associated with its forest management, including:
   - Timber harvesting;
   - Road use, construction, reconstruction, decommissioning, repair, and maintenance;
   - Measures to prevent or minimize controllable sediment discharge from roads skid trails, landslides, and other sources related to timberland management;
   - Retention of riparian vegetation to preserve and/or restore shade, supply large wood, filter sediment from upslope sources, help maintain and restore channel form and in-stream habitat, and moderate peak flows;
   - Treatment of controllable sediment discharge sources;
   - In-stream and riparian zone habitat restoration by enhancement of in-stream large wood for habitat restoration; ~~and~~
   - Implementation and Effectiveness Monitoring; and
   - Watershed trend monitoring.

   While the ROWD has been deemed complete, it is not considered fully adequate to meet all water quality requirements associated with Elk River. As such, this Order establishes specific requirements based largely on the ROWD, with additional measures as warranted to meet applicable water quality requirements.

4. Water quality impacts from logging and associated activities can include increased sediment production and elevated water temperature. These impacts result from a complex interaction between inherent watershed characteristics, such as geology and geomorphology, external natural processes, such as climate and timing of stochastic events (i.e. large storms, earthquakes, fires), type of management practices, and extent and rate of watershed area disturbed. Increased sediment production is the result of greater incidence of landsliding, surface and gully erosion, and increases in channel erosion due to higher runoff rates. Much of the increased sediment production is associated with roads, skid trails, and landings, with the highest potential for sediment discharge occurring at road watercourse crossings.

5. On May 12, 2016, the Regional Water Board adopted an amendment to the *Basin Plan* to include the *Action Plan for Upper Elk River Sediment Total Maximum Daily Load* (TMDL Action Plan). The TMDL Action Plan draws from the *Upper Elk River: Technical Analysis for Sediment* (Technical Report) (Tetra Tech, October 2015), included as Attachment B of this Order, which is a comprehensive assessment of sediment

conditions in the Upper Elk River Watershed. The Technical Report is a synthesis of all Regional Water Board documents, reports from stakeholders in Upper Elk River, and an additional analysis conducted by Tetra Tech, and provides the technical basis for the TMDL Action Plan. This Order is informed by the Technical Report and overwhelming evidence pointing to the lack of any assimilative capacity in the impacted reach.[1]

~~5.~~ The purpose of this Order is to provide a water quality regulatory structure for HRC to prevent and/or address discharges of waste and other controllable water quality factors associated with timber harvest activities in the UER watershed. ~~The Elk River has a long and strained history, and despite numerous efforts to improve conditions, and recent and promising changes in management strategies, the watershed remains severely impaired, specifically the existing beneficial uses in the downstream reach. This Order is informed by the *Upper Elk River: Technical Analysis for Sediment* (Tetra Tech, 2015) ("Technical Report") (Attachment B) and overwhelming evidence pointing to the lack of any assimilative capacity in the impacted reach.~~

6. The Order provides for implementation of rigorous best management practices (BMP) prepared in collaboration with HRC, according to the sediment loading risk of subwatersheds (See Attachment A, Elk River Location Map). It provides ~~an~~a minimum 5 year interim program where HRC will ~~temporarily refrain from~~limit timber harvest activities in high risk subwatersheds to allow time for stewardship efforts (see Findings ~~66~~69 and ~~67~~70) to move forward and improve conditions in the impacted reach.

UPPER ELK RIVER WATERSHED

7. The Elk River has a long and strained history, and despite numerous efforts to improve conditions, and recent and promising changes in management strategies, the watershed remains severely impaired, specifically the existing beneficial uses in the downstream reach.

~~6.~~8. In its sediment source analysis, the Regional Water Board evaluated the natural and anthropogenic factors that influence the ~~behavior~~production and transport of sediment in the Elk River Watershed. The results of the analyses are described in the Technical Report.

~~7.~~9. Over time, sediment transported from the upper tributaries has been deposited in low gradient downstream reaches and has resulted in ongoing aggradation, encroachment of riparian vegetation onto relatively recent fine sediment deposits, and an increased incidence of overbank flooding which has impacted the residential community for the past 20 years. It is estimated that approximately 640,000 cubic yards of sediment

[1] The term "impacted reach" applies to the North Fork Elk River below Browns Gulch, the South Fork Elk River below Tom Gulch, and the mainstem of Elk River from the confluence of the North and South Forks downstream to Bertas Road.

~~produced by management activities over the~~ have accumulated within the past two decades ~~are stored within~~in the low gradient stream reaches of the UER. In addition to elevated sediment loads, hydromodification from channel stabilization, removal of large woody material, dredging, and channel constrictions in lower portions of the watershed, such as bridges and roads, have diminished the ability of the river to assimilate increased sediment loads.

~~8.~~10. High sediment production during the period between 1988-1997 is due to several factors, including an approximate four-fold increase in logging under ~~new~~prior ownership of the primary landowner, ~~the~~ PALCO. Additional factors include poorly regulated logging practices, a series of winters with above average precipitation and a series of large storm events, and potentially the effects of a magnitude 7.2 earthquake off Cape Mendocino in 1992.

~~9.~~11. In 1997, the Regional Water Board and other state agencies began to receive reports from downstream residents of increased turbidity, channel filling, and flood frequency. In December 1997, California Department of Forestry and Fire Protection (CAL FIRE), California Department of Fish and Wildlife (DFW, then California Department of Fish and Game), California Geological Survey (CGS) and the Regional Water Board determined, based on field observations and aerial photograph data, that the Elk River Watershed was one of five watersheds owned by PALCO that were significantly cumulatively impacted by sediment discharges following the large storm events in late 1996 and early 1997. The other watersheds included Bear, Stitz and Jordan Creeks, which are ~~also~~ tributary to the Eel River in the same vicinity, and Freshwater Creek, the adjacent watershed directly north of Elk River, which is also tributary to Humboldt Bay. Following this determination, a series of regulatory and non-regulatory actions designed to increased land use controls to reduce sediment discharges from timber harvesting activities were implemented.

~~10.~~12. This most recent period of increased disturbance, which peaked from the mid-1980s to 1998 and has gradually diminished through the present, is most closely associated with the degradation of conditions in the impacted reach.

REGULATORY ACTIONS IN THE UPPER ELK RIVER

~~11.~~13. CAL FIRE is the state agency responsible for overseeing timber harvesting activities through implementation of the Forest Practice Rules (FPR). (Cal. Code Regs., tit. 14, §§895 *et seq.*[2]) Under the Forest Practices Act, non-federal landowners proposing to harvest timber are required to have an approved timber harvest plan (THP) prior to commencing timber harvesting. The Regional Water Board, DFW, CGS, and other agencies are responsible agencies charged with the multidisciplinary review of THPs to ensure compliance with applicable state laws.

[2] Citations to the Forest Practice Rules contained in title 14 of the California Code of Regulations will be indicated by "FPR" followed by the relevant section number.

~~12.~~14. The FPRs include rules for protection of the beneficial uses of water, including rules for enhanced protection in watersheds with listed anadromous salmonids. The FPRs provide measures designed to prevent sediment discharge; (See FPR §§ 914, 934 [harvesting practices and erosion control]; §§ 923, 943 [prescriptions for construction, reconstruction, use, maintenance, and decommissioning of roads and landings]; §§ 916.4, 936.4 [requiring evaluation of sites that could adversely impact beneficial uses of water and treatment of such sites when feasible].) FPR section 916.9 requires that every timber operation shall be planned and conducted to comply with the terms of a total maximum daily load (TMDL). The FPRs also provide measures to limit reductions in riparian shade to ~~protect~~moderate water temperature. Public Resource Code section 4581.71 specifies that a timber harvesting plan may not be approved if the appropriate regional water quality control board finds, based on substantial evidence, that the timber operations proposed in the plan will result in a discharge into a watercourse that has been classified as impaired due to sediment under Clean Water Act section 303(d). Full and proper implementation of the FPRs related to sediment discharge from timberlands can contribute greatly towards ~~implementation of~~achieving water quality standards. (See e.g. RB1-2013-0005 [FPRs are generally adequate to implement Basin Plan water quality standards if implemented correctly].) Accordingly, this Order relies in part upon the water quality protection provided by the FPRs. Additional protection measures are necessary to protect the beneficial uses of water for site-specific conditions, prevent nuisance, and to comply with a TMDL load allocation.

~~13.~~15. ~~In addition,~~ HRC ownership in the Elk River watershed is covered by a multi-species state and federal Habitat Conservation Plan (HCP) approved in 1999. The HCP implements state and federal Incidental Take Permits (ITP) issued for aquatic species including Chinook salmon, Coho salmon, steelhead trout, southern torrent salamander, tailed-frog, red-legged frog, foothill yellow-legged frog, and the northwestern pond turtle in conformance with the state and federal Endangered Species Acts. The HCP includes a Watershed Analysis (WA) component for focused inventory and investigation of conditions and processes related to mass wasting, surface erosion, riparian function, stream channel, and aquatic habitat. The most recent WA iteration for the Elk River is the Elk River/Salmon Creek Watershed Analysis (ERSC WA) Revisited, prepared by HRC in June 2014. The ERSC WA establishes forest management prescriptions pertaining to slope stability, and riparian forest protection are established in consultation with multiple state and federal resource agencies. While the HCP and WA impose prescriptions and other requirements helpful for water quality protection needs and therefore can be relied upon in this Order, they cannot ensure full compliance with federal and state water quality laws, including protection of all the designated beneficial uses of water listed in Finding 21 below.

~~14.~~16. Starting in 1997, the Regional Water Board issued a series of Cleanup and Abatement Orders (CAOs) that required the inventory, prioritization, treatment, and

monitoring of existing sediment sources associated with land management activities, prevention of new sediment sources, and monitoring of in-stream sediment-related indices. Treatment of existing controllable sediment discharge sources (CSDS)[3] have been conducted under CAO Nos. R1-2004-0028 (for the South Fork and Mainstem Elk River) and R1-2006-0055 (for the North Fork Elk River). By 2011, 80% of the top 100 sites with the greatest potential for environmental impact were treated. In 2012, HRC submitted a new master treatment schedule to inventory and schedule implementation of treatment to control sediment discharge of the remaining CSDS in the watershed, which is included as Attachment C of this Order.

~~15.~~17. In September of 1998, the Regional Water Board issued Cleanup and Abatement Order No. 98-100, requiring cleanup and abatement of THP-related discharges by restoring damaged domestic and agricultural water supplies in the North Fork Elk River. HRC currently provides drinking water service to twelve residences, while seeking final resolution and termination of the CAO.

~~16.~~18. In addition, HRC currently operates under Order No. R1-2006-0039, Elk River Watershed-specific Waste Discharge Requirements (WWDR) issued by the Regional Water Board in 2006. Among other requirements, the WWDR includes receiving water limitations on peak flow increases and sediment discharge from harvest-related landslides. Rate of harvest (ROH) limitations were established based on two scientific models.

~~17.~~19. All Regional Water Board Orders that pertain to HRC's current activities were originally issued to PALCO and amended by Order No. R1-2008-0100 to reflect HRC's ownership of the former PALCO holdings.

~~18.~~20. The WWDR (Order No. R1-2006-0039) is not tailored to the management practices of HRC, and does not comprehensively address HRC's obligations for cleanups and TMDL implementation. An updated WDR would provide a more comprehensive permit that reflects current watershed conditions, changes in management practices, and new technical analyses of watershed sediment conditions. The remaining requirements for erosion control from the 2004 and 2006 CAOs are incorporated into this Order for a more efficient management of related monitoring and reporting.

TMDLs AND REVISED WASTE DISCHARGE REQUIREMENTS

~~19.~~21. In spite of all of the efforts to control sediment discharge, beneficial uses in the downstream impacted reaches remain impaired, the stream channel continues to aggrade, and flooding frequency has increased. It appears that the river's capacity to transport sediment out of the aggraded reach is limited by hydrologic and geomorphic constraints and sediment continues to work its way down through the

[3] Sites that discharge or have the potential to discharge sediment to waters of the state in violation of water quality standards, that are caused or affected by human activity, and that may feasibly and reasonably respond to prevention and minimization management measures.

fluvial system. In addition, even with implementation of current management practices and restrictions, ongoing timber harvesting and associated activities will result in increased sediment discharge, further exacerbating the already impaired condition.

~~20.~~22. The Water Quality Control Plan for the North Coast Region (Basin Plan), last adopted in 2011, is the Regional Water Board's master water quality control planning document. It identifies beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives.

~~21.~~23. The beneficial uses for the Upper Elk River and its tributaries include:

Municipal – Domestic Water Supply (MUN)	Non-Contact Water Recreation (REC-2)
Agricultural Supply (AGR)	Commercial or Sport Fishing (COMM)
Industrial Service Supply (IND)	Cold Freshwater Habitat (COLD)
Industrial Process Supply (PRO)	Wildlife Habitat (WILD)
Groundwater Recharge (GWR)	Rare, Threatened, or Endangered Species (RARE)
Freshwater Replenishment (FRSH)	Migration of Aquatic Organisms (MIGR)
Navigation (NAV)	Spawning, Reproduction, and/or Early Development (SPWN)
Hydropower Generation (POW)	Aquaculture (AQUA)
Water Contact Recreation (REC-1)	

~~22.~~24. At least five of the identified beneficial uses are considered as impaired, including MUN, AGR, COLD, and to a lesser extent both REC-1 and REC-2. The primary beneficial uses of concern for this Order are domestic and agricultural water supplies and the cold freshwater habitat. Existing ~~county roads and bridges~~public and private infrastructure (e.g. roads, bridges, septic systems, and houses) are impacted by increased flooding, creating risks to public safety and nuisance conditions.

