California Regional Water Quality Control Board North Coast Region

DRAFT Order No. R1-2026-0015

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 purpose of this Order is to establish enforceable requirements to ensure that: 1) Humboldt Redwood Company, LLC (HRC) manages its timberlands in the Elk River watershed in such a manner that will lead to compliance with hillslope indicators and numeric targets from Table 2 of the TMDL Action Plan; 2) all anthropogenic discharges of sediment are eliminated to the extent feasible, and if not feasibly eliminated, minimized, as soon as feasible to implement the TMDL zero load allocation; and 3) HRC implement the TMDL Action Plan by complying with the specific and general requirements and prohibitions as prescribed in this Order, which apply throughout its timberlands in the Elk River watershed, not solely in areas with active timber operations.

   This Order replaces Order No. R1-2019-0021 to incorporate alternative methods of compliance with specific aspects of riparian zone protections and wet weather requirements that Humboldt Redwood Company LLC proposed pursuant to section I.H of the Order and to update outdated provisions of the 2019 Order. In addition, the Monitoring and Reporting Program has been moved from Section IV of the Order to Attachment C.

2. 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 impairment is primarily attributed to land use activities that have been occurring since the 1850s, including but not limited to timber harvesting, forest conversion, agriculture, grazing, road construction, and rural housing development. Water quality impacts resulting from this history of land management activities include:

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

3. The Upper Elk River (UER) Watershed (see Attachment A), comprises 44.2 square miles of predominately timberland. 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 that were resulting from timber management activities in the UER.

4. High sediment production during the period between 1988-1997 is due to several factors, including an approximate four-fold increase in logging under prior ownership of the primary landowner, the Pacific Lumber Company (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.

5. Over time, sediment transported from the UER has 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 since the 1990s. The Technical Analysis for Sediment (Tetra Tech, Inc., 2015) estimated that approximately 640,000 cubic yards of sediment have accumulated within the past two decades 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.

6. 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 attributed to the degradation of conditions in the impacted reach[1]. In 2008, the Humboldt Redwood Company (HRC) took ownership of PALCO's Elk River property, and is now the largest landowner in the UER, with 79 percent ownership. Prior to the transfer of ownership, the Regional Water Board adopted waste discharge requirements (WDRs) for PALCO's ownership in Elk River through Order No. R1-2006-0039.

[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 Berta Road.

7. 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)[2] 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). As of 2021, HRC has completed all feasible site treatments.

8. In September of 1998, the Regional Water Board issued CAO 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.

9. Following HRC's acquisition of PALCO's timberlands in 2008, HRC had been operating 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 included receiving water limitations, including rate of harvest (ROH) limitations, which were established based on two scientific models intended to limit peak flow increases and sediment discharge from harvest-related landslides. 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.

10. The WWDR (Order No. R1-2006-0039) was not tailored to the management practices of HRC and did not comprehensively address HRC's obligations for cleanups and total maximum daily load (TMDL) implementation. An updated WDR was needed to provide a more comprehensive permit that reflects current watershed conditions, changes in management practices, and new technical analyses of watershed sediment conditions.

11. Therefore, 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. HRC's ROWD was subsequently amended on March 11, 2016 and October 4, 2016. 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:

[2] 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.

- 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;
- Implementation and Effectiveness Monitoring; and
- Watershed trend monitoring.

While the ROWD, including amendments, was deemed complete, it was not considered fully adequate to meet all water quality requirements associated with Elk River. As such, on November 30, 2016, the Regional Water Board adopted 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 2016 Order]. The 2016 Order established specific requirements based largely on the ROWD, with additional measures as warranted to meet applicable water quality requirements. As discussed in Finding 27 below, subsequent to adoption of the 2016 Order, the State Water Resource Control Board's resolution (No. 2017-0046) adopting the Upper Elk River Sediment TMDL Action Plan (TMDL Action Plan)(Attachment E) included a finding (Finding 9) "that the North Coast Water Board's WDRs and any other orders for the two major landowners that conduct timber harvesting will incorporate specific provisions that implement all of the TMDL hillslope indicators and numeric targets, unless the regional board makes specific findings about why any omitted hillslope indicators or numeric targets are not appropriate or feasible." The State Water Board further required "the WDRs and any other orders for the two major landowners will also contain any additional specific provisions to ensure that all anthropogenic discharges of sediment are eliminated to the extent feasible and, if not feasibly eliminated, minimized as soon as feasible but not later than 2031" (amended via a letter dated October 15, 2018). The State Water Board's understanding of the TMDL is that absent amendment of the TMDL, "the WDRs and any other orders will require the landowners to achieve the zero-load allocation for all anthropogenic discharges of sediment as soon as feasible, but no later than 2031."

Therefore, on June 19, 2019, the Regional Water Board adopted Order No. R1-2019-0021, which included revised requirements to fully implement the TMDL hillslope indicators and numeric targets and ensure that all anthropogenic

discharges of sediment are eliminated or minimized, and included findings expanding on how the requirements of the Order implement those indicators and targets. This Order modifies the 2019 Order to incorporate alternative methods of compliance proposed by HRC and to and to omit outdated findings and requirements.

REGULATORY ACTIONS IN THE UPPER ELK RIVER

12. 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.*[3]) 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, California Department of Fish and Wildlife (CDFW), California Geologic Survey (CGS), and other agencies are responsible agencies charged with the multidisciplinary review of THPs to ensure compliance with applicable state laws.

13. 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 § 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 moderate water temperature. Public Resource Code § 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 achieving water quality standards. (See e.g. RB1-2013-0005 [FPRs are generally adequate to implement water quality standards from the Water Quality Control Plan for the North Coast Region (Basin Plan) 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.

[3] 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.

14. 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 17 below.

TMDL AND REVISED WASTE DISCHARGE REQUIREMENTS

15. In spite of 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 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.

16. The Basin Plan, last updated in 2018, 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.

17. 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)	

18. On May 12, 2016, the Regional Water Board approved the Action Plan for the Upper Elk River Sediment TMDL (TMDL Action Plan). On April 4, 2018, the United States Environmental Protection Agency approved the TMDL Action Plan, the final step in the process necessary for it to be amended into the Basin Plan, following approvals by the State Water Resources Control Board on August 1, 2017, and the Office of Administrative Law on March 8, 2018.

