State of California
North Coast Regional Water Quality Control Board

Staff report prepared for

The Revised Categorical Waiver of Waste Discharge Requirements

for

Timber Harvesting Activities on Non-Federal Lands in the North Coast Region

Draft Order No. R1-2009-0038

By

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I. Introduction

The Regional Water Board will be considering adoption of tentative Order No. 2009-R1-0038, which if adopted would revise the existing Categorical Waiver of Waste Discharge Requirements for Timber Harvesting Activities on Non-Federal Lands in the North Coast Region (Categorical Waiver), Order No. R1-2004-0016. An Initial Study and draft Mitigated Negative Declaration to comply with the California Environmental Quality Act (CEQA) to support adoption of the Order is also to be considered concurrently with the tentative order. The Regional Water Board adopted the current Categorical Waiver in 2004. The waiver expires on June 23, 2009.

The Categorical Waiver is an integral part of a multi tiered regulatory approach, that includes: General Waste Discharge Requirements Order No 2004-0030 (GWDRs) for timber harvesting activities for projects that do not meet Waiver criteria, a conditional waiver for timber harvesting activities on Federal lands, and several individual WDRs for larger watershed wide activities on private land.

Basis for the revisions to the current Waiver

The proposed revisions are intended to comply with the waste discharge prohibitions contained in the Action Plan for Logging, Construction, and Associated Activities from the Water Quality Control Plan for the North Coast Region (the Basin Plan), State Water Resources Control Board's (SWRCB) Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy), Total Maximum Daily Loads (TMDLs) for watersheds throughout the region, and to prevent controllable sediment discharge, to protect and restore natural levels of shade to prevent elevating water temperatures, and reverse declines in populations of anadromous salmonids.

The basic intent of the Categorical Waiver is to identify those timber harvesting activities that pose a lower threat to water quality and therefore do not require the same level of oversight that individual or general Waste Discharge Requirements would provide. While regulatory oversight is reduced, protection of beneficial uses of water is maintained.

Revision Process

The Comment Period for the Categorical Waiver began on April 9, 2009 with the concurrent release of an initial study and draft mitigated negative declaration (Attachment 2) for the Categorical Waiver which updates the original negative declaration issued in 2004 to comply with the California Environmental Quality Act (CEQA).

Prior to the release of the tentative order, the Regional Water Board staff held public workshops in Fortuna on March 24, 2009 and in Yreka on April 8, 2009. Robert Klamt, Chief of the Regional Board's Timber Harvest Division, also gave a presentation to the Board of Forestry on May 6, 2009, which included an extensive question and answer session. The purpose of the workshops was both to inform interested members of the public of the proposed revisions to the Categorical Waiver, to respond to questions

members of the public, and to receive comments as early as possible in the process of revising the waiver. The current draft under consideration reflects changes made in response to exchanges during these meetings.

The Regional