~~23.~~25. TMDLs must be established at levels necessary to attain and maintain water quality standards. A TMDL is the sum of individual waste load allocations (WLA) for point sources and load allocations (LA) for nonpoint sources and natural background. (40 CFR 130.2 (i).) Loading capacity is the greatest amount of loading that a waterbody can receive without violating water quality standards. (40 CFR 130.2(f).) A LA is the portion of receiving water's loading capacity that is attributed either to nonpoint source pollution or to natural background sources. Wherever possible, natural and nonpoint source loads should be distinguished. (40 C.F.R. § 130.2(g).)

~~24.~~26. The capacity of the UER for sediment is limited by the ongoing aggradation in the impacted reach ~~and~~ resulting in nuisance conditions and compromised beneficial uses. The loading capacity of the impacted reach for additional sediment is defined as zero until its capacity can be expanded through sediment remediation and channel restoration, nuisance conditions are abated, and beneficial uses are supported. In the UER watershed, all the land use-related sediment delivered to the stream channel is attributed to nonpoint source pollution and natural background. Due to the lack of assimilative capacity in the ~~receiving water~~impacted reach, the nonpoint source load allocation is defined as zero.

~~25.~~27. Unlike a WLA that must be translated into a National Pollution Discharge Elimination System (NPDES) permit as an effluent limit, the Board has more discretion in how it chooses to implement the LA[4]. A LA is not independently enforceable and must be applied in the statutory context of the implementation mechanism, ~~here~~such as waste discharge requirements issued under Water Code section 13263. When water quality is already degraded, it may take time to achieve water quality objectives and immediate compliance may not be possible, even with complete cessation of a discharging activity. (See generally Nonpoint Source Policy at 13.) ~~That said,~~ WDRs must include requirements designed to show measurable progress toward improving water quality over the short term and achieving water quality objectives in a meaningful timeframe. Pursuant to Water Code section 13263, the Regional Water Board shall prescribe requirements as to the nature of any proposed or existing discharge with relation to the receiving water conditions. Requirements shall implement any relevant Basin Plan requirements and take into consideration beneficial uses of water, relevant water quality objectives, and other relevant factors. WDRs can prohibit the discharge of waste or certain types of waste, either under specific conditions or in specified areas. (Wat. Code, § 13243.) All requirements shall be reviewed periodically.

~~26.~~28. The ROWD identifies the following five subwatersheds ~~have been identified~~ as high risk to water quality: Clapp, Tom, and Railroad Gulches, McCloud Creek and the Lower South Fork Elk River. Sediment production from these subwatersheds, which are also located directly above and adjacent to the impacted reach of the South Fork Elk River, is among the highest observed throughout the UER. The relative risk rating informs specific protection measures applicable at a subwatershed scale, including ~~a temporary prohibition on~~limited timber harvest activities in high risk subwatersheds. (See Order Section I.A.4.)

---

[4] Even for waste load allocations, dischargers may be granted additional time to come into compliance with TMDL requirements (see e.g. State Water Board Order WQ-2015-0075 [allowing a watershed-based planning and implementation approach as an alternative compliance pathway with TMDLs and receiving water limitations when issuing Phase I MS4 permits, subject to if rigor, accountability, and transparency requirements are met]).

~~27.~~29. The findings below describe reasonable waste discharge requirements for HRC timber management and associated activities in the UER watershed. In this case, a significant portion of in-channel sources are likely to be mobilized and transported to the impacted reach over time~~, regardless of whether or not timber operations are conducted.~~. In-channel sources include headward migration of low order channels, streamside landslides and unstable streambanks resulting from ground disturbances from past and on-going timber harvesting activities. Stringent controls are necessary to prevent exacerbation of these sources from continuing timber harvesting activities. The sediment source analysis estimated that approximately 56% of the sediment loading in the UER is from in-channel sources. This increases the need to further constrain any additional sediment inputs that are controllable in order to make progress toward attainment of the load allocation. Therefore, this Order includes stringent waste discharge requirements designed to minimize new sediment production and to control and remediate existing sediment inputs to the extent feasible. Monitoring will be required to determine whether implementation is leading to measurable improvements. In addition, ~~a temporary prohibition on~~limiting timber harvesting activities that are likely to generate additional sediment ~~production~~ in high risk areas is appropriate~~ while~~, and the Watershed Stewardship Program (see Finding 66) will take active measures~~ are taken~~ to improve downstream beneficial uses.

~~28.~~30. Findings below provide a discussion of HRC's management plan addressing water quality controls, with additional requirements as deemed necessary by the Regional Water Board in order to implement the load allocations contained in the ~~UER~~ TMDL~~.~~ Action Plan. The Order incorporates and includes the following components:

- Measures to Prevent Sediment Discharge;
  - Forest Management;
  - Riparian Zones Protection;
  - Roads Management;
  - Landslide Prevention;
  - Wet Weather Restrictions; and
  - ~~Temporary Prohibition~~
  - Limiting Timber Harvesting Activities in High Risk Subwatersheds
- Inventory and Treatment of Existing Controllable Sediment Sources;
- Watershed Restoration Efforts; and
- Monitoring and Reporting Program.

SPECIFIC REQUIREMENTS AND RATIONALE

Measures to Prevent Sediment Discharge

~~29.~~31. Specific requirements to prevent new sediment discharge fall into several categories discussed below, including forest management (including harvest rate), riparian protection, roads management, landslide prevention, and wet weather prescriptions. Management measures in separate categories often overlap, and also provide benefits

relevant to other categories. ~~-~~For example, riparian protections and proper road management can help reduce landslides. The categories are provided as a way to organize the discussion but should not be viewed in isolation.

Also, practices implemented to prevent and minimize elevated sediment discharges may also help control elevated water temperatures. While the UER is not listed as impaired for temperature, removal of trees providing shade to watercourses and decreased channel depth due to in-filling of pools with sediment can result in elevated water temperature. Due to the proximity of the UER to the ocean and the moderating effects of the marine influences~~,~~ and stringent BMPs for control of sediment~~, and harvest restrictions~~ that include significant tree retention the will provide shade along all watercourses, elevated water temperatures are not anticipated to result from HRC's management activities.

Forest Management/Harvest Rate

~~30.~~32. Tree removal can result in reduced interception, evaporation, and evapotranspiration of rainfall by forest canopy and can therefore potentially increase the ~~volume of precipitation that infiltrates~~peak flows and ~~remains in soils~~landslides. Tree roots enhance the strength of shallow soils, increasing the soil's ability to resist failure. When trees are harvested, their roots gradually decay, reducing the reinforcement they provide and increasing the potential for shallow landslides. Harvesting trees can ~~result in increased soil moisture~~potentially increase peak flows and ~~runoff and decreased~~decrease root strength, which can contribute to ~~landsliding~~landslides and ~~increased~~increase erosion throughout a watershed. These impacts can be reduced or prevented by limiting canopy removal through silvicultural prescriptions and/or harvest rates limits.

~~31.~~33. The rate of harvest in a watershed is an important management variable. Various studies cite specific thresholds for the rate of harvest, above which, cumulative impacts become more likely to occur and have linked specific processes to watershed impacts, such as increased peak flows from road and canopy removal (Lisle et al. 2000, Lewis et al. 2001), landslide related sediment discharge (Reid, 1998), road density (Cedarholm et al. 1981, Gucinski et al. 2001, Trombulak et al, 2000), or equivalent clearcut area[5] (USDA Forest Service, 1974).

~~32.~~34. HRC has implemented a significantly different silvicultural management strategy from PALCO that predominantly utilizes partial harvesting methods such as uneven-

[5] Equivalent clearcut area (ECA) is a widely used methodology developed by the USFS to account for the relative impacts of different types of silvicultural treatment. It assigns a weighting factor of one to clearcutting and a value less than one for partial harvesting silvicultural treatments. The weighting factor for a silvicultural treatment is multiplied by total area treated under each silviculture to arrive at a normalized disturbance calculation. Therefore, 100 acres of selection harvest, which is typically assigned a ECA factor of 0.5, would be counted as 50 equivalent clearcut acres.

aged single-tree and small group selection (ROWD section 4.1). Partial harvesting results in post-harvest conditions that are less susceptible to mass wasting and increased erosional processes as compared to clearcut harvesting. HRC does not utilize the clearcut harvest method and does not harvest old growth[6].

~~33.~~35. Section 4.0 of the ROWD describes HRC's Forest Management Plan, including projected timber harvesting over a twenty year period between 2015 and 2034 based on multiple management factors such as growth and inventory, forest canopy, protection of critical terrestrial and aquatic habitat, and watershed analysis constraints. HRC's projected harvest can be described as: 1) average annual harvest acreage (and equivalent clearcut acres) and average overlapping crown canopy for each five year period throughout the UER (ROWD Figure 4-2~~)~~), as well as 2) for individual subwatersheds (ROWD Figures 4-3 and 4-4). HRC projected harvest scenario shows increases in standing timber inventory and yield over 20 years.

~~34.~~36. Watershed-wide average annual harvest rates proposed in the ROWD for each five year period vary between ~~530~~466 and ~~625~~605 acres (~~265~~223 to ~~312~~303 equivalent clearcut acres). ~~This equates to average annual harvest rates below 1.0% equivalent clearcut acres.~~ These rates are lower than required under the 2006 WWDRs, which allowed annual harvest rates of 1.9% in the North Fork and 1.8% and upwards in the South Fork. Based on the transition to ~~unevenaged~~uneven-aged management under HRC's ownership, the proposed average annual harvest rate for each five-year period from through the year 2034 throughout the entire UER watershed is less than 1.5% equivalent clearcut acres, the harvest rate above which Klein et.al. (2012) found elevated chronic turbidity levels.

~~35.~~37. Figures 4-3 and 4-4 of the ROWD show projected harvest acreage and overlapping overstory canopy by subwatershed in each five year period~~.~~ over a 20 year time period. Modeled canopy changes for each five year increment over the 20 year period generally show a balance between reductions in canopy due to harvesting and increases from regrowth. For the majority of individual subbasins, canopy changes tend to be positive (increased canopy) for the first three five year periods, with some decreases. Decreases in canopy occur more frequently during the period between 2030 and 2034.

~~36.~~38. The Technical Report recommends a numeric target for limiting increases in peak flows from timber harvesting in individual Class II and III catchment to less than 10% in ten years. Implementation of this numeric target can generally be met by limiting canopy reduction by allowing predominantly unevenaged silviculture, harvest rate limits, and ~~the temporary prohibition on~~limiting timber harvesting in high risk

[6] Variable Retention may be used in some instances as an alternative silviculture to address certain stand conditions, such as high levels of whitewood or hardwood species, animal damage, or general poor form and vigor due to past logging history. Other silvicultural methods that may be applied infrequently include Rehabilitation of Understocked Areas, Seed Tree Removal, and Sanitation Salvage.

subwatersheds. Using the regression equation developed from the North Fork Caspar Creek (Lisle et al. 2000; Lewis et al. 2001; Cafferata and Reid, 2012), Regional Water Board staff have calculated changes in peak ~~flow~~flows from canopy removal based on HRC's projected harvest rates for each subwatershed. Even without taking into account canopy regrowth following harvesting, modeled peak flow increases from HRC's proposed harvesting in individual subwatersheds are below 10%.

39. HRC's projected harvest rates from Table 4.3 of the ROWD (Attachment D) are generally reasonable~~, with the exception that projected average~~. Average annual harvest rates in ~~some~~ subwatersheds ~~for specific 10- year periods exceed~~ fall near or below 2% equivalent clearcut acres~~. Therefore, Section I.A.3. of this Order requires that the rate of harvest in any subwatershed in the UER not exceed 2% equivalent clearcut acres per year~~ averaged over any 10 year period~~. This is to ensure that proposed harvest~~ in most subwatersheds. Harvest rates ~~are generally below a~~ above this threshold ~~that~~ would cause concern for ~~contributing to ongoing~~ cumulative impacts on water quality ~~and contribute towards implementation of numeric targets recommended in the Technical Report~~that have been observed from intensive logging practices in the past. Each timber harvest plan (THP) is evaluated individually for impacts to water quality and that review may reveal ~~additional constraints. All conditions are subject to periodic modification by the Board based on the adaptive management and monitoring results.~~ the need for additional constraints. Where an individual, or multiple, THP(s) would exceed this threshold of concern in any subwatershed, the Regional Water Board Executive Officer may decline to enroll the THP(s), or portions of the THP, or may require additional mitigations or monitoring as a condition of enrollment. (See also Section V.)

~~37.~~

<u>Riparian Zone Protection</u>

~~38.~~40. Properly functioning riparian areas in UER can promote complexity in stream channels, both in the steep upper watershed as well as in the depositional reach. A riparian zone helps maintain healthy stream ecosystems and supports beneficial uses by:

i. Stabilizing banks through provision of root cohesion on banks and floodplains;
ii. Filtering sediment from upslope sources;
iii. Filtering~~ chemicals and~~ nutrients from upslope sources;
iv. Supplying large wood to the channel, which maintains channel form and improves in-stream habitat complexity;
v. Helping to maintain channel form, in-stream habitat, and an appropriate sediment regime through the restriction of sediment inputs or metering of sediment through the system;
vi. Moderating downstream flood peaks through temporary upstream storage and infiltration of flood water;

vii. Helping maintain cool water temperatures through provision of shade and creation of a cool and humid microclimate over the stream; and

viii. Providing both plant and animal food resources for the aquatic ecosystem in the form of, for example, leaves, branches, and terrestrial insects.

~~39.~~41. Alteration of physical processes in riparian zones have led to reduced forest stand complexity, including reduction in the number of trees available within riparian areas for recruitment to streams, increased surface erosion and landsliding, and destabilization of stream channels. Subsurface erosion of soil pipes is prevalent in the UER, particularly in swales above small headwater channels. Preferential flow through soil pipes results in internal erosion of the pipe, which may produce gullies by tunnel collapse. Considerations of the interactions between sediment processes, water temperature, and riparian trees are essential for evaluating and avoiding management related impacts to streams. Management of riparian zone must be designed to preserve and restore the function of riparian vegetation and hillslope processes, including retention of adequate riparian zone trees and avoiding use of roads and heavy equipment on vulnerable hillslopes and swales.