19. The TMDL Action Plan includes a phased total maximum daily load (TMDL) for sediment and describes the implementation actions necessary to attain water quality standards in the Upper Elk River Watershed. The goal of the TMDL Action Plan is to achieve sediment related water quality standards, including the protection of the beneficial uses of water in the upper watershed and prevention of nuisance conditions. The TMDL Action Plan establishes the sediment load consistent with current conditions in the impacted reaches, identifies a process for assessing and implementing necessary and feasible remediation and restoration actions, and describes a program of implementation to be considered and incorporated into regulatory and non-regulatory actions of the Regional Water Board and other stewardship partners in the watershed.

20. Site specific assessment of water quality conditions in the Upper Elk River Watershed confirm that sediment discharges from timberlands in the upper watershed and sedimentation in the impacted reaches, combining with other natural (e.g., tectonics, geology, soil characteristics, geomorphology, climate and vegetation) and anthropogenic (e.g., pre-Forest Practices Act logging, ranching, farming, roads, and residential development) factors exceed the water quality objectives for sediment, suspended material, settleable matter, and turbidity and result in adverse impact to several beneficial uses, including domestic water supplies (MUN), agricultural water supplies (AGR), cold-water habitat (COLD); spawning, reproduction and early development (SPWN); rare, threatened, or endangered species (RARE), and recreation (REC-1 and REC-2). Sedimentation in the impacted reaches also has resulted in conditions of nuisance, including increased rates and depth of annual flooding and loss of property, use of property, access to property, and risk to human health and welfare.

21. The Technical Analysis for Sediment identifies the key sediment source categories that produce sediment in the Upper Elk River Watershed. Sediment discharges

resulting from timber harvest and other land-management activities in the most recent analysis time period (2004-2011) are (in order of significance): in-channel sources (headward channel incision, bank erosion, and streamside landslides), discharges from existing land use-related sediment discharge sites, other road-related discharges, and harvest-related discharges.

22. Water quality indicators and associated numeric targets outlined in the TMDL are not independently enforceable and are designed to measure progress towards attaining water quality objectives for suspended material, settleable material, turbidity and sediment. The water quality indicators are divided into hillslope and instream, as identified in Tables 2 and 3 of the Action Plan, respectively. The Action Plan states that the hillslope indicators and numeric targets in Table 2 are designed to inform Board actions and can be incorporated into orders, as appropriate and to the maximum extent feasible. The instream water quality indicators and targets are designed to help assess the overall effectiveness of the program of implementation and confirm progress towards attainment of applicable water quality standards.

23. TMDLs must be established at levels necessary to attain and maintain the applicable water quality standards with seasonal variations and a margin of safety (MOS) (40 CFR § 130.7(c)(1)). The TMDL represents the maximum amount of a pollutant that can be discharged to a waterbody, taking into account critical conditions of stream flow, loading, and water quality parameters. The TMDL is equivalent to the loading capacity of the waterbody for the pollutant in question.

24. The Upper Elk River Sediment TMDL is set equal to the loading capacity of the waterbody. The loading capacity of the Upper Elk River Watershed is defined as the total sediment load (natural and management-related) that can be discharged into the Upper Elk River and its tributaries without impacting beneficial uses of water, causing an exceedance of water quality objectives, reducing the quality of high-quality water, or creating nuisance conditions. Because capacity for sediment is limited by the ongoing aggradation in the impacted reaches, the loading capacity for additional sediment is defined as zero until the capacity of the impacted reaches can be expanded.

25. The program of implementation identifies a combination of regulatory and non-regulatory actions that will lead to the attainment of water quality objectives, recovery of beneficial uses, protection of high-quality waters, and prevention of nuisance conditions in the Upper Elk River Watershed. Phase 1 of the Upper Elk River Sediment TMDL Implementation Plan requires control of all existing and potential future sediment sources in the upper watershed while the Elk River Recovery Assessment is completed and the Elk River Watershed Stewardship Program is developed, initiated, and successfully results in the activities necessary to expand the sediment loading capacity of the impacted reaches and abate nuisance conditions.

26. WDRs are the primary regulatory mechanism utilized by the Regional Water Board to control the nonpoint source pollution resulting from past and ongoing timber harvesting activities, the dominant land use in Upper Elk River Watershed. Existing adverse cumulative impacts from current and past land management practices combined with watershed characteristics (such as sensitive geology and altered hydrologic conditions) require that additional actions be taken beyond those currently being implemented in the Upper Elk River Watershed. Updated management actions are necessary to prevent continued impact to beneficial uses and contributions to downstream nuisance conditions that result from ongoing timberland management. The WDRs must consider the unique watershed factors that influence the discharge of sediment so as to properly update management practices and better manage watershed effects.

27. In its resolution adopting the TMDL Action Plan, the State Water Board included the finding that its "understandings of the TMDL Action Plan's requirements and statements described above are (1) that hillslope indicators and numeric targets in Table 2 apply throughout a discharger's area of land ownership and not solely in areas of active harvest, (2) that the Regional Water Board's WDRs and any other orders for the two major landowners that conduct timber harvesting will incorporate specific provisions that implement all of the hillslope indicators and numeric targets in Table 2, unless the regional board makes specific findings about why any omitted hillslope indicators or numeric targets are not appropriate or feasible, (3) the WDRs and any other orders for the two major landowners will also contain any additional specific provisions to ensure that all anthropogenic discharges of sediment are minimized and eliminated, and (4) in the absence of a future amendment to the TMDL Action Plan, including an amendment based on successful implementation of the Watershed Stewardship Program resulting in expanded sediment loading capacity in the impacted reach, the WDRs and any other orders will require the landowners to achieve the zero load allocation for all anthropogenic discharges of sediment as soon as feasible, but no later than 2031." In a letter dated October 15, 2018, the State Water Board provided the following clarification to understanding 3 above, as follows: "the WDRs and any other orders for the two major landowners will also contain any additional specific provisions to ensure that all anthropogenic discharges of sediment are ~~minimized and~~ eliminated to the extent feasible and, if not feasibly eliminated, minimized, as soon as feasible but not later than 2031" [strikeout and underline are from the original October 15, 2018 letter].