~~40.~~42. HRC's timber operations in Riparian Management Zones (RMZs) are subject to the ERSC WA prescriptions that prevent or minimize sediment delivery to streams and maintain and restore riparian forests for the benefit of shade canopy and large woody debris recruitment. These prescriptions are enforced through specific requirements for timber harvest and road construction, re-construction, and maintenance activities. ERSC WA prescriptions for RMZs include no harvesting within 150 feet of the lower eight miles of the North Fork Elk River and within 50 feet of all other Class I watercourses. No harvesting is permitted within 30 feet of Class II watercourses~~.~~ and 20 feet of Class III watercourses. Large tree, down wood, canopy retention requirements are mandated throughout the remainder of the RMZ. Entry into Class I and II riparian zones are permitted no more than once every 20 years. Hillslope prescriptions include further restrictions on harvesting on inner gorge slopes and headwall swales, road use and construction, and heavy equipment use. A "Hillslope Management Checklist" is used by registered professional foresters (RPFs) to identify areas that are vulnerable to mass wasting. Silvicultural treatments in RMZs are managed to develop or maintain late seral forest conditions, such as thinning from below or individual tree selection.

~~41.~~43. Section I.B. of this Order establishes protection measures for RMZs that incorporate ERSC WA prescriptions for riparian protection as minimum protection standards~~.~~ with additional requirements for RMZ widths and post-harvest tree retention on Class II and III watercourses to minimize peak flow increases, protect slope stability and promote and maintain robust riparian stands. Additional protection measures to be implemented~~ as necessary,~~ include avoidance of tractor crossings and retention of trees in unchanneled swales to the extent feasible~~;~~, and implementation of ~~highest feasible level of~~ erosion control on all RMZ road segment, landings, and skid trails~~; and requirements for post-harvest tree retention to protect slope stability and~~

~~promote and maintain robust riparian stands in Class III watercourses by providing a 100 foot RMZ with a 20 foot no harvest inner zone and an 80 foot outer zone that retains a minimum of 50% post-harvest conifer canopy coverage~~.

Control of Sediment from Roads

~~42.~~44. Sediment TMDLs adopted for watersheds throughout the North Coast Region have identified logging roads as one of the most significant sources of anthropogenic sediment discharge. Logging roads can alter hillslope hydrologic processes and increase sediment discharge from surface and gully erosion and landslides. Roads can contribute to landsliding by undermining and oversteepening slopes and placing fill material on steep slopes. Roads also intercept and concentrate shallow groundwater and surface runoff, which can cause gully erosion and saturate vulnerable slopes, increasing the potential for failure. Road crossings of watercourses are subject to the force of high stream flows and failure usually results in direct delivery of sediment to streams. Road crossings of watercourses are one of the most common controllable sediment sources. Management practices have become standard in timberlands throughout the North Coast to reduce the potential for road related sediment discharge. Inventory and treatment of existing roads is addressed under a separate heading below.

~~43.~~45. A programmatic approach to road construction, reconstruction, maintenance, decommissioning, and regular inspections is essential to controlling sediment discharge from roads. A widely used reference document for planning, designing, constructing, reconstructing, maintaining, and decommissioning roads on forestlands in the North Coast is the Handbook of Forest and Ranch Roads (Weaver and Hagans, 1994)[7]. The Handbook contains a comprehensive suite of measures for forestland roads that the Regional Water Board consider adequate and necessary to control sediment discharge from roads. Roads that have implemented all feasible site specific sediment control measures as described in the Handbook are referred to as "stormproofed."

Stormproofed roads incorporate the design features as summarized below into construction of new roads or reconstruction of existing roads:

- Hydrologically disconnecting road segments from watercourses and minimizing concentration of surface runoff by installing drainage structures at sufficient intervals to disperse runoff so as to avoid gully formation and minimize erosion of the road surface and inside ditches;
- Identifying and treating potential road failures (mostly fill slope failures) that deliver sediments to streams;

[7] Handbook for Forest, Ranch, and Rural Roads, A Guide for Planning, Design, Constructing, Reconstructing, Maintaining, and Closing Wildland Roads. The handbook was updated in 2014, funded in part by a State Water Board 319(h) nonpoint source grant.

- Watercourse crossing shall be designed to minimize the potential for crossing failure and diversion of streams. Watercourse crossings shall be sized adequately to accommodate estimated 100-year flood flow, including wood and sediment;
- Inspecting and maintaining roads annually; and
- Wet weather road use shall be avoided or limited to well rocked, paved, or chip sealed surfaces.

~~44.~~46. Appendix B of the ROWD includes the description of sediment control measures for roads from HCP section 6.3.3, which largely rely on implementation of standards identified in Weaver and Hagans Handbook. By 2014, HRC stormproofed 206 miles of the approximately 260 mile active road system in the UER, and decommissioned 50 miles. Implementation of these road prescriptions are established as specific requirements in Section I.C. of this Order. Section 1.C.2. of this Order requires that all of HRC's roads in the UER shall be upgraded to stormproof standards by October 15, 2018.

Landslide Prevention

~~45.~~47. Due to the weak geologic bedrock underlying much of the watershed, relatively high rates of tectonic uplift, and high annual precipitation rates, hillslopes throughout much of the UER are naturally vulnerable to landsliding. Natural rates of landslide related sediment production vary based on the occurrence of landscape disturbance such as large storms, fires, earthquakes or other infrequent natural events. Timber harvesting and associated ground disturbance can result in increased rates of shallow landslides on vulnerable slopes due to decreases in root strength, increased soil moisture, altering of hillslope hydrologic process, and oversteepening or loading slopes by cut and fill road construction.

~~46.~~48. Tree roots can enhance the strength of shallow soils, increasing the soil's ability to resist failure. When trees are harvested, their roots gradually decay, reducing the reinforcement they provide and increasing the potential for shallow landslides. The loss of root strength gradually increases over a period of several years, with the critical period of maximum loss occurring approximately 5 to 15 years after harvesting. As new roots grow into the space previously occupied by the older root system, the support they provide gradually increases. Loss of root strength varies with species and intensity of harvest. Interception, evaporation, and evapotranspiration of rainfall by forest canopy can reduce the volume of precipitation that infiltrates and remains in soils. Harvesting trees can therefore ~~result in increased soil moisture and runoff~~increase peak flows, which can contribute to landsliding and increased erosion. Vulnerability to shallow landsliding processes varies throughout a hillslope, primarily as a function of soil depth, slope gradient, contributing drainage area, subsurface hydrology, and soil characteristics.

~~47.~~49. Construction of roads, skid trails, and landings can also increase landsliding. Excavations on vulnerable areas to construct roads and skid trails can undermine steep slopes. In addition, fill material placed on steep slopes on the outboard edge of roads can fail. Such failures can trigger larger failures on slopes below, often displacing large volumes of debris which can be transported considerable distances down slope.

~~48.~~50. The TMDL sediment source analysis found that landslide-related sediment production increased over two-fold above natural rates during the period between 1955 and 2001, with the highest rates (almost 5 times natural landslide rates) observed during the 1988 to 1997 time period. Open-slope landslides and road-related landslides were the dominant sediment sources during this period. Landslide-related sediment production has declined in the UER during subsequent time periods, notwithstanding large storm events that occurred in 2003 and 2006. Declines in landsliding rates are thought to be partially the result of the HCP mass wasting avoidance strategy, which limits or precludes operations on areas identified as high landslide hazard as well as the ERSC WA prescriptions for landslide prevention.

~~49.~~51. The 2006 WWDRs included a "zero landslide-related discharge" requirement for harvest acreage in excess of the landslide reduction model limits. In 2008, Regional Water Board staff in collaboration with PALCO staff and other interested parties developed a methodology for evaluating enrollment of harvest acreage in excess of the limits based on the landslide reduction model and monitoring compliance with the zero landslide discharge requirement. Applications for this additional acreage, referred to as "Tier 2", were evaluated in a watershed context, and were subject to a far more rigorous level of geologic review than standard THPs, including consideration of geomorphology, topography, engineering geologic characteristics, management history, and hydrology.

~~50.~~52. In 2008, Regional Water Board staff developed Monitoring and Reporting Program (MRP) R1-2008-0071 in collaboration with PALCO and other interested parties to establish a process to ensure compliance with Tier 2 zero discharge requirements. The MRP specifies clear guidelines for application, review, and enrollment of THPs under Tier 2. The MRP also requires that following harvest all Tier 2 units be inspected at a minimum two times per year to identify new landslides or enlargement of existing landslides. HRC submits annual Tier 2 monitoring reports to the Regional Water Board. To date, no sediment discharge from harvest related landslides in units enrolled under Tier 2 has been reported. The current inventory of landslides based on interpretation of aerial photographs from 2003, 2006, and 2010 is discussed in the Landslide Prevention section of this Order and provided as Appendix C of the ROWD. Section IV of this Order requires HRC to maintain and update the landslide inventory according to the specifications described in the Monitoring and Reporting Program (MRP).

~~51.~~53. In addition to periodic air photo analysis, monitoring and reporting requirements required in Section IV of this Order rely upon annual field and helicopter fly-over inspections of harvested areas and road systems to evaluate the effectiveness of required measures to prevent landslides.

~~52.~~54. HRC's approach for evaluating landslide hazards includes ERSC WA prescriptions. As part of THP planning, a review of pertinent technical data are conducted to denote potential high risk slopes, including landslide inventories, regional geomorphic maps, stereoscopic aerial photographs, and a shallow landslide potential map developed using the SHALSTAB landslide model. Appendix D of the ROWD (HCP section 6.3.3.7, ERSC WA) includes the following prescriptions for hillslope management mass wasting strategy:

- A hillslope management checklist is used to identify areas that are particularly vulnerable to mass wasting;
- No harvesting or road construction or reconstruction on Class I inner gorges;
- No harvesting or road construction or reconstruction on the following areas without characterization and development of measures to protect water quality prescribed by a California Professional Geologist (PG);
    - Class II or III inner gorges;
    - headwall swales;
    - other areas with very high mass wasting hazard (including slopes greater than 60%); and
    - earthworks (skid trails, landings, road prisms, or other earthen structures) exhibiting characteristics identified in the hillslope management checklist.

~~53.~~55. In addition to the hillslope management mass wasting strategy described above, a comprehensive approach to preventing increases in landslide related sediment discharge resulting from timber harvesting and associated activities includes characterization of landslide hazards, designing projects to minimize impacts to slope stability based on site specific hazards, and ongoing monitoring of landslide activity to better understand landslide patterns and modify management practices based on observed activity. The California Geological Survey Note 45 provides guidelines for Engineering Geologic Reports for Timber Harvesting Plans[8], which must be prepared by a PG who is familiar with watershed characteristics. Section I.D. of this Order establishes requirements for characterization of geologic hazards by a PG and development of site-specific mitigations. Characterization of landslide hazard should at a minimum consider the following information:

- Existing hazard maps derived from slope stability models;
- Available maps and reports;
- Aerial photographs;

[8] California Department of Conservation, California Geological Survey Note 50, 2013.

- Field investigation and mapping; and
- Applicable studies and technical models.

~~54.~~56. The Engineering Geologic report must include an evaluation of potential effects on slope stability, surface soil erosion, and landslide related sediment discharge from the proposed management activity, identify problem areas, and describe specific mitigation measures needed to minimize potential effects for identified areas of concern. The mitigations should be based on the potential hazard process (likelihood of landslide initiation or acceleration in sediment mobilization or water flow, and the potential risk to water quality or public safety). Where appropriate, mitigations shall include, but are not necessarily limited to, the following:

- Limit canopy removal in areas with elevated landslide hazard;
- Limit activities upslope of existing landslide and on vulnerable portions of deep seated landslides;
- Avoid road or skid trail construction on steep or vulnerable slopes; and
- Stabilize existing landslides where applicable by methods such as planting, drainage manipulation, buttressing, and other feasible engineering techniques.

~~55.~~57. This Order establishes enforceable provisions to prevent increases in sediment discharge from landslides associated with HRC's timber harvest activities. The provisions entail an overall strategy that includes HRC's hillslope management mass wasting strategy from the ERSC WA, as well as additional measures included in their ROWD and those deemed necessary by Regional Water Board to prevent management related landsliding. These are summarized below as follows:

- Harvest rates throughout HRC's ownership in the UER that must be less than those allowed under the limits set by the landslide reduction model under the current WWDRs;
- Use of partial harvesting methods that retain a significant component of post-harvest root strength;
- ~~Temporary prohibition of~~Limiting timber harvesting in high risk subwatersheds;
- Riparian protection zones, which include no harvesting within 50 feet of Class I watercourses, 30 feet of Class II watercourses, 20 feet of Class III watercourses and specific tree retention up to 150, ~~100~~200, and 100 feet of Class I, II and III watercourses, respectively;
- Review by PG of all proposed activities, including harvesting and construction or reconstruction of roads and watercourse crossings; and
- Implementation of HRCs ERSC WA hillslope management prescriptions.

Wet Weather Requirements

~~56.~~58. Conducting timber operations during wet weather increases the potential for sediment production and discharge from roads, landing, and skid trails. Use of trucks and heavy equipment during saturated soil conditions can result in soil compaction, create ruts which affect road drainage, and increase production of fine sediment. Typically the most effective way to prevent impacts from operations during saturated soil conditions is to avoid operations during the period of the year when rain is likely to occur. This allows for timely implementation of seasonal erosion control, and the completion and stabilization of construction and reconstruction of roads, landings, skid trails and watercourse crossings. In the North Coast, over 90% of average annual precipitation falls between October ~~15th~~1 and May ~~1st~~1.

In order to minimize the impacts of conducting timber operations during wet weather, the following seasonal restriction shall apply:

a. Road construction or reconstruction may not take place between September ~~15th~~15 and May ~~1st~~1 except in response to failure of a road segment or watercourse crossing ~~that~~ resulting in ongoing or imminent sediment discharge~~;~~.

~~Timber~~

b. Between October 1 and May 1, timber falling and cable yarding are permitted. Ground-based yarding and site preparation are prohibited.

c. Hauling (including logs, heavy equipment and/or rock) shall be suspended once there is 4 inches of accumulated precipitation in any water year (October 1 - September 30) as measured at the National Weather Service Woodley Island Station in Eureka (NWS Woodley Island) unless there are dry weather conditions during this time period. Hauling may resume during dry weather conditions, but shall be suspended again when dry weather conditions do not exist. Dry weather conditions are defined as less than a cumulative total of 0.25 inches of precipitation during any consecutive 72 hour period as measured at NWS Woodley Island. Hauling may resume May 1 pursuant to HCP requirements.

~~b.~~d. In the five high risk subwatersheds Clapp, Tom, and Railroad Gulches, McCloud Creek, and the Lower South Fork Elk River (see Finding 59), timber operations, including timber falling, timber yarding, and hauling (including logs, heavy equipment and/or rock), shall cease once there is 4 inches of accumulated precipitation in any water year (October 1-September 30) after October 1 as measured at the National Weather Service Woodley Island Station in Eureka. Timber operations in the five high risk subwatersheds can resume May 1 pursuant to HCP requirements.
~~4 inches of accumulated precipitation in any water year (October 1–September 30) after October 1st as measured at the National Weather Service~~

~~Woodley Island Station in Eureka. Timber operations can resume May 1st pursuant to HCP requirements.~~

~~Temporary Prohibition~~

Limited Harvesting in Five High Risk Subwatersheds

59. Regional Water Board staff evaluated the relative risk of sediment production and discharge in each subwatershed in the UER based on probabilistic landslide hazard, bedrock geology, and observed sediment production from 2000-2011. This evaluation was used to establish a ranking of relative risk to water quality of low, moderate, or high for each subwatershed. Similarly, section 5.4 of the ROWD identifies five subwatersheds predominantly underlain by the Hookton Formation, a geologically young sandstone/siltstone bedrock unit that is highly vulnerable to surface erosion and mass wasting. These areas closely correlate with Regional Water Board assessment, and include: Clapp, Tom, and Railroad Gulches, McCloud Creek, and the Lower South Fork Elk River. Sediment production from these subwatersheds, which are also located directly above and adjacent to the impacted reach of the South Fork Elk River, is among the highest observed throughout the UER. The five subwatersheds identified above are therefore appropriately considered as high water quality risk for the purposes of this Order. The relative risk rating informs specific protection measures applicable at a subwatershed scale, including ~~a temporary prohibition on~~limiting timber harvest activities in high risk subwatersheds. ~~This temporary prohibition is necessary~~

~~57.~~ In order to make progress toward the TMDL zero load allocation, while fully recognizing that halting all timber harvest activity in the UER watershed is not necessarily feasible or helpful in promoting HRC's participation in cleanup and restoration efforts~~. By refining water quality risk at a subwatershed scale, HRC can still engage in timber operations while refraining from activities in the most sensitive subwatersheds to allow active measures to be taken to improve downstream beneficial uses.~~, for the five year period following adoption of this Order timber harvesting in the five high risk subwatersheds is limited to units of THP 1-12-110 HUM, which was approved by CAL FIRE on April 26, 2013 prior to the completion of the Upper Elk River TMDL and supporting Technical Report[9]. Following this five-year period, as outlined below, the Board may modify the harvest limitations of this Order.

~~A limited exception is provided in Railroad Gulch subwatershed for Unit 2 of THP 1-12-110 HUM, which is part of the ongoing Railroad Gulch BMP Evaluation Project (Section I.A.4.) Upon enrollment, operations on Unit 2 must follow the new Wet Weather conditions (Section I.E.1.-2.). In order to meet the study objectives of~~

[9] On May 20, 2015, Regional Water Board staff notified HRC that their requested enrollment of one harvest unit in THP 1-12-110 HUM would be postponed pending finalization of the Elk River TMDL and development of additional measures to address impaired conditions in revised WDRs. Enrollment of harvest units of THP 1-12-110 HUM is conditioned on implementing the applicable requirements of this Order

~~evaluating the effectiveness of ERSC WA RMZs, harvesting in Unit 2 is exempt from Class III riparian protection measures (Section I.B.3.a.-c.).~~

60. ~~The temporary prohibition may be lifted in high risk watersheds upon a finding that beneficial uses are supported in the impacted reach, subject to a 30-day review and public comment period and approval by the Regional Water Board.~~ No later than five years from the date of adoption of this Order, Regional Water Board staff will provide an update to the Regional Water Board on the effectiveness of the harvest limitations in the high risk subwatersheds. In providing the update, the Regional Water Board staff shall consider monitoring data and other relevant information to assess whether water quality conditions in the impacted reach are improving and beneficial uses will be supported within a reasonable period of time. Staff will provide the update at a scheduled Board meeting, after providing notice and an opportunity for HRC and interested persons to comment. At the meeting, the Board will consider whether to reopen the Order, or continue the existing limited harvest provisions as outlined in I.A.4 of this Order. If the Board determines to reopen the Order to modify the limited harvest conditions based on staff recommendations, comments, and evidence received, it will provide further direction to staff on the conditions under which harvesting in the five high risk watersheds may proceed. After a minimum 30-day public review and comment period, the Board will consider a modified Order in a public hearing that addresses the limited harvest provisions in the five high risk subwatersheds[10].

~~58.~~61. Support for beneficial uses may result ~~from~~, but is not limited to, projects that focus on:

i. Flood flow routing improvement (e.g. replace earthen approaches to bridges with culverts and riparian plantation thinning) to ~~significantly~~ reduce the current flooding frequency in the impacted reach;
ii. ~~Stored~~Reduction of the volume of stored sediment ~~reduction~~ (e.g. slowing, trapping, removing~~)~~ of accumulated sediment) in~~, or delivering to~~ the impact reach~~,~~ to a level which ~~significantly~~ reduces the current flooding frequency in the impacted reach;
iii. Water supply reliability (e.g. implement alternative supplies)[11]; and
iv. Infrastructure enhancement (e.g. roads, bridges, septic systems, houses) to alleviate impacts from flooding.

<u>Inventory and Treatment of Controllable Sediment Discharge Sources</u>

---

[10] This Order specifically requires the Board to reconsider the limited harvest conditions of this Order within five years. It does not require modifications to the Order, and does not limit the Board's authority to reopen the Order before or after the required five year update if it determines changes are necessary.

[11] Note: A project that provides reliable, permanent water supplies to those residents whose water supplies have been impaired by excess sediment from timber operations may also be considered for final resolution and termination of the existing CAO No. 98-100.

~~59.~~62. Timber harvesting and associated road construction and use have left disturbed areas throughout the landscape that have the potential to discharge sediment over extended periods of time. These legacy sites, which should be treated as CSDS, may include failing or failed watercourse crossings, road failures, road surfaces, landslides, unstable watercourse banks, soil stockpiles, skid trails, landings, exposed harvest units, or any other site discharging or threatening to discharge waste or earthen materials.

~~60.~~63. The identification, evaluation, and treatment of CSDS are important components of a strategy to prevent or minimize ongoing sediment discharge, and also contribute towards achieving sediment TMDL load allocations. This Order supersedes the two existing ~~CAOs No~~CAO Nos. R1-2004-0028 and R1-2006-0055. The CAOs required off-road surveys of large tracts of land known to have experienced significant ground based logging operations, in addition to inventories conducted during the development of individual THPs. As a result, over 12,300 acres have been surveyed since 2007 and 143 off-road CSDSs, primarily associated with skid trails, were identified. As of 2014, corrective actions had been implemented at approximately half of these sites. The CAOs also addressed road-related CSDSs. The CAOs required inventories of road related CSDS. To date, it is estimated that over 330,000 cubic yards of road related sediment has been controlled. One hundred and twelve road related CSDS from the master treatment schedule remain and are scheduled to be treated by the end of 2017. ~~Appendix~~Attachment C of this Order includes a master treatment schedule that identifies the remaining potential sources to be treated. HRC will continue to treat these sites annually according to the prioritization described in the master treatment schedule in Attachment C, as well as concurrently with timber operations for those sites located in the vicinity of THPs. In order to demonstrate continued progress in treating remaining sites, monitoring and reporting requirements in Section IV of this Order require that HRC provide annual reports identifying sites to be treated each year. Submittal of monthly status reports will no longer be required. Order Section I.C.4. requires treatment of the remaining CSDSs identified in Attachment C by October 15, 2018.

~~61.~~64. New active or potential sediment sources are identified through implementation of an Annual Road Inspection Program (ARIP). This program requires that all accessible roads be inspected for maintenance needs at least once annually. CSDS identified by ARIP, storm-triggered inspections, and active THP inspections are typically scheduled and treated within one year of discovery during the drier months of the year (May~~–~~-November) and will be included in annual reports pursuant to Section IV of this Order. Order Section I.C.5. requires that HRC track these new CSDS as they are identified and subsequently ~~treat~~treated in accordance with the ARIP. Additional non-scheduled routine minor maintenance (i.e. shaping of road surface, cleaning of inboard ditches and culvert inlets, maintenance of energy dissipation/downspouts, and roadside brush maintenance) will also occur as needed in response to road inspection and results in directives by HRC management or Regional Water Board.

~~62.~~65. CSDS not previously identified are also addressed by preparation and submittal of Erosion Control Plans (ECPs) for individual THPs. ECPs must include an inventory of CSDS within the logging area of all THPs submitted by HRC. The inventory must include a description of each CSDS and corrective actions that can reasonably be expected to control sediment discharge from each source. Corrective action for each source must be implemented during the life of the THP.

~~63.~~66. In addition, HRC must conduct annual inspection requirements of the THP project area as outlined below, including appurtenant roads and harvest units where timber operations are or have been active. Inspections will be scheduled as follows:

- Prior to October 16th – to ensure erosion control measures are in place;
- Between October 16th and April 1st – Storm-triggered inspections following any storm that generates over 3 inches of rain falling in a 24 hour period; and
- After April 1st – Inspection of THP areas including all appurtenant roads to document any discharges resulting from the preceding winter period and to schedule any required road maintenance or other corrective action.

In-channel Sediment Sources

~~64.~~67. As described in Finding ~~27~~5, the sediment source analysis estimates that in-channel sources such as low order channel incision, bank erosion, and streamside landslides, represent approximately 56% of the potential sediment load from UER. Due to limited access and the sensitive nature of riparian zones, controlling sediment discharge from these in-channel sources can be difficult. Section I.G. of this Order requires that HRC conduct a feasibility study to evaluate potential projects or methods to control, trap, or meter sediment from in-channel sources in the UER before it can be transported to the impacted reach.

~~65.~~68. The feasibility study should identify potential projects or methods to reduce transport of sediment from tributaries in the UER to the impacted reach that may include design and implementation of small scale pilot projects. If the pilot projects demonstrate the success of methods, HRC shall develop a plan to implement these methods on a wider scale throughout the UER. If the feasibility study concludes that there are no, or limited, effective methods for control of in-channel sources in the UER, resources that would have been used for that work should be committed to projects to correct beneficial use impairment and abatement of nuisance conditions in the impacted reach.

In-stream Restoration and Watershed Stewardship

~~66.~~69. In-stream restoration and enhancement work consisting primarily of large wood placement to provide increased aquatic habitat complexity (e.g. pool development, sediment sorting, shelter and refuge) has been implemented since the 1990s. In addition to on-property conservation, restoration, and enhancement activities, HRC is also partnering with the Regional Water Board, NGOs, and other agencies to address chronic downstream health and safety concerns relative to water quality, domestic

water supply, and winter storm flooding. HRC's participation includes voluntary financial and in-kind contributions to the Elk River Watershed Stewardship process. HRC has indicated a willingness to continue development and implementation of in-stream restoration projects in the UER as well as a long-term commitment to participation in Watershed Stewardship to address beneficial use impairments in the impacted reach. The Monitoring and Reporting Plan in Section IV of the Order requires that HRC provide an annual report to the Regional Water Board summarizing its participation in Watershed Stewardship and other restoration efforts.

~~67.~~70. The purpose of the Watershed Stewardship Program is to convene a participatory program that engages community members, residents, scientists, land managers, and regulatory agencies in developing a collaborative planning process that seeks to enhance conditions in the Elk River watershed. The Watershed Stewardship Program will include the entire Elk River Watershed, and will work to accomplish the following goals:

- Promote shared understanding and seek agreements among diverse participants; and
- Identify strategies and solutions to:
  - Improve the hydrologic, water quality, and habitat functions of Elk River;
  - Reduce nuisance flooding and improve transportation routes during high water conditions;
  - Improve residential and agricultural water supplies; and
  - Promote coordinated monitoring and adaptive management.

~~68.~~71. In addition to the work discussed in Finding 67, HRC may conduct various types of restoration projects intended to improve fish habitat and control sediment delivery from in-channel and near-stream sources. Restoration covered under the Order would include projects such as:

- Large wood augmentation for the purposes of improving fish habitat and sediment routing. Methods could include falling riparian zone trees or placement of logs using heavy equipment;
- Construction of ~~in-stream or~~ off-channel sediment detention basins;
- Streambank stabilization using large wood, excavation, planting, ~~rip-rap,~~ or other bioengineering methods;
- Removal or reconstruction of watercourse crossings and near-stream road segments; and
- Excavation of in-stream sediment deposits.