28. The Order provides 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 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). The 2019 Order established a

minimum 5-year interim requirement that HRC would limit timber harvest activities in high risk areas to allow time for stewardship efforts to move forward and improve conditions in the impacted reach. High risk areas are defined as those areas identified in HRC's ROWD amendment request dated October 4, 2016 submitted to the Regional Water Board with associated map titled Sensitive Bedrock Sub-Basin and Elk River Geologic Map (see Finding 46). In August 2024, staff presented on the status of Elk River efforts including, but not limited to, information from a paired watershed study, a staff analysis of water quality trends, and observations from timber harvest inspections. Based on this information, staff recommended allowing the limits on high risk areas to lapse, in accordance with the approved WDR. The Board maintained the current permit and the limits on high risk areas ended.

29. Table 2 from the TMDL Action Plan describes Hillslope Water Quality Indictors and Numeric targets. Hillslope indicators fall into four general categories: roads, harvest related, management discharge sites, and specific Upper Elk River watershed indicators. Following final adoption and approval of the TMDL Action Plan, Regional Water Board staff evaluated the specific requirements of the 2016 Order to: 1) determine whether the provisions are adequate to fully implement all the TMDL hillslope indicators and numeric targets, and 2) where the provisions of the 2016 Order may not fully implement indicators and targets, request that HRC propose additional measures, where such feasible and appropriate measures exist, to implement the hillslope indicators and numeric targets. The Regional Water Board found that in large part, the 2016 Order was expected to implement the TMDL Hillslope Water Quality Indicators but may not be fully adequate to implement certain Specific Upper Elk River Watershed Indicators. As such, following discussions with Regional Water Board staff, HRC proposed revisions to specific provisions of the 2016 Order to implement TMDL hillslope targets and load allocation and on February 15, 2019, submitted the proposed revisions. The revisions primarily address expanded riparian zone protection measures and seasonal restrictions on hauling. The 2019 Order superseded the 2016 Order and established new requirements deemed necessary and appropriate by the Regional Water Board for HRC's Management Activities conducted within the Upper Elk River watershed to fully comply with the TMDL Action Plan.

Table 2: Hillslope Water Quality Indicators and Numeric Targets†

Indicator	Numeric Target	Associated Area
Common Road Indicators		
Hydrologic connectivity of roads to watercourses	100% of road segments hydrologically disconnected from watercourses	All roads

Indicator	Numeric Target	Associated Area
Sediment delivery due to surface erosion from roads	Decreasing road surface erosion	All roads
Sediment delivery due to road-related landslides	Decreasing sediment delivery from new and reactivated road-related landslides	All roads
Common Harvest-Related Indicators		
Sediment delivery due to surface erosion from harvest areas	100% of harvest areas have ground cover sufficient to prevent surface erosion	All harvest areas
Sediment delivery from open slope landslides due to harvest-related activities	Decreasing sediment delivery from new and reactivated open-slope landslides	All open slopes
Sediment delivery from deep seated landslides due to harvest-related activities	Zero increase in discharge from deep-seated landslides due to management-related activities	All deep-seated landslides
Common Management Discharge Site Indicators		
New management discharge sites	No new management discharge sites created	Class I, II, and III watercourses
Specific Upper Elk River Watershed Indicators		
Headward incision in low order channels	Zero increase in the existing drainage network	Class II/III catchments
Peak flows	Less than 10% increase in peak flows in 10 years related to timber harvest	Class II/III catchments
Channels with actively eroding banks	Decreasing length of channel with actively eroding banks	Class I, II, and III watercourses
Characteristics of riparian zones (i.e., 300 feet on either side of the channel) associated with Class I and II watercourses	Improvement in the quality/health of the riparian stand so as to promote 1) delivery of wood to channels, 2) slope stability, and 3) ground cover	Class I and II watercourses

Indicator	Numeric Target	Associated Area
Characteristics of riparian zones (i.e., 150 feet on either side of the channel) associated with Class III watercourses	Improvement in the quality/health of the riparian stand so as to promote 1) delivery of wood to channels, 2) slope stability, and 3) ground cover	Class III watercourses

† The hillslope indicators and numeric targets in Table 2 are designed to inform Regional Water Board actions and can be incorporated into orders, as appropriate and to the maximum extent feasible.

30. 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.

31. 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 additional upslope timber harvesting occurs. 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 as a result of 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 and protection of beneficial uses. 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, limiting timber harvesting activities that are likely to generate additional sediment in high-risk areas is appropriate, and the Watershed Stewardship Program (see Findings 67 through 70) will take active measures to improve downstream beneficial uses.

32. Findings below provide a discussion of HRC's management plan addressing water quality controls, including measures proposed in its February 1, 2019 submittal

(Attachment F of this Order). This Order includes requirements in addition to those HRC has proposed as deemed necessary by the Regional Water Board in order to implement water quality regulations contained in the Basin Plan, including hillslope indicators and numeric targets from Table 2 of the TMDL Action Plan and the zero-load allocation. The additional requirements are based on information contained in the evidentiary record that supports this Order, including the Technical Report and additional evidence that informed the Regional Water Board's decision to adopt the 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
- 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

33. Specific requirements to prevent new sediment discharge fall into several categories discussed below, including forest management (including harvest rate limitations), 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 below 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 that include significant tree retention that will provide shade along all watercourses, elevated water temperatures are not anticipated to result from HRC's management activities.

FOREST MANAGEMENT/HARVEST RATE

34. Specific UER watershed hillslope indicators and associated numeric targets generally address protection of channels and riparian zones from impacts related to

ground disturbance and tree removal. Hillslope indicators include headward incision in low-order channels, actively eroding channel banks, peak flow, and characteristics of riparian zones. All of these indicators are interrelated and closely associated with the effects of tree removal on hydrologic processes and hillslope and riparian ground disturbance. Tree removal can result in reduced interception, evaporation, and evapotranspiration of rainfall by forest canopy and can therefore potentially increase the peak flows and landslides (Lewis, 2003) (Reid and Lewis, 2007) (Pearce and Rowe, 1979). 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 (Ziemer, 1981). Harvesting trees can potentially increase peak flows and decrease root strength, which can contribute to landslides and increase erosion throughout a watershed. These impacts can be reduced or prevented by limiting the intensity and rate of canopy removal through silvicultural prescriptions designed to protect riparian zone function and limit hydrologic changes related to upslope canopy removal.

35. Limiting the rate of harvest in a watershed is an important management variable to control peak flow increases and the effects of loss of root strength due to tree removal. 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[4] (USDA Forest Service, 1974). It is unknown to what extent increased impacts related to high harvest rates documented in these studies may be due to management practices in effect at the time of these studies that are not considered to be as protective as current practices or whether the impacts may be the result of changes in inherent watershed processes due to reductions in canopy and ground disturbance.

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

[4] 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.

erosional processes as compared to clearcut harvesting. HRC does not utilize the clearcut harvest method and does not harvest old growth[5]. In addition, HRC's management practices include measures to control erosion and sediment production.

37. 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's projected harvest scenario shows increases in standing timber inventory and yield over 20 years.

38. Watershed-wide average annual harvest rates proposed in the ROWD for each five-year period vary between 466 and 605 acres (223 to 303 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 uneven-aged management under HRC's ownership, the proposed average annual harvest rate for each five-year period through the year 2034 for 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.

    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.

39. The numeric target for peak flows specifies limiting increases in peak flows related to timber harvesting in individual Class II and III catchment to less than 10% in ten

[5] 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.

years. Significant challenges are presented when attempting to manage for specific peak flow changes resulting from specific canopy reduction at a small catchment scale. Grant et al (2008) found the minimum detectable change in peak flow for site scale analysis to be ±10%. Annual variation in peak flows in small catchments can be up to two orders of magnitude. Grant et al also report that peak flow effects are not present in streams with slopes greater than 10%, which would include most Class II and III streams. The peak flow model derived from work in Caspar Creek is widely used to estimate peak flow changes from canopy removal and a modified version of that model was used in the 2006 Elk River and Freshwater Creek WDRs. However, that model was not calibrated for drainage areas less than 25 acres, which would also exclude many Class II and III catchments in Elk River. Further confounding use of a specific peak flow target is that peak flow changes are greatest in early season smaller storms and low recurrence interval storms and diminish with increasing storm size and seasonal watershed saturation. In addition, hydrologic effects from canopy removal typically recover to near pre-harvest levels after approximately ten years due to revegetation (Keppeler, et al, 2003). HRC's partial harvesting strategy and prescriptions for canopy retention in riparian zones (discussed further in Findings 41 through 47) result in post-harvest canopy retention within Class II or III catchments that meet the numeric target of less than 10% in ten years. Modeled changes in peak flows from canopy removal on HRC's timberlands in Elk River using the regression equation developed from the North Fork Caspar Creek (Lisle et al. 2000; Lewis et al. 2001; Cafferata and Reid, 2012), indicated that implementation of the numeric target for peak flow can generally be met by limiting canopy reduction by appropriate harvest rate limits and robust riparian buffers.

40. HRC's modeled harvest rates from Figure 4.3 of the ROWD (Attachment D) will comply with hillslope numeric targets for peak flow. Average annual harvest rates in subwatersheds fall near or below 2% equivalent clearcut acres averaged over any 10-year period in most subwatersheds. Harvest rates above this threshold would cause concern for cumulative impacts on water quality 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 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 I.A.3 and Section V.)

RIPARIAN ZONE PROTECTION

41. Specific UER watershed indicators and numeric targets from the TMDL Action Plan associated with channel stability and riparian zone protection include the following:

- Improvement in the quality/health of the riparian stand so as to promote: 1) delivery of wood to channels, 2) slope stability, and 3) ground cover within 300 feet of Class I and II watercourses and within 150 feet of a Class III watercourse;
- No increase in the existing drainage network through headward incision in low order channels; and
- Decreasing length of channel with actively eroding banks.

42. 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:

    - Stabilizing banks through provision of root cohesion on banks and floodplains;
    - Filtering sediment and nutrients from upslope sources;
    - Supplying large wood to the channel, which maintains channel form and improves in-stream habitat complexity;
    - 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;
    - Moderating downstream flood peaks through temporary upstream storage and infiltration of flood water;
    - Helping maintain cool water temperatures through provision of shade and creation of a cool and humid microclimate over the stream; and
    - Providing both plant and animal food resources for the aquatic ecosystem in the form of, for example, leaves, branches, and terrestrial insects.

43. 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. Increased peak flows from tree removal can result in alteration of stream hydrographs by increasing the magnitude and shortening the duration of peak flows in watercourses. Changes in hydrographs can result in channel scour and increases in streamside landslides. 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. Expansion of the existing drainage network by the process of headward erosion and upslope migration of channel initiation points likely resulted from a combination of hydrology (increased peak flow) and channel disturbance from operation of heavy equipment and dragging logs in streams and riparian areas. Considerations of the interactions between sediment processes, water temperature, and riparian trees are essential for evaluating and avoiding management-related impacts to streams. Due to the highly erosive nature of underlying geologic units, channels in the watershed are naturally vulnerable to destabilization, which has been exacerbated by logging. Management

of riparian zones 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. Impacts to channels can be reduced or prevented by excluding tractor yarding and minimizing peak flow increases by limiting canopy removal through requirements for riparian zone protection and harvest rate limits.