~~**GENERAL WATER QUALITY CERTIFICATION**~~

~~69. Some of the actions described in findings 67 and 68, such as in-stream restoration projects that involve construction and other work in waters of the United States (that are not included under timber activities) may require a federal permit pursuant to section 404 of the Clean Water Act. Section 401 of the Clean Water Act requires each~~

~~applicant for a federal license or permits to apply for water quality certification from the state in which the activity will occur. The Regional Water Board Executive Officer may issue a decision on a water quality certification application. State water quality certification conditions shall become conditions of any federal license or permit for the project. This Order includes a general water quality certification for activities and associated discharges for in-stream restoration projects that require federal permits.~~

~~70. The Regional Water Board may issue a general water quality certification for a class or classes of activities that are the same or similar, or involve the same or similar types of discharges and possible adverse impacts to water quality if it determines that these activities are more appropriately regulated under a general certification rather than individual certifications. General certifications apply for a fixed term not to exceed five years, must be conditioned to require subsequent notice to the Regional Water Board at least 30 days prior to commencement of the activity, and include appropriate monitoring and reporting requirements. A fee is also required pursuant to California Code of Regulations, title 23, section 3833, sub.(b)(3).~~

~~71. In the event that the Army Corps of Engineers requires a Clean Water Act section 404 permit for a given restoration project in the UER, water quality certification coverage may be requested by submitting a Notice of Intent (NOI) to the Regional Water Board. The NOI must include relevant portions of the application information required under California Code of Regulations, title 23, section 3856. If this information is already included in a THP enrollment application or annual report, it need not be duplicated; however, the NOI should specify where the information is located. The Regional Water Board will notify the discharger within 30 days if the project or activity does not meet the specified criteria for coverage. A list of projects covered by this General Water Quality Certification will be posted on the Regional Water Board's website. Unless the Regional Water Board determines that the project or activity does not meet the specified criteria for coverage under the general water quality certification, this Order will provide Clean Water Act section 401 certification for the federal permit required for that project.~~

~~72. The General Water Quality Certification contained in this order shall not apply to activities that will result in significant unavoidable environmental impacts including permanent impacts to wetlands and other waters of the state from dredge and fill activities; result in the direct or indirect take of any listed species; or expose people and/or structures to potential adverse effects from flooding, landslides, or soil erosion. (Cal. Code Regs., tit. 23, §3861, subd. (d).)~~

MONITORING AND REPORTING

~~73.~~72. Section IV of this Order contains monitoring and reporting requirements to achieve the following objectives:

a. Provide regular reports on all timber harvesting and associated activities covered under this Order, including harvesting, road use and construction, and

implementation of corrective action to control sediment discharge, in order to evaluate compliance with requirements of this Order;

b. Provide for a five year summary report to evaluate the effectiveness of this Order in contributing towards control of sediment discharge and watershed recovery and providing an efficient mechanism to ensure water quality requirements are implemented for timber harvesting and associated activities in the UER;
c. Determine the effectiveness of management measures designed to protect water quality and inform adaptive management decisions;
d. Identify potential new sources of sediment discharge and implement corrective action in a timely manner;
e. Track HRC's participation in Watershed Stewardship efforts working towards recovery of beneficial uses in Elk River;
f. Track water quality trends; and,
g. Help inform re-evaluation of the UER's assimilative capacity for sediment and sediment load allocations.

~~74.~~73. HRC conducts various types of monitoring, including water quality monitoring, and regular inspections of all roads; inspections for landslides, including annual and periodic aerial photographic flights; all treated sediment sources included in the master treatment schedule (Attachment C) for road and non-road CSDS; and all CSDS identified in ECPs for individual THPs following implementation of corrective action.

Inspections and Inspection Reports

~~75.~~74. HRC conducts inspections of: 1) all harvest areas during the period a THP is active and throughout the three year erosion control maintenance period following completion of operations, 2) all treated CSDS, and 3) all roads on their ownership in the UER.

Regular inspection by HRC of those areas and activities described above are essential in ensuring the management practices designed to control sediment have been adequately implemented and are functioning properly, to identify areas where management practices are not functioning as intended or where additional corrective action is needed to control sediment discharge, and to allow for timely implementation of additional corrective action when needed.

Inspection reports serve to document that inspections have been conducted as required and to provide Regional Water Board staff with a mechanism to evaluate effectiveness of management practices designed to control sediment discharge.

Water Quality Monitoring

~~76.~~75. Water Quality Monitoring conducted by HRC includes the following:

a. Aquatic trends monitoring of Class I stream habitat at ~~10~~seven locations for channel substrate (pebble counts), pools, large wood, riparian canopy, water temperature, fish surveys, and channel cross sections; and

b. Hydrology and suspended sediment trends monitoring at ~~eight~~nine locations throughout UER for discharge, and suspended sediment concentration.

Collecting data on in-stream physical habitat characteristics and suspended sediment loads and discharge is essential for tracking watershed conditions and trends and the distribution and movement of sediment throughout the watershed. These monitoring data can also improve understanding of the spatial and temporal association between sediment loads and management activities such as timber harvesting, sediment control efforts, and restoration activities.

Annual Summary Report and Work Plan

~~77.~~76. By January 31 of each year, HRC must submit an annual summary report and work plan describing all activities covered under this Order conducted during the previous year and planned for the upcoming year. Annual reports will provide specific information on the following activities:

a. The total harvest acreage by THP number, silviculture method, and subwatershed;
b. Corrective action to treat CSDS from the master treatment schedule (Attachment C), ARIP activities, ECPs for individual THPs, and any additional sites identified during required inspections;
c. Road construction, reconstruction, or decommissioning;
d. All inspections and water quality monitoring;
e. In-stream Restoration and Riparian Restoration activities; and
f. Participation in Watershed Stewardship efforts.

HRC must certify in the annual work plan (and Regional Water Board staff verify during the CAL FIRE THP review and implementation process, including additional field inspections as warranted) that approved THPs comply with the requirements of the ~~WDR~~WDRs. Annual reports provide a mechanism for Regional Water Board to review and comment on activities planned for the coming year, track compliance with Order requirements and progress in sediment control and restoration, and efficiently focus staff resources and prioritize inspection efforts.

Five year Synthesis Report

~~78.~~77. By ~~March~~November 15, 2021, and every five years thereafter, HRC shall submit a report summarizing current watershed conditions and any trends observed over the previous five year period, including water quality, effectiveness of measures to control sediment discharge, landslide rates and distribution, watershed recovery efforts, including Watershed Stewardship. This will allow Regional Water Board, HRC, and other stakeholders to evaluate the effectiveness of the requirements of this Order and the Regional Water Board to modify them if warranted.

~~79.~~78. HRC conducts additional monitoring as described below to evaluate the effectiveness of management practices in controlling sediment discharge.

Best Management Practice Evaluation Program (BMPEP)
HRC forestry staff inspects all completed stream crossing related roadwork to ensure HCP stormproofing standards are correctly implemented and that each work site has been properly treated for erosion control in advance of the wet weather season. In coordination with ARIP and Storm-Triggered Inspections, these newly treated sites are specifically inspected for sediment prevention and minimization performance following the first winter. Accessible sites then continue to be monitored over time per the ARIP and storm triggered inspection requirements.

Railroad Gulch BMP Evaluation Study
HRC has designed and is implementing a paired watershed study in the Railroad Gulch subwatershed. The objective of the study is to collect and evaluate specific sediment production, storage, and delivery data to test the effectiveness of HCP prescriptions in limiting sediment production and delivery from potential sources (roads, landslides, bank erosion, upslope stream channel head-cutting, and harvest unit surface erosion) as it relates to its management practices. The study presents ~~eight~~ten hypotheses that are intended to test whether THP-related HCP and ERSC WA harvest prescriptions are effective at minimizing the impact that land management has on the delivery rate of fine sediment to Railroad Gulch. The hypotheses include overall THP effectiveness relating to mass wasting, stream channel erosion, and road-related sediment delivery.

PROCEDURE

THP Enrollment and Administration

~~80.~~79. During the first five years following adoption of this Order, HRC must apply to the Regional Water Board Executive Officer for coverage of individual THPs as described below. After the first five years, an enrollment process is not required to commence operations for CAL FIRE-approved THPs that fully comply with requirements of this Order; however, HRC must submit a notice of commencement of operation to the Regional Water Board at least 10 days prior to commencement of operations for a specific THP.

~~81.~~80. The Regional Water Board Executive Officer, upon finding that a plan may violate any of the terms of the Order, may at any time notify HRC that they must refrain from commencing, or cease, operations.

~~82.~~81. Regional Water Board staff will continue to review and inspect all proposed THPs in the UER watershed as part of the CAL FIRE review team pursuant to the FPRs. In addition, staff will conduct regular inspections of harvest areas, roads, riparian zones, and unstable areas to verify and evaluate compliance with the requirements of this Order and watershed conditions.

~~83.~~82. Prior to ~~April~~November 30, 2021, before operations may commence on an approved THP, HRC must apply for enrollment of the THP under this Order by submitting an enrollment application to the Regional Water Board Executive Officer. The enrollment

application must be signed by a designated representative of HRC certifying that the THP complies with the terms and provisions of this Order. Prior to enrollment, Regional Water Board staff will evaluate the THP for compliance with the Order, and at that time may require additional measures for water quality protection as warranted. Timber harvesting activities must not commence until HRC receives written notification from the Regional Water Board Executive Officer that the THP is covered under this Order. It is anticipated that Projects which have had thorough Regional Water Board staff involvement in the review and approval process will receive written notification of coverage within ten (10) working days of receipt of a complete application.

~~84.~~83. Water quality issues identified on any particular THP and not resolved prior to THP approval by CAL FIRE, shall be resolved to the satisfaction of Regional Water Board Executive Officer, prior to enrolling that THP under this Order.

ADDITIONAL FINDINGS

~~85.~~84. The Regional Water Board finds that all the combined measures required under this Order, as itemized below, are protective of water quality standards within the UER watershed: the transition from ~~evenaged~~even-aged to ~~unevenaged~~uneven-aged management under HRC's ownership; harvest rate limits throughout the UER and for each subwatershed that limit canopy reduction and anticipated peak flow changes; enhanced riparian protection; geologic review of all harvest activities; management practices designed to prevent or minimize sediment discharge; the ~~temporary prohibition of~~limited timber harvest activities in high risk subwatersheds; cleanup and remediation of existing sediment source discharge sites; ongoing oversight of HRC's management activities through participation in the THP review process; and the monitoring and reporting program.

~~86.~~85. State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Policy) requires that regional water boards, in regulating the discharge of waste, to maintain high quality waters of the state, require that any discharge not unreasonably affect beneficial uses, and not result in water quality less than that described in regional water board's policies. The Policy applies whenever a) there is high quality water, and b) an activity which produces or may produce waste or an increased volume or concentration of waste that will discharge into such high quality water. "Existing quality of water" has been interpreted to mean baseline water quality, the best quality that has existed since the Policy was adopted in 1968. Thus, the Regional Water Board must determine baseline water quality and compare with current water quality objectives. If the baseline water quality is equal to or less than the objectives, the water is not "high quality" and the Policy is not triggered. In this case the water quality objectives govern the water quality that must be maintained or achieved. (*Asociación de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal. App. 4th 1255, 1270 (AGUA).)

~~87.~~86. If baseline water quality is better than water quality objectives, the Policy is triggered and baseline water quality must be "maintained" unless the Board makes the requisite findings. To permit a proposed discharge that will degrade high quality water, the Board must find that the discharge 1) will be consistent with maximum benefit to the people of the state; 2) will not unreasonably affect present and anticipated beneficial uses of the water; and 3) will not result in water quality less than that prescribed in water quality plans and policies. (*AGUA* at 1278.) In addition, the Board must ensure the discharge is utilizing the "best practicable treatment or control" to ensure pollution or nuisance will not occur and that the highest quality consistent with the maximum benefit to the people of the state will be maintained. (*Id.*)

~~88.~~87. Following a century of logging, and in particular, following the post-World War II era of intensive tractor logging, water quality conditions in Elk River in 1968 were likely already impacted by sediment. Further impairment occurred after 1968 as a result of excessive and poorly-regulated logging and large storm events. The capacity of the UER for sediment is limited by the ongoing aggradation in the impacted reach and resulting nuisance conditions and compromised beneficial uses. Unless and until its capacity can be expanded through sediment remediation and channel restoration, nuisance conditions abated, and beneficial uses supported, the nonpoint source load allocation is defined as zero. Even with the implementation of current and much improved management practices and stringent restrictions described, ongoing timber harvesting and associated activities will result in some sediment discharge, further exacerbating the already impaired condition. Therefore, in addition to addressing existing, ongoing discharges, this Order addresses water quality impacts that have already occurred.

~~89.~~88. This Order requires HRC to implement the zero load allocation in order to restore the beneficial uses, and requires compliance with water quality objectives in receiving water through implementation of stringent management practices designed to minimize discharges ~~(~~including harvest rate restrictions, riparian protection, roads management, landslide prevention, and wet weather prescriptions~~), a temporary prohibition on~~, limited logging activities in high-risk subwatersheds, and continued efforts to inventory, prioritize and implement cleanup and remediation of existing sediment source discharge sites. This Order authorizes discharges from certain cleanup and restoration activities as well as from ongoing timber harvesting and associated activities. Cleanup and restoration activities may result in small short term discharges associated with placement of large wood into streams or excavation to stabilize or remove fill material stored in channels and adjacent riparian zones. The potential impacts of minor short term discharges are outweighed by the benefits of long term sediment control derived by such projects.