44. HRC's timber operations in riparian zones are subject to the ERSC WA prescriptions designed to 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. The ERSC WA established riparian management zones (hereinafter referred to as HCP RMZs) with specified widths and prescriptions including the following:

    - No harvesting within 150 feet of the lower eight miles of the North Fork Elk River, within 50 feet of all other Class I watercourses, and 30 feet of Class II watercourses;
    - Retention of the 18 largest trees per acre within 100 feet of Class I watercourses;
    - Only single tree selection shall be utilized in HCP RMZs for Class I, II, and III
    - watercourses. No group clearing shall take place in these RMZs;
    - Large tree, down wood, and canopy retention requirements throughout the remainder of the HCP RMZ;
    - Entry into Class I and II riparian zones are permitted no more than once every 20 years;
    - Additional hillslope prescriptions that restrict harvesting, road use/construction, and heavy equipment use on inner gorge slopes and headwall swales;
    - A "Hillslope Management Checklist" to identify areas that are vulnerable to mass wasting;
    - No harvesting of Class III channel trees or trees located on unstable slopes adjacent to Class III watercourses;
    - Silvicultural treatments in HCP RMZs to develop or maintain late seral forest conditions, such as thinning from below or individual tree selection;
    - Unevenage silviculture practices and post-harvest conditions upslope from HCP RMZs.

45. Sections I.B and I.C of this Order establish additional protection measures for watercourses and riparian zones throughout HRC's timberlands in the UER. This Order extends protections beyond the HCP RMZs to comply with the TMDL hillslope indicators and numeric targets. These expanded riparian protection zones are referred to as the TMDL RMZs. This Order incorporates HCP RMZ prescriptions for riparian protection as minimum protection standards but includes additional

requirements within the TMDL RMZs that achieve the following objectives: extend protections upslope beyond the HCP RMZ widths, provide post-harvest tree retention standards, minimize ground disturbing activities, and eliminate activities near sensitive areas. These additional protection measures within the TMDL RMZs, include:

- Implementation of prescriptions for HCP RMZs as described in Finding 44, above;
- Primarily single tree and limited group selection silviculture in TMDL RMZs for Class I, II, and III watercourses;
- Group openings may be used in the TMDL RMZs on slopes less than 40% between 150 and 300 feet of a Class I or II watercourse and between 100 and 150 feet of a Class III watercourse;
- With the exception of allowance for restorative silviculture methods resulting in lower canopy retention, HRC must retain 50% post-harvest overstory canopy within 300 feet of Class I and II watercourses or to the first hydrologic divide and within 150 feet of Class III watercourses or to the first hydrologic divide;
- Limits on ground-based equipment and enhanced erosion control practices in TMDL RMZs;
- Avoidance of tractor crossings in unchanneled swales;
- Retention of trees along the center line of swales and areas of subsurface flow paths.

HARVESTING IN HIGH RISK AREAS

46. 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, which includes Clapp, Tom, and Railroad Gulches, McCloud Creek, Mainstem Elk River, 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. Further refinement of the relative risk ranking based on subwatershed sediment production, landslide hazard, and observations by field staff of areas dominated by the Hookton Formation, have resulted in identification of areas within portions of the six subwatersheds identified above that are appropriately considered as high water quality risk for the purposes of this Order.

47. Section I.C of this Order establishes the following riparian zone management measures for high risk areas (hereinafter referred to as High Risk RMZs) that are in addition to the HCP RMZ prescriptions specified in Section I.B. High Risk RMZs were established in the 2016 Order and remain unchanged in this Order:

    - High Risk RMZs for Class II and III watercourses extend up to 200 feet and 100 feet, respectively, on either side of the channel or to the hydrologic divide;
    - No harvesting between 30 feet and 20 feet of Class II and III watercourses, respectively;
    - Between 30 feet and 200 feet or to the hydrologic divide of Class II watercourses, retain a minimum of 60% post-harvest canopy coverage;
    - Between 20 feet and 100 feet or the hydrologic divide of Class III watercourse, retain a minimum of 70% post-harvest conifer canopy coverage.

CONTROL OF SEDIMENT FROM ROADS

48. Road-related numeric targets from Table 2 include: 100% of road segments hydrologically disconnected from watercourses to the maximum extent feasible, decreasing road surface erosion, and decrease in sediment delivery from new and reactivated road-related landslides. 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.

49. 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, 2015)[6]. The Handbook contains a comprehensive suite of

[6] Handbook for Forest, Ranch, and Rural Roads, A Guide for Planning, Design, Constructing, Reconstructing, Maintaining, and Closing Wildland Roads. The handbook

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 “storm-proofed.” Storm-proofed 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;
- 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.

50. 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 the Weaver and Hagans Handbook. By 2021, HRC storm-proofed the entire active road system in the UER and decommissioned over 50 miles. Implementation of these road prescriptions are established as specific requirements in Section I.D. of this Order. The management practices described above to control of road related sediment discharge establish specific requirements deemed adequate to implement TMDL numeric targets for common road indicators.

LANDSLIDE PREVENTION

51. 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. Many of the TMDL hillslope water quality indicators and numeric targets are related to landslides and management impacts to slope stability. 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,

was updated in 2015, funded in part by a State Water Board 319(h) nonpoint source grant.

altering of hillslope hydrologic process, and oversteepening or loading slopes by cut and fill road construction.

52. Tree roots can enhance the strength of shallow soils, decreasing the risk of landslide activation. 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 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.

53. 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.

54. 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.

55. In addition to periodic air photo analysis, monitoring and reporting requirements included in Attachment C 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.

56. HRC’s approach for evaluating landslide hazards includes ERSC WA prescriptions. As part of THP planning, a review of pertinent technical data is 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);
    - Inner gorges adjacent to class II or III watercourses;
    - 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.

57. 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[7], which must be prepared by a PG who is familiar with watershed characteristics. Section I.E. 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;
    - Field investigation and mapping; and
    - Applicable studies and technical models.

58. 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

[7] California Department of Conservation, California Geological Survey Note 45, 2013.

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.

59. This Order establishes enforceable provisions to prevent increases in sediment discharge from landslides associated with HRC's timber harvest activities and meet TMDL numeric targets related to landslides and slope stability. 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 2006 WWDRs;
    - Use of partial harvesting methods that retain a significant component of post-harvest root strength;
    - Riparian protection zones in high risk areas 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, 200, and 100 feet of Class I, II and III watercourses, respectively;
    - Implementation of HRCs RMZ and TMDL RMZ prescriptions outside of high-risk areas;
    - Primarily selection silviculture throughout HRC's timberlands in the UER, resulting in post-harvest forest conditions with significant canopy, basal area, and ground cover; and
    - Review by a PG of all proposed activities, including harvesting and construction or reconstruction of roads and watercourse crossings.

WET WEATHER REQUIREMENTS

60. 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 1 and May 1.

In order to minimize the impacts of conducting timber operations during wet weather and implement the TMDL numeric target of decreasing road surface erosion, section I.F of the Order establishes seasonal restrictions.

INVENTORY AND TREATMENT OF CONTROLLABLE SEDIMENT DISCHARGE SOURCES

61. 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.

62. 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 Attachment C of this Order. Order Section I.D.6 requires that HRC address these new CSDS as they are identified and subsequently 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.

63. 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.

64. 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 2.5 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

65. As described in Finding 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. The 2019 Order required 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.

66. The feasibility study was to 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. HRC conducted the pilot projects but did not identify a wider scale project that could feasibly be implemented throughout the UER.

IN-STREAM RESTORATION AND WATERSHED STEWARDSHIP

67. 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, winter storm flooding, and associated threats to public and private infrastructure. HRC's participation includes voluntary financial and in-kind contributions to the Elk River Watershed Stewardship Program. 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 Attachment C 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.

68. 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.

69. The Watershed Stewardship Program also endeavors to incorporate and advance the findings of the Elk River Recovery Assessment (ERRA): Recovery Framework. The ERRA utilized a hydrodynamic and sediment transport (HST) model to develop a suite of actions to recover beneficial uses in the Elk River. The ERRA HST model incorporates a larger geographic scope within the watershed than was considered in the TMDL. For example, management actions below the impacted reach are included in the model scenarios. The model highlights the necessity and efficacy of employing multiple types of management actions at multiple locations to restore the Elk River's reduced assimilative capacity. The ERRA findings suggest that to restore lost hydrologic function, increase supporting fish habitat, and improve water quality conditions will require both stream remediation (e.g., sediment removal, channel shaping, and riparian management) as well as sediment source reduction from the upper watershed.

    One of the scenarios modeled by the ERRA HST model evaluated a 30% reduction in suspended sediment entering the impacted reach. The model findings did not show that a 30% property-wide reduction alone would sufficiently improve conditions downstream to support beneficial uses or achieve TMDL allocations. The ERRA recommended pursuing opportunities to reduce sediment loading from the UER at levels well above 30% to achieve meaningful benefits. This could be accomplished with a single project, or suite of projects in sub-basins known to produce high rates of suspended sediment, such as Tom Gulch. The ERRA HST model scenarios indicate five classes of actions needed to restore beneficial uses and reduce nuisance flooding: sediment reduction from the upper basin; mechanical channel rehabilitation; retention and improvement of floodplain connectivity;

infrastructure improvements; and estuary enhancements. The ERRA HST model provides technical support for the Elk River Watershed Stewardship Program to identify strategies and solutions to achieve TMDL goals.

70. 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 off-channel sediment detention basins;
    - Streambank stabilization using large wood, excavation, planting, or other bioengineering methods;
    - Removal or reconstruction of watercourse crossings and near-stream road segments; and
    - Excavation of in-stream sediment deposits.

MONITORING AND REPORTING

71. Attachment C 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 and consistency with the TMDL Action Plan;

    b. Determine the effectiveness of management measures designed to protect water quality and inform adaptive management decisions;

    c. Identify potential new sources of sediment discharge and implement corrective action in a timely manner;

    d. Track HRC's participation in Watershed Stewardship efforts working towards recovery of beneficial uses in Elk River;

    e. Track water quality trends; and

    f. Help inform re-evaluation of the UER's assimilative capacity for sediment and sediment load allocations.

72. 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; and all CSDS identified in ECPs for individual THPs following implementation of corrective action.

INSPECTIONS AND INSPECTION REPORTS

73. 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

74. Water Quality Monitoring conducted by HRC includes the following:

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

75. 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:

    - The total harvest acreage by THP number, silviculture method, and subwatershed;

- Annual Road Inspection Program (ARIP) activities, ECPs for individual THPs, and any additional sites identified during required inspections;
- Road construction, reconstruction, or decommissioning;
- All inspections and water quality monitoring;
- In-stream Restoration and Riparian Restoration activities; and
- 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 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.

PROCEDURE

THP ENROLLMENT AND ADMINISTRATION

76. 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.

77. THPs, or portions of a THP in the UER watershed, enrolled under Order R1-2019-0021 prior to May 7, 2026 will retain coverage under, and be subject to the terms and provisions of, that Order.

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

79. 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.

80. 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

81. The Regional Water Board finds that all the combined measures required under this Order, as itemized below, are protective of water quality standards and implement

TMDL numeric targets, hillslope indicators and load allocation within the UER watershed: the transition from even-aged to 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; HCP RMZ protections; TMDL RMZ protections, High Risk Area RMZs; geologic review of all harvest activities; wet weather limitations, management practices designed to prevent or minimize sediment discharge; 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.

82. State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Antidegradation 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 the best quality that has existed since the Policy was adopted in 1968. Thus, the Regional Water Board must determine this "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 does not apply. 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).)

83. If baseline water quality is better than water quality objectives, the Policy applies 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 p.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.)

84. 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 Regional Water Board determined that the nonpoint source load allocation be 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.

85. This Order requires compliance with water quality objectives in receiving water 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, wet weather prescriptions, limited logging activities in high risk areas, 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.

    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 limits logging activity in the most sensitive areas 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.

86. Compliance with the terms of this Order will further the TMDL Action Plan goals of minimizing and eliminating sediment discharges from HRCs timber operations in the UER watershed. The monitoring and reporting program in Attachment C 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. The Order provides for ongoing assessment of the effectiveness of management measures and progress in meeting TMDL load allocations.

87. To the extent that the Antidegradation Policy applies, the Order is consistent with the Policy because: 1) compliance with the Order will result in a net improvement over existing conditions and any degradation authorized by prior Orders; 2) implementation of management measures required by this Order constitute BPTC to control discharges from timber operations; and 3) the Regional Water Board finds the authorization of some discharges is to the maximum benefit of the people of the state.