~~90.~~89. To the extent that the UER had existing higher quality water in 1968, the Regional Water Board finds that the authorization of some sediment discharges from ongoing timber operations (subject to proper management and stringent restrictions) and

cleanups is necessary to accommodate important economic and social development in the area and is consistent with the maximum benefit to the people of the state. The Regional Water Board recognizes that a significant portion of in-stream sources are likely to be mobilized and transported to the impacted reach over time, regardless of whether or not timber operations are conducted. Allowing some timber harvest activity to continue enables HRC's participation in cleanup and restoration efforts. The Order requires control and remediation of existing sediment inputs to the extent feasible, and monitoring to determine whether implementation is leading to measurable improvements. The Order also ~~temporarily prohibits~~limits logging activity in the most sensitive subwatersheds to allow active measures to be taken by the Watershed Stewardship Program to improve downstream beneficial uses. The Order ensures that any new discharges are subject to the best practicable treatment or control.

~~91.~~90. Compliance with the terms of this ~~order~~Order should result in improvement in water quality in the UER and impacted reach. The monitoring and reporting program in Section IV of this Order is designed to provide a feedback mechanism to ensure that management measures are implemented and functioning as intended and provide data on in-stream sediment conditions. This Order is consistent with Resolution No. 68-16 because it will result in a net benefit to water quality by improving existing environmental conditions currently impacted by past logging activity. The Order is designed to protect or recover in-stream beneficial uses and does not promote or authorize the permanent lowering of high quality waters.

~~92.~~91. As lead agency under the California Environmental Quality Act (CEQA), the Regional Water Board provided notice of intent to adopt a mitigated negative declaration (SCH No. ~~2015122010~~XXXXXXXX) for this Order on ~~March 10~~August 29, 2016 (Cal. Code Regs., tit. 14, § 15072~~.).~~).[12] The mitigated negative declaration reflects the Regional Water Board's independent judgment and analysis. After considering the document and comments received during the public review process, the Regional Water Board hereby determines that the proposed project, with mitigation measures, will not have a significant effect on the environment. The documents ~~or~~and other material, which constitute the record, are located at 5550 Skylane Blvd, Suite A, Santa Rosa, CA 95403. The Regional Water Board will file a Notice of Determination within five days from the issuance of this Order. Mitigation measures necessary to reduce or eliminate significant impacts on the environment, and monitoring and reporting are incorporated as conditions of approval below.

[12] The draft Order and associated Initial Study and Mitigated Negative Declaration developed pursuant to the California Environmental Quality Act (CEQA) to analyze potential impacts from the proposed Order were originally released for public comment on December 4, 2015. Revisions to this Order do not alter the original analysis and conclusions that all project design features and mitigation measures will reduce potential environmental impacts to a less than significant level. Nevertheless, the Regional Water Board is reissuing the entire CEQA package in order to provide interested members of the public an additional opportunity to comment on the environmental documents.

~~93.~~92. The Regional Water Board has reviewed the contents of this Order, its accompanying Initial Study and Mitigated Negative Declaration, written public comments and testimony provided after notice and hearing. The Order prescribes requirements that implement the Basin Plan, in consideration of relevant factors pursuant to water code section 13263. This Order establishes requirements to implement the zero load allocation described above, while still permitting discharges from timberland management, including harvesting. Compliance with the terms of this Order is the regulatory mechanism by which HRC will comply with the Upper Elk River TMDL. This ~~WDR~~Order is a component of the Regional Water Board's overall strategy to restore ecosystem functions, abate nuisance flood conditions, attain ambient water quality objectives and recover beneficial uses. In-stream remediation and channel restoration is anticipated as a means of recovering the ecosystem functions of the impacted reaches of Elk River, in combination with reduction in sediment loads from the upper watershed.

THEREFORE, IT IS HEREBY ORDERED that pursuant to Water Code section 13263, the Regional Water Board hereby adopts Order No. R1-2016-0004, and directs the Executive Officer to file all appropriate notices.

IT IS FURTHER ORDERED that this Order supersedes Order No. R1-2006-0039 (Elk River WDR) (as amended by Order No. R1-2008-0100), *Monitoring and Reporting Program No. R1-2008-0071*, and Cleanup and Abatement Order Nos. R1-2004-0028 and R1-2006-0055.

IT IS FURTHER ORDERED that, no more than ~~approximately~~ five years after adoption of this Order, HRC and Regional Water Board staff shall provide an update to the Regional Water Board on the status of the Order implementation and watershed condition. The update shall include the evaluation of compliance and assessment of the efficacy of this Order based on review of the annual work plans and five-year report, progress of Elk River Stewardship Program efforts directed at remediation, and any other relevant information. Staff shall include any recommendations for modifying Order requirements.

IT IS FURTHER ORDERED that pursuant to Water Code section 13263, Humboldt Redwood Company, LLC, shall comply with the following:

I. SPECIFIC REQUIREMENTS[13]
   A. Forest Management
      1. HRC shall utilize uneven-aged single-tree and small group selection silviculture as defined in California Code of Regulations, title 14, section 913.1 within its timberlands in the UER watershed. Variable Retention may be used in some instances to address certain stand conditions, such as high levels of whitewood

[13] Several of the Specific Requirements are from HRC's ROWD. These include: I.A.1-2; I.B.1.a-d; I.B.2.b; I.B.4-6.a-b; I.C.1-8; I.D.1-4; I.F.1-2; H.1-2; IV.A.1-2

or hardwood species, animal damage, or general poor form and vigor due to past logging history. Other silvicultural methods that may be applied infrequently include Rehabilitation of Understocked Areas, Seed Tree Removal, and Sanitation Salvage. HRC shall not utilize the clearcut harvest method.

2. HRC shall not utilize group selection harvest method as defined in California Code of Regulations, title 14, section 913.2 within Riparian Management Zones.

~~3. The average annual harvest rate in any subwatershed in Table 4.3 of the ROWD shall not exceed 2% equivalent clearcut acres per year during any 10 year period.~~

3. Subwatershed average annual harvest rates from Table 4.3 of the ROWD (Attachment D) fall near or below 2% equivalent clearcut acres averaged over any 10 year period and are generally reasonable. Harvest rates above this threshold may cause concern for cumulative impacts on water quality. Where an individual, or multiple, THP(s) would result in an average annual harvest rate in any subwatershed above 2% equivalent clearcut acres over any 10 year period, the Executive Officer may decline to enroll the THP(s), or portions of the THP, or may require additional mitigations or monitoring as a condition of enrollment.

4. Harvesting in High Risk Subwatersheds
   a. ~~Timber~~For the first five year period following adoption of this Order timber harvesting activities on HRC's timberlands in the five high risk subwatersheds, Clapp, Tom and Railroad Gulches, McCloud Creek and the Lower South Fork Elk River, as described in ~~Finding 57~~Findings 59 and 60 of this Order, is ~~prohibited. This does not include areas in Railroad Gulch subwatershed where the Railroad Gulch BMP Evaluation Project is being conducted in Unit 2~~limited to units of THP 1-12-110 HUM.~~ Upon enrollment, operations on Unit 2 must follow the Wet Weather~~

   ~~a.~~b. At the required update to the Regional Water Board no later than five years from the date of adoption of this Order, the Regional Water Board will consider the Order conditions ~~(I.E.1. and 2) but are exempt from Class III riparian protection measures I.B.3.a.-c~~limiting harvest activities in the high risk subwatersheds, and after public notice and comment will provide staff direction on potential changes to the harvest limitations. Any changes to this Order regarding harvest limitations in the subsequent five year period or beyond shall consider available data and information to assess watershed conditions, including beneficial use recovery in the impacted reach, and shall be subject to a 30-day review and public comment period and Regional Water Board hearing. In the absence of changes to this Order, harvesting in the high risk subwatersheds for the period beginning five years after the adoption of this Order shall be limited to the acreage included in Table 4.3 (revised March 11, 2016) of the ROWD.

~~b. The temporary prohibition may be lifted in high risk subwatersheds upon a finding that beneficial uses are supported in the impacted reach, subject to a 30-day review and public comment period and approval by the Regional Water Board. Support for beneficial uses may result from projects that focus on:~~

~~i. Flood flow routing improvement (e.g. replace earthen approaches to bridges with culverts and riparian plantation thinning) to significantly reduce the current flooding frequency in the impacted reach;~~
~~ii. Stored sediment reduction (e.g. slowing, trapping, removing) of accumulated sediment in, or delivering to the impact reach, which significantly reduces the current flooding frequency in the impacted reach;~~
~~iii. Water supply reliability (e.g. implement alternative supplies); and~~
~~iv. Infrastructure enhancement (e.g. roads, bridges, septic systems, houses) to alleviate impacts from flooding.~~

B. Riparian Zone Protection
1. Class I Watercourse Riparian Protection
   a. Riparian Management Zones (RMZs) for Class I watercourses extend to 150 feet on ~~either side~~both sides of the channel;
   b. No harvesting within 50 feet of Class I watercourses;
   c. Retain the 18 largest conifer trees per acre (measured along 435 feet of watercourse length and within 100 feet of the watercourse and lake transition line); and
   d. Between 50 feet and 150 feet of Class I watercourses, retain a minimum of 50% post-harvest conifer canopy coverage.

2. Class II Watercourse Riparian Protection
   a. Riparian Management Zones (RMZs) for Class II watercourses extend up to ~~100~~200 feet or to the hydrologic divide on ~~either side~~both sides of the channel;
   b. No harvesting within 30 feet of Class II watercourses; and
   c. Between 30 feet and ~~100~~200 feet or to the hydrologic divide of Class II watercourses, retain a minimum of 60% post-harvest conifer canopy coverage.

3. Class III Watercourse Riparian Protection
   a. Riparian Management Zones ~~(RMZs)~~ for Class III watercourses extend to 100 feet ~~on either side~~or to the hydrologic divide on both sides of the channel;
   b. No harvesting within 20 feet of Class III watercourses; and
   c. Between 20 feet and 100 feet ~~from a~~or the hydrologic divide of Class III watercourse, retain a minimum of ~~50~~70% post-harvest conifer canopy coverage.

4. Only single tree selection shall be utilized in RMZs for Class I, II, and III watercourses. No group clearing shall take place in these RMZs.

5. No ground based equipment with the exception of at existing roads and permitted new road construction within:
   a. 150 feet of a Class I watercourses;
   b. 100 feet of a Class II watercourse;
   c. 50 feet of a Class III watercourse, or to the closest hydrologic divide.

6. Erosion control practices in riparian management zones:
   a. Implement ~~highest feasible~~ erosion ~~control methods~~controls including surfacing all segments of road and skid trails within riparian areas with pavement, rock, slash, mulch, straw, or other adequate materials~~;~~ to prevent the discharge of sediment to a watercourse;
   b. Trap and filter all road and skid trail surface drainage within riparian areas to prevent the discharge of sediment to watercourse; and
   c. Cover all disturbed soil areas with slash, mulch, straw, or other adequate materials, or apply other effective erosion control measures to prevent the discharge of sediment to a watercourse.

7. Avoid tractor crossings in unchanneled swales.

8. Retain trees along the center line of swales and areas of subsurface flow paths.

C. Road Management
   1. ~~To the extent feasible, all~~All roads shall be hydrologically disconnected from watercourses to the extent feasible.

   2. HRC shall implement management practices and specifications described in Appendix B of the ROWD to prevent and minimize sediment discharge from active roads.

   3. By October 15, 2018, HRC shall upgrade all roads to meet the storm-proofed standard as described above in Finding 43 and Appendix B of the ROWD.

   4. By October 15, 2018, HRC shall treat those road related controllable sediment discharge sources currently identified in Attachment C.

   5. HRC shall address any newly-discovered road-related CSDSs within a year of discovery in accordance with the ARIP (section 6.2 of the ROWD).

   6. HRC shall inspect all roads within their Elk River ownership at least annually between April 1 and October 15.

7. HRC shall inspect storm-proofed roads as soon as conditions permit following any storm event that generates 3 inches or more of precipitation in a 24-hour period, as measured at the Elk River rain gauge.

8. Within one year of identifying new sediment discharge sources from roads HRC shall document, notify the Regional Water Board, and implement measures to prevent or minimize sediment discharge at any new controllable sediment discharge sources identified during the road inspections.

D. Landslide Prevention

1. Prior to conducting timber harvesting activities or construction or decommissioning roads and watercourse crossings on its ownership in the UER, HRC shall prepare and submit an engineering geologic report to the Regional Water Board Executive Officer for review and approval.

   The engineering geologic report shall be prepared by a California Licensed Professional Geologist (PG) in conformance with the guidelines of California Geologic Survey Note 45 to evaluate the potential impacts of the proposed harvesting to water quality. At a minimum, the report shall characterize geologic hazards using a combination of the following data and methods of investigation:
   - Existing hazard maps derived from slope stability models;
   - Available maps and reports;
   - Aerial photographs;
   - Field investigation and mapping; and
   - Applicable studies and technical models.

2. The PG shall evaluate potential effects on slope stability and surface soil erosion, and landslide related sediment discharge from the proposed management activity, identify vulnerable areas, and describe specific mitigation measures needed to avoid and minimize potential effects for identified areas of concern.

   The mitigations shall be based on the potential hazard, and where appropriate, shall include, but are not necessarily limited to the following:
   - Avoid and minimize canopy removal in areas with elevated landslide hazard;
   - Avoid and minimize activities upslope of existing landslide;
   - Avoid and minimize activities on vulnerable portions of deep seated landslides; and
   - Stabilization of existing landslides where applicable by methods such as planting, manipulating drainage, buttressing, and other feasible engineering techniques.

3. The engineering geologic report may be submitted before or during the THP review process conducted by CAL FIRE, or by request of the Executive Officer.

The Regional Water Board staff shall review the engineering geologic report and ~~if deemed necessary,~~ may request additional information or require additional conditions be incorporated to further reduce or mitigate the potential for sediment discharge. If additional information or mitigation is required, HRC shall not proceed with the proposed activity until demonstration that the potential impacts to the beneficial uses of water will be adequately mitigated.

4. HRC shall maintain and update the landslide inventory included in Appendix C of the ROWD according to the specifications described in the Monitoring and Reporting Program in Section IV of this Order.

E. Wet Weather Requirements
1. Road construction or reconstruction may not take place between September ~~15th~~15 and May ~~1st~~1 except in response to failure of a road segment or watercourse crossing that is resulting in ongoing or imminent sediment discharge.

2. ~~Timber~~Between October 1 and May 1, timber falling and cable yarding are permitted. Ground-based yarding and mechanical site preparation are prohibited.

3. Hauling (including logs, heavy equipment and/or rock) shall be suspended once there is 4 inches of accumulated precipitation in any water year (October 1 - September 30) as measured at the National Weather Service Woodley Island Station in Eureka (NWS Woodley Island) unless there are dry weather conditions during this time period. Hauling may resume during dry weather conditions, pursuant to HCP requirements, but shall be suspended again when dry weather conditions do not exist. Dry weather conditions are defined as less than a cumulative total of 0.25 inches of precipitation during any consecutive 72 hour period as measured at NWS Woodley Island. Hauling may resume May 1 pursuant to HCP requirements.

~~2.~~4. In the five high risk subwatersheds, Clapp, Tom and Railroad Gulches, McCloud Creek and the Lower South Fork Elk River, timber operations, including timber falling, timber yarding, and hauling (including logs, heavy equipment and/or rock), shall cease once there is 4 inches of accumulated precipitation in any water year (October 1–September 30) ~~after October 1st~~ as measured at ~~the National Weather Service~~NWS Woodley Island ~~Station in Eureka.~~. Timber operations can resume in the five high risk subwatersheds May ~~1st~~1 pursuant to HCP requirements.

F. Erosion Control Plans
1. HRC shall prepare and submit an inventory of CSDS within, and in the vicinity of, the logging area for all THPs it submits in the UER. Any CSDS not previously inventoried and treated as part of the Road Management activities described in

Section I.C. of this Order shall be inventoried and scheduled for treatment concurrently with THP operations, including those off-road sites from the master treatment schedule in the vicinity of the THP.

2. These CSDS will be subject to the following:
   a. Each CSDS shall be inventoried in an ECP, which will include: a description of the current condition of each site, an estimate of the potential sediment volume that could discharge from the site, a narrative description of the proposed management measures, and a schedule for implementation;
   b. Inventoried CSDS must be treated per the site specific ECP schedule;
   c. The ECP shall be submitted to the Regional Water Board for review and approval with the THP it is associated with; and
   d. If treatment of such sites "strands" any other CSDS, HRC does not relinquish responsibility for also treating the stranded sites. For logistical reasons, it is recommended that measures be taken to prevent sites from becoming stranded.

G. Feasibility Study for Control of In-channel Sediment Sources
HRC shall conduct a feasibility study to evaluate potential methods to control, trap, or meter sediment from in-channel sources in the UER before such sediment can be transported to the impacted reach. The feasibility study shall identify potential methods to reduce transport of sediment from tributaries in the UER to the impacted reach that may include design and implementation of small scale pilot projects. If the pilot projects demonstrate the success of methods to reduce sediment discharge from in-channel sources, HRC shall develop a plan to implement these methods on a wider scale throughout the UER.

1. By October 15, 2017, HRC shall submit to the Regional Water Board Executive Officer for approval, an initial plan describing in-channel sediment sources, potential methods to control, meter, or trap sediment from these sources, and propose pilot scale projects to test the effectiveness of proposed methods.

2. Starting October 15, 2018, HRC shall submit to the Regional Water Board Executive Officer for approval, annual updates on progress in implementing the feasibility study.

3. By October 15, 2020, HRC shall submit to the Regional Water Board Executive Officer for approval, the final feasibility study, including results of pilot scale projects, description of feasible methods to control sediment from in-channel sources, and a detailed workplan to implement ~~additional~~full scale projects ~~as warranted~~ to control in-channel sediment sources throughout their ownership, including an implementation schedule.

H. Implementation and Maintenance of the Sediment Reduction and Master Treatment Schedule

1. This Order supersedes and incorporates the requirements of Cleanup and Abatement Order (CAO) R1-2004-0028 for HRC's ownership in the Mainstem Elk River and South Fork Elk River and CAO R1-2006-0055, for HRC's ownership in the North Fork Elk River.

2. By October 15, 2018, HRC shall complete corrective action for all remaining road related CSDS described in the master treatment schedule in Attachment C. HRC will continue to prioritize and treat CSDS associated with legacy skid trails according to the schedule described in the master treatment schedule. The annual report described in Section IV.B.1. shall include a list of those sites treated during the previous year and those scheduled for treatment during the upcoming year.

I. Alternatives Methods of Compliance
Many measures proposed in the ROWD are incorporated as enforceable specific requirements above. Additional water quality protection measures include subwatershed harvest rates, ~~a temporary prohibition on~~limited harvesting in high risk watersheds, additional riparian protections for Class II and III streams, and a feasibility study for controlling in-channel sediment sources. HRC may propose and submit for approval by the Regional Water Board, alternative measures that can be demonstrated to provide beneficial uses protection and nuisance abatement that is equal or better than that provided by these specific requirements. Any proposed alternative measures shall be submitted in writing to the Regional Water Board Executive Officer. The proposal shall include a description of the alternative measure(s), accompanied by supporting documentation that the alternative measures will achieve equal or better protection than those specific requirements. The Executive Officer shall bring any meritorious proposal to the Regional Water Board for its consideration after public notice and a hearing.

II. GENERAL REQUIREMENTS

A. HRC shall comply with all applicable water quality standards, requirements, and prohibitions specified in the Basin Plan as modified, and policies adopted by the State Water Board.

B. HRC shall allow Regional Water Board staff entry onto all land within the Elk River Watershed covered by the WDR including appurtenant roads for the purposes of observing, inspecting, photographing, videotaping, measuring, and/or collecting samples or other monitoring information to document compliance or non-compliance with this Order.

C. HRC shall comply with all water quality related HCP prescriptions, conditions included in an approved THP, and any additional mitigation measures identified and required pursuant to CAL FIRE CEQA process.

D. HRC shall comply with all mitigation measures identified in Attachment A of the Initial Study and Mitigated Negative Declaration.

E. This Order does not authorize discharges from the aerial application of herbicides or pesticides. HRC shall submit a ROWD prior to any proposed aerial application of pesticides that could discharge to waters of the state.

F. HRC shall notify the Regional Water Board in writing at least 30 days prior to any proposed ground-based application of pesticides within 100 feet of Class I, Class II or Class III watercourses. The notification shall include the type of pesticide(s), method and area of application, projected date of application, and measures that will be employed to assure compliance with applicable water quality requirements.

G. Water quality issues identified on any particular THP and not resolved prior to THP approval by CAL FIRE, shall be resolved to the satisfaction of Regional Water Board Executive Officer, prior to commencement of that THP.

H. HRC shall maintain copies of all correspondence and records collected and prepared to document compliance with this Order and provide access to Regional Water Board to review and copy.

I. No discharge of waste into the waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights. (Wat. Code, § 13262, subd.(g).)

J. Prior to implementing any change to the project or activity that may have a significant or material effect on the findings, conclusions, or conditions of this Order, HRC shall obtain the written approval of the Regional Water Board Executive Officer.

K. The Regional Water Board may reopen this Order to add to or modify the conditions of this Order, with notice and as appropriate in response to monitoring results or to implement any new or revised water quality standards and implementation plans adopted and approved pursuant to the Porter-Cologne Water Quality Control Act or the Clean Water Act.

L. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state law.

M. Should it be determined by HRC or the Regional Water Board that unauthorized discharge of waste are causing or contributing to a violation or an exceedance of an applicable water quality requirement or a violation of a WDR prohibition (below), HRC shall:

1. Implement corrective measures immediately following discovery that applicable water quality requirements were exceeded or a prohibition violated, followed by notification to the Regional Water Board by telephone or email as soon as possible, but no later than 48 hours after the discharge has been discovered. This notification shall be followed by a report within 14 days to the Regional Board, unless otherwise directed by the Executive Officer, that includes:

    a. the date the violation was discovered;
    b. the name and title of the person(s) discovering the violation;
    c. a map showing the location of the violation site;
    d. a description of recent weather conditions prior to discovering the violation;
    e. the nature and cause of the water quality requirement violation or exceedance or WDR prohibition violation;
    f. photos of the site documenting the violation;
    g. a description of the management measure(s) currently being implemented to address the violation;
    h. any necessary maintenance or repair of management measures;
    i. any additional management measures which will be implemented to prevent or reduce discharges that are causing or contributing to the violation or exceedance of applicable water quality requirements or WDR prohibition violation;
    j. an implementation schedule for corrective actions; and,
    k. the signature and title of the person preparing the report.

N. HRC shall revise the appropriate technical report (i.e. ECP, Inventory, or other required information as applicable) immediately after the report to the Regional Board to incorporate the additional management measures that have been and will be implemented, the implementation schedule, and any additional inspections or monitoring that is needed.

O. Emergency Maintenance
If there is an imminent threat to life, property, or public safety, or a potential for sediment discharge with catastrophic environmental consequences, HRC will notify Regional Water Board staff of the emergency and the planned or implemented action within 14 calendar days. HRC shall meet with the Regional Water Board Executive Officer within six months of a major fire to discuss modifications to this Order as may be warranted due to changed conditions.

III. DISCHARGE PROHIBITIONS

A. The discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.

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

IV. MONITORING AND REPORTING

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267, subdivision (b) and requires HRC to implement the monitoring and reporting described below. The Regional Water Board has delegated its authority to the Executive Officer to revise, modify, and reissue the MRP.

A. Monitoring
HRC shall monitor watershed conditions according to the monitoring program described below.

1. Inspections
<u>Roads</u>
a. HRC shall inspect all roads within the UER according to the following schedule:
i. At least once annually between April 1 and October 15 to ensure that drainage structures and facilities are intact and fully functional, and to identify any active or imminent road-related failures of the road prism, cutbanks, or fills which can deliver sediment to streams, and identify and schedule any corrective action needed to control sediment discharge;

ii. As soon as conditions permit following any storm event that generates 3 inches or more of precipitation in a 24-hour period, as measured at HRC's UER rain gauge.

THP areas

b. HRC shall inspect the entire logging area of all active THPs, including roads, harvest units, and CSDS sites, a minimum of three times per year according to the following schedule:

   i. By October 15 to assure project areas are secure for the winter; and/or immediately following cessation of winter period timber harvest activities;

   ii. Between October 15 and April 1 after at least 3 inches of cumulative rainfall has fallen within a 24 hour period and as soon as conditions permit, assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new CSDS sites have developed;

   iii. Between April 1 and June 15 to assess the effectiveness of management measures designed to address existing CSDS sites and to identify if any new CSDS sites have developed.

2. Landslides Monitoring
HRC shall conduct the following monitoring to identify new or reactivated mass wasting activity:

   a. HRC shall maintain and update the landslide inventory included in Appendix C of the ROWD according to the specifications described below;
   b. HRC shall inspect harvest THP units at least annually during the life of the THP and through the three year erosion control maintenance period following completion of the plan. The inspections shall cover both harvested areas as well as RMZs and channel zones and shall be designed to identify any new, or reactivated mass wasting, including open slope landslides and streamside landslides;
   c. Additional on-the-ground monitoring and reporting to identify new, or reactivated mass wasting activity shall include HRC field staff (i.e. forestry, physical sciences), notifying the HRC Geology Department in the event a new or recently active landslide is observed during the course of daily duties (i.e. road inspections, wildlife surveys, aquatics monitoring, THP layout and logging supervision);
   d. HRC shall obtain new aerial photographs of the Upper Elk River watershed at intervals no greater than 5 years;
   e. HRC shall utilize color, high-angle, stereo pair aerial photographs at a scale of 1:12,000 of the UER to update the landslide inventory; and
   f. By June 15, 2022, HRC shall conduct a representative survey of streamside landslides.

3. Water Quality Monitoring
   HRC shall continue to conduct the following water quality trend monitoring, including Aquatic Trends Monitoring (ATM) every three years and Hydrology Trends Monitoring (HTM) annually, according to the sampling procedures described in detail in ~~Appendix F. of~~ the ROWD and applicable Standard Watershed Operating Protocols for the following parameters:

   a. Pebble counts
   b. Pool dimension and frequency
   c. Large wood
   d. Riparian and overstory canopy measurements
   e. Water temperature
   f. Fish surveys
   g. Channel cross section measurements
   h. Hydrology and suspended sediment

B. Reporting
   HRC shall provide the following reports to the Regional Water Board Executive Officer according to schedule specified below. Reports must contain sufficient information that Regional Water Board staff can clearly identify the types of work planned and monitoring conducted throughout the UER including key results, findings, problems encountered, and corrective actions taken. HRC shall summarize any information pertinent to corrective actions that have been or need to be taken to ensure adequate water quality protection.

   1. Annual Summary Report and Work Plan

      By January 31 of each year, HRC shall submit to the Regional Water Board a summary report of all management activities, including monitoring, conducted during the previous calendar year and a work plan, describing all management activities planned for the current calendar year (January 1 to December 31). HRC shall certify that the activities included in the report are in compliance with the provisions of this Order.

      Regional Water Board staff will review and may provide written comments and or request additional information as necessary by February 15. If requested, HRC shall submit a revised final annual work plan to the Regional Water Board by March 1.

      Regional Water Board and HRC staff shall also meet annually, if requested by either party, to review proposed work to discuss the timing of and type of activities planned for the year.

      The annual work plan is a planning document. The actual work conducted in the upcoming year may differ from what is described in the plan due to changes in

conditions or other considerations. HRC shall notify the Regional Water Board no less than quarterly in writing when it becomes apparent that a deviation from the current annual work plan is necessary. The notification shall include a description of how the work differs from the annual work plan and an explanation for the change. The annual summary shall describe all of the management activities actually conducted during the previous year.

The annual report shall include, at a minimum, the following information:

a. Timber harvest
   The report shall at a minimum describe all harvesting conducted during the previous year as well as anticipated harvest planned for the coming year pursuant to Section I.A. of the Order, including;
   i. Acres by subwatershed;
   ii. Silviculture method;
   iii. THP name and number;

b. Roads
   HRC shall describe all road work conducted during the previous year and work planned for the upcoming year, including a description and map locations of all road construction, reconstruction, and maintenance work, pursuant to Section I.C. of the Order.

c. Inventory of CSDS
   HRC shall provide a detailed list of CSDS sites treated during the previous year and sites that are proposed for treatment prior to that calendar year's winter period. The list of sites shall include remaining CSDS from the master treatment schedule, road related CSDS identified during annual road inspections, CSDS identified in ECPs for individual THPs, and any other CSDS identified during the previous year, including those associated with watercourse crossings, roads, skid trails, gullies, road-related and non-road-related landslides, and any other sediment generating features associated with timber harvest activities. For each CSDS site scheduled for treatment, the annual work plan shall contain:
   i. A treatment site identification number and location shown on a scaled map;
   ii. The volume of sediment to be treated;
   iii. Treatment status (pending or completed); and
   iv. A description of the selected treatment alternative.

d. Restoration Projects
   HRC shall provide a description of any restoration projects conducted during the previous year and that are scheduled for implementation during the upcoming year. Restoration projects that shall be included in the annual report include any projects implemented as part of the Feasibility Study for

control of in-channel sediment sources or the Stewardship Program, including:

i. Large wood augmentation for the purposes of improving fish habitat and sediment routing. Methods could include falling riparian zone trees or placement of logs using heavy equipment;
ii. Construction of ~~in-stream or~~ off-channel sediment detention basins;
iii. Streambank stabilization using large wood, excavation, planting, ~~rip-rap,~~ or other bioengineering methods;
iv. Removal or reconstruction of watercourse crossings and near stream road segments;
v. Excavation of in-stream sediment deposits.

e. Inspections
The annual summary report shall describe all inspections of roads, erosion control plans associated with timber harvest plans, and landslides conducted during the previous year according to the specifications described in Section IV.A. The annual summary report shall include at a minimum, the following information for each inspection:

i. date of the inspection;
ii. inspector(s) name;
iii. area or sites inspected;
iv. observations, including problems identified that result, or have the potential to result in controllable sediment discharge, including discharge notifications;
v. actions needed to prevent or minimize sediment discharge;
vi. actions taken to prevent or minimize sediment discharge;
vii. a brief evaluation of the causes of the erosional problems and the adaptive management measures that must be taken to prevent recurrence.

f. Landslide Reporting
The annual summary report shall include an updated landslide inventory, describing any landslide activity observed within the past year, including;

i. A map showing locations of landslide activity;
ii. Whether landslide is new or reactivation of existing landslide;
iii. Estimated volume of sediment discharged; and
iv. Management activities (such as timber harvesting or road work) that may reasonably be considered to have caused or affected landslide activity.

g. Water Quality Trends Monitoring Data
The annual summary report shall include water quality and hydrology monitoring data collected during the previous year as specified in Section IV.A., including: stream flow, sediment, water temperature, channel form, and

large wood in the channel, according to the specifications of ~~Appendix F of~~ the ROWD.

h. Watershed Stewardship Report
The annual report shall describe HRC's participation in Elk River Watershed Stewardship. The report shall provide a brief description of its participation in meetings as well as its contributions supporting stewardship efforts.

2. Five-year Synthesis Report

Following adoption of this Order, HRC shall provide a five-year synthesis and evaluation of the effectiveness of its management activity in preventing and minimizing discharges of sediment and protection of water temperature increases that may impact the beneficial uses of water in UER.

By no later than ~~April~~November 15, 2021, HRC shall submit the first five year synthesis report to the Regional Water Board~~. The~~ for approval by the Executive Officer. By no later than October 15, 2020, the content of the report will be developed in consultation with Regional Water Board staff in order to assure that the report will be useful to evaluate compliance with the General and Specific requirements of the Order and inform decisions regarding potential revisions to the Order. The five year update and evaluation shall include the following information:

a. Harvest Summary
HRC shall submit a summary of total acres harvested over the previous five year period, by:
   i. Acres harvested by subwatershed;
   ii. Silviculture method;
   iii. THP name and number.

b. Road update
HRC shall submit a summary report of roadwork conducted throughout their ownership in the UER. The purpose of the report is to provide a status report on the road network and the effectiveness of their program for controlling sediment discharge from roads. The report shall include the following:
   i. Total length of active roads, including total amount of seasonal and permanent roads;
   ii. Total length of road that meets the stormproofed standard (this shall confirm that HRC's entire road network has been stormproofed);
   iii. Total length of road decommissioned over the previous five year period;
   iv. A map of the current road network.

c. Landslide Summary
An updated landslide inventory and evaluation of the effectiveness of management measures intended to reduce the potential for management related landslides. The updated inventory shall be prepared by a PG and shall include a description of all landslide activity identified during the previous five years based on field observations, interpretation of updated aerial photographs, and other available data sources, including;
   i. An updated landslide inventory, describing all landslide activity observed within the past five years and whether observed landslides are new or reactivation of existing landslides;
   ii. Estimated volume of sediment discharged by landslides over the previous five year period by subwatershed;
   iii. A map showing locations of landslide activity that has occurred during the previous five years;
   iv. A description of data sources (aerial photograph, road inspection, THP layout, etc.);
   v. Copies of aerial photographs of the UER from the previous five year period (may be scanned); and
   vi. A discussion of overall landslide activity during the previous five years and any conclusions that can be made with respect to an association between management and landslide activity. This section shall include a discussion of potential modifications to management practices necessary to further minimize management related sediment discharge.

d. Water Quality Trends
HRC shall submit a water quality trends reports, providing a summary of water quality monitoring results for the previous five years. This report shall be developed in coordination with the Watershed Stewardship Program, to the extent possible. The summary should provide a discussion of any observable water quality trends detected during the previous five years and any conclusions that can be made, in particular with respect to sediment loads, anadromous salmonid habit, and any possible association between management activities and in-stream conditions. This section shall include a discussion of potential modifications to management practices necessary to further minimize management related sediment discharge.

e. Restoration Summary
HRC shall submit a summary report of all restoration projects ~~they have~~it has conducted, participated in, or contributed to, within the Elk River watershed. Restoration activities are those projects designed to control in-stream sediment production and transport, improve beneficial uses of water, and abate nuisance conditions, and may include, but are not necessarily limited to:

i. Stabilizing banks through provision of root cohesion on banks and floodplains;
ii. Filtering sediment, chemicals, and nutrients from upslope sources;
iii. Supplying large wood to the channel, which maintains channel form and improves in-stream habitat complexity;
iv. Maintaining channel form, in-stream habitat, and an appropriate sediment regime through the restriction of sediment inputs or metering of sediment through the system;
v. Moderating downstream flood peaks through temporary upstream off-channel storage of water;
vi. Maintaining cool water temperatures through provision of shade and creation of a cool and humid microclimate over the stream;
vii. Providing both plant and animal food resources for the aquatic ecosystem in the form of, for example, leaves, branches, and terrestrial insects.

f. Effectiveness Monitoring Summary
HRC shall submit a summary report(s) describing the results of their effectiveness monitoring programs for roads throughout the UER and timber harvest related management practices in Railroad Gulch. The reports shall include a description of monitoring methods used, the location of sites evaluated, the results of the monitoring, a discussion the results, and any conclusion regarding the effects of their management practices with respect to sediment production from roads, watercourse crossings, harvest units, landslides, in-channel sources, and sensitive riparian zones.

V. APPLICATION AND ENROLLMENT PROCEDURE

Pursuant to this Order, for the first five years following adoption of this Order, HRC must apply to the Regional Water Board Executive Officer for coverage of individual THPs as described below. After five years, an enrollment process is not required to commence operations for CAL FIRE-approved THPs that fully comply with requirements of this Order, unless notified in writing by the Regional Water Board Executive Officer that the plan is not eligible for coverage.

For the first five years, before operations may commence on an approved THP, HRC must apply for enrollment of the THP under this Order by submitting an enrollment application to the Regional Water Board Executive Officer. The enrollment application must be signed by a designated representative of HRC certifying that the THP complies with the terms and provisions of this Order. Prior to enrollment, Regional Water Board staff will evaluate the THP for compliance with the Order, and at that time may require additional measures for water quality protection as warranted. Timber harvesting activities may not commence until HRC receives written notification from the Regional

Water Board Executive Officer that the THP is covered under this Order. It is anticipated that Projects which have had thorough Regional Water Board staff involvement in the review and approval process will receive written notification of coverage within ten (10) working days of receipt of a complete application.

After the first five years, HRC must submit a notice of commencement of operation to the Regional Water Board at least 10 days prior to commencement of operations for a specific THP.

The Regional Water Board Executive Officer, upon finding that a plan may violate any of the terms of the Order, may at any time notify HRC that they must refrain from commencing, or cease, operations.

CERTIFICATION

All reports required by this Monitoring and Reporting program or other information requested by the Regional Water Board determination of compliance shall be signed by a duly authorized representative of HRC. Any person signing a document under this requirement shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Any person failing to furnish technical or monitoring reports or falsifying any information therein is guilty of a misdemeanor, and may be subject to civil liability. (Water Code section 13268)

~~THE REGIONAL WATER BOARD HEREBY CERTIFIES that projects in compliance with the conditions of the Order above will comply with sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of State law, subject to the following additional terms and conditions:~~

~~1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.~~

2. ~~This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.~~

3. ~~Certification is conditioned upon total payment of any fee required under California Code of Regulations, title 23, section 3833, subdivision (b)(3). Annual Fee Schedules are detailed in the California Code of Regulation, title 23, section 2200.~~

4. ~~Dischargers other than HRC may seek coverage under this Order for similar activities subject to public notice and approval by the Regional Water Board Executive Officer.~~

5. ~~A Discharger seeking water quality certification coverage shall notify the Regional Water Board prior to commencement of the activity and submit information regarding the construction schedule and other relevant information, and appropriate fee. Work may not commence until the discharger is authorized by the Executive Officer of the Regional Water Board either through coverage under this Order or through individual water quality certification.~~

6. ~~The authorization of this certification for any General Water Quality Certification or dredge and fill activities expires five (5) years from the date the activity commences.~~

7. ~~Upon completion of the project, Discharger shall provide notice of completion certifying that all the conditions and monitoring and reporting requirements of this Order have been met.~~

8. ~~All Order requirements, standard conditions, general terms and provisions, and prohibitions are enforceable conditions of this General Water Quality Certification.~~

9. ~~In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.~~

10. ~~This General Water Quality Certification portion of the Order may be modified as needed by the Executive Officer of the Regional Water Board.~~

VI. Certification:

I, Matthias St. John, Executive Officer do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on ~~April 7~~November 30, 2016.

_____
Matthias St. John
Executive Officer

LIST OF ATTACHMENTS
Attachment A – Map
Attachment B – Upper *Elk River: Technical Analysis for Sediment* (Tetra Tech, 2015)
Attachment C – Master Sediment Reduction and Master Treatment Schedule
Attachment D – HRC's Report of Waste Discharge

References

Cafferata, P., and L. Reid, 2013. Applications of long-term watershed research to forest management in California: 50 years of learning from the Caspar Creek Experimental Watersheds. California Forestry Report No. 5, The Natural Resources Agency, Sacramento, CA. 110 pp.

Cedarholm, C.J., L.M. Reid and E.O. Salo. 1981. Cumulative effects of logging road sediment on salmonid populations of the Clearwater River, Jefferson County, Washington. Pages 38-74 in Proceedings of Conference on Salmon Spawning Gravel: A Renewable Resource in the Pacific Northwest? Report 19. Wash. State University, Water Research Center, Pullman, WA.

Gucinski, H., M. J. Furniss, R. R. Ziemer, and M. H. Brookes. 2001. Forest roads: a synthesis of scientific information. Gen. Tech. Rep. PNWGTR-509. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.

Klein, R.D, et al., Logging and turbidity in the coastal watersheds of northern California, Geomorphology (2011).

Lewis, Jack, Elizabeth T. Keppeler, Robert R. Ziemer, and Sylvia R. Mori. 2001. Impacts of logging on storm peak flows, flow volumes and suspended sediment loads in Caspar Creek, California. In: Mark S. Wigmosta and Steven J. Burges (eds.) Land Use and Watersheds: Human Influence on Hydrology and Geomorphology in Urban and Forest Areas. Water Science and Application Volume 2, American Geophysical Union, Washington, D.C.; 85-125.

Lisle, T.E., L.M. Reid, and R.R. Zeimer. 2000. Addendum: review of Freshwater flooding analysis summary. Unpublished report prepared for the California Department of Forestry and Fire Protection. USDA Forest Service, Pacific Southwest Research Station, Arcata, CA. 16 p.

Reid, L, 1998, Calculation of Cutting Rate for UER watershed, Prepared for the California Regional Water Quality Control Board, Dr. Leslie M. Reid, USDA Forest Service Pacific Southwest Research Station, Redwood Science Laboratory.

Tetra Tech, Inc., 2015. Upper Elk River: Technical Analysis for Sediment. Prepared for Environmental Protection Agency, Region 9 and North Coast Regional Water Quality Control Board. Fairfax, VA.

Gucinski, H., M. J. Furniss, R. R. Ziemer, and M. H. Brookes. 2001. Forest roads: a synthesis of scientific information. Gen. Tech. Rep. PNWGTR-509. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.

Attachments