88. The Order is consistent with the Policy for Implementation and Enforcement of the Non-Point Source Pollution Control Program (Non-Point Source Policy). Implementation of the Order will promote attainment of Water Quality Objectives and TMDL Action Plan requirements. The Order incorporates antidegradation requirements as described in Findings 91-95; describes management practices and performance standards to be met; requires annual monitoring and reporting, and cumulative reports to provide a feedback mechanism to the Regional Water Board on the effectiveness of the management practices; sets clear milestones for meeting objectives; and states the consequences for failure to meet Order requirements, which may include: modification of Order requirements to require additional management measures and mitigations, rescission of coverage for individual THPs and/or denial of THP enrollment; and enforcement action for failure to comply with Order conditions including reporting requirements.

89. As lead agency under the California Environmental Quality Act (CEQA), the Regional Water Board prepared an addendum to the subsequent mitigated negative declaration (SCH No. 2015122010, adopted on June 19, 2019) for this Order (Cal. Code Regs., tit. 14, § 15164)[8]. The addendum was circulated for public review with the Order (Attachment G) and the addendum reflects the Regional Water Board's determination that none of the conditions that would require the preparation of a subsequent negative declaration or environmental impact report exists (Pub. Res. Code §21166; Cal. Code Regs. tit. 14, §15162.).

[8] 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.

90. The Regional Water Board has reviewed the contents of this Order, environmental documentation prepared for this Order, 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 Basin Plan, prevent nuisance conditions, and attain beneficial uses in the watershed. The Order supports the Regional Water Board adopted sediment load allocation for the UER watershed, while still permitting discharges from timberland management, including harvesting. This 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 are 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. R1-2026-0015 and directs the Executive Officer to file all appropriate notices.

IT IS FURTHER ORDERED that this Order supersedes Order No. R1-2019-0021 (Elk River WDR). THPs, or portions of THPs, enrolled under Order R1-2019-0021 prior to May 7, 2026 will retain coverage under, and be subject to the terms and provisions of, that Order.

IT IS FURTHER ORDERED that pursuant to Water Code section 13263 and Water Code section 13267, Humboldt Redwood Company, LLC, shall comply with the following on its timberlands in the Elk River watershed:

I. SPECIFIC REQUIREMENTS[9]

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 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. Consistent with the ROWD, HRC shall not utilize the clearcut harvest method.

[9] Several of the Specific Requirements are from HRC's ROWD (Attachment D) and February 1, 2019 submittal (Attachment F). These include: I.A.1-2; I.B.2; I.B.4; I.D.2; I.D.5-8; I.E.1-4; I.F.1 and 5

2. HRC shall only utilize single-tree and limited group selection silviculture within areas defined in this Order as HCP RMZs, TMDL RMZs, or High-Risk Area RMZs except as allowed by section B below.

3. Subwatershed average annual harvest rates from the ROWD (Attachment D) fall near or below 2% equivalent clearcut acres averaged over any 10-year period. 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 management measures, mitigations, or monitoring as a condition of enrollment.

B. Riparian Zone Protection

1. The following requirements for riparian zone protection apply throughout HRC's timberlands in the UER and are designed to ensure that HRC's management activities shall be conducted so as to implement the following TMDL hillslope indicators and numeric targets associated with watercourses and riparian zones:

   - Improvement in the quality/health of the riparian stand so as to promote: 1) delivery of wood to channels, 2) slope stability, and 3) ground cover within 300 feet of Class I and II watercourses and 150 feet of a Class III watercourse;
   - No increase in the existing drainage network through headward incision in low order channels; and
   - Decreasing length of channel with actively eroding banks.

2. HRC shall implement HCP RMZ prescriptions for riparian protection as specified in section 6.3.3.7 of the HCP and as outlined in the ROWD submitted by HRC on September 22, 2015 with modifications as described in its February 1, 2019 proposal and as prescribed herein.

3. HRC shall retain a minimum of 50% post-harvest forest overstory canopy cover well distributed throughout the area within 300 feet from Class I and II watercourses and 150 feet from Class III watercourses, or to the first hydrologic divide with the following exceptions:

   a. Group selection forest openings, as defined in California Code of Regulations, title 14, section 913.2 up to 2.5 acres in area may be used on slopes less than 40% between 150 and 300 feet of Class I and II and 100 and 150 feet of a Class III watercourse.

   b. Restorative silvicultural methods limited to Variable Retention, Rehabilitation of Understocked Areas, and Sanitation Salvage (as defined

in California Code of Regulations, title 14, section 913.3) may be used on slopes less than 40% between 150 and 300 feet of Class I and II watercourses and 100 and 150 feet of a Class III to address timber stand conditions impacted by disease, animal, or mechanical damage or less desirable species including grand fir, alder, and tanoak.

4. With the exception of existing roads and to access permitted watercourse crossings, no use of ground-based equipment shall occur within:
   a. 150 feet of a Class I watercourses;
   b. 75 feet of a Class II watercourse;
   c. 50 feet of a Class III watercourse, or to the closest hydrologic divide;
5. Erosion control practices in riparian management zones:
   a. Implement erosion 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. 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.
6. Avoid tractor crossings in unchanneled swales.
7. Retain trees along the center line of swales and areas of subsurface flow paths.

C. Riparian Zone Protection in High Risk Areas

High risk areas are defined as those areas identified in HRC's ROWD amendment request dated October 4, 2016, that was submitted to the Regional Water Board with an associated map titled Sensitive Bedrock Sub-Basin and Elk River Geologic Map. In addition to all of the requirements from section I.B, the following requirements apply in high risk areas:

1. Class II Watercourse Riparian Protection
   a. Between 30 feet and 200 feet or to the hydrologic divide of Class II watercourses, retain a minimum of 60% post-harvest canopy coverage.
2. Class III Watercourse Riparian Protection
   a. No harvesting within 20 feet of Class III watercourses; and
   b. Between 20 feet and 100 feet or the hydrologic divide of Class III watercourse, retain a minimum of 70% post-harvest conifer canopy coverage.

D. Road Management

1. 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. 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).
4. HRC shall inspect all roads that are accessible by standard 4-wheel drive pick-up or ATV within their Elk River ownership at least annually between April 1 and October 15.
5. HRC shall inspect storm-proofed roads as soon as conditions permit following any storm event that generates 2.5 inches or more of precipitation in a 24-hour period, as measured at the rainfall gauge as specified in the Monitoring and Reporting Program.
6. 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.

E. 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 and 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 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.

F. Wet Weather Requirements

1. From October 15th to May 1, the following wet weather requirements apply:
   a. Hauling shall be limited to permanent rocked all-season roads that meet the HCP storm-proofed standard;
   b. Hauling shall cease for a period of 48 hours following a precipitation event that results in 0.25 inches[10] or more of rainfall within any 24-hour period.
   c. For the period between October 15 and May 1, HRC shall notify the Regional Water Board or its designee within 24 hours when hauling ceases due to precipitation that results in 0.25 inches or more of rainfall within a 24-hour period. HRC shall also notify the Regional Water Board within 24 hours of the resumption of hauling.
2. Road construction or reconstruction is prohibited from October 15 to May 1 except in response to failure of a road segment or watercourse crossing that is

[10] Rainfall totals and forecasts shall be derived from the rainfall gauge specified in the Monitoring and Reporting Program.

resulting in ongoing or imminent sediment discharge, or during extended dry periods prior to November 15th.

3. Site specific erosion control measures shall be applied to newly constructed or reconstructed roads prior to any day for which a chance of rain, 30 percent or greater, is forecast by the National Weather Service from September 15 to May 1.
4. From October 15 to May 1, timber falling and cable yarding are permitted. Ground-based yarding and mechanical site preparation are prohibited from October 15 to May 1 except during extended dry periods from October 15 to November 15.
5. Road construction, reconstruction, ground based yarding, or mechanical site preparation conducted during extended dry periods between October 15 and November 15 shall cease when a 30 percent or greater chance of 0.25 or more inches of rain is forecast by the National Weather Service for the following day.
6. Additional wet weather operations shall be consistent with the ROWD and HCP wet weather prescriptions.
7. Extended Dry Periods are defined as periods during which saturated soil conditions threatening water quality do not exist. Indicators of saturated soil conditions threatening water quality include (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) creation of ruts and/or wet slurry, and/or (4) inadequate traction without blading wet soil or surfacing materials, located within 150 feet of a watercourse.

G. 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.D. 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.

H. 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, limited harvesting and additional riparian protections for Class II and III streams in high risk areas, and wet weather limitations. 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 Subsequent 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, 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 is 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. COVERAGE OF INDIVIDUAL TIMBER HARVEST PLANS

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.

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.

V. RESCISSION AND DENIAL OF COVERAGE

The Executive Officer may rescind or deny coverage for a THP under this Order if the Executive Officer makes any of the following determinations:

A. The THP does not comply with Terms and Provisions of this Order;

B. The THP is reasonably likely to result in or has resulted in a violation or exceedance of any applicable Water Quality Standards, US EPA approved load allocation, or other water quality requirement[11];

C. The THP has varied in whole or in any part from the approved THP in any way that could adversely affect water quality;

D. The THP is the subject of an unresolved water quality or procedural issue including, but not limited to, a non-concurrence filed by the Regional Water Board staff with CAL FIRE;

[11] "Water Quality Requirements" means a water quality objective (narrative or numeric), prohibition, TMDL implementation plan, policy, or other requirement contained in a Water Quality Control Plan (Basin Plan) adopted by the Regional Water Board and approved by the State Water Board, and all other applicable plans or policies adopted by the Regional Water Board or State Water Board, including, but not limited to, State Water Board Resolution No. 68-16, (Statement of Policy with Respect to Maintaining High Quality Waters in California).

E. The THP meets the Terms and Provisions of this Order, but may still result in a discharge of waste that could adversely affect water quality from any of the following:

   1. An observable increase in sediment discharge from landslides, channel or streambank erosion, or surface or gully erosion associated with harvest activities;
   2. A measurable and significant increase in turbidity or suspended sediment concentration as a result of harvest related activities;

F. Any operations on an individual, or multiple, THP(s) that would result in an average annual harvest rate in any subwatershed above 2% equivalent clearcut acres over any 10-year period that has resulted, or would be likely to result in any of the following:

   1. An observable increase in sediment discharge from landslides, channel or streambank erosion, or surface or gully erosion associated with harvest activities;
   2. A measurable and significant increase in turbidity or suspended sediment concentration as a result of harvest related activities; or

G. There are substantive errors or inaccuracies found in information submitted as part of the THP and enrollment application package that, if known at the time of application, would have resulted in a denial or limitation of coverage under this Order.

Upon receipt of a written notice of rescission or denial of coverage for a THP under this Order, the coverage of the THP under this Order is immediately terminated. Upon termination, Discharger shall immediately cease all THP activities other than activities necessary to control further discharges. Projects that are denied coverage may be required to submit a report of waste discharge for site-specific individual WDRs.

PETITION

Any person aggrieved by this action of the Board may petition the State Water Board to review the action in accordance with CWC section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday (including mandatory furlough days), the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

Certification:

I, Valerie M. Quinto, 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 May 7, 2026.

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Valerie M. Quinto
Executive Officer

LIST OF ATTACHMENTS

Attachment A – Elk River Location Map

Attachment B – Upper Elk River: Technical Analysis for Sediment (Tetra Tech, 2015)

Attachment C – Monitoring and Reporting Program

Attachment D – HRC's August 28, 2015, Report of Waste Discharge with amendments dated March 11, 2016 and October 4, 2016.

Attachment E – Upper Elk River Sediment TMDL Action Plan (TMDL Action Plan)

Attachment F – HRC's February 1, 2019, response to Regional Water Board Executive Officer's request for Revisions to Order No. R1-2016-0030.

Attachment G – Regional Water Board addendum to the subsequent mitigated negative declaration.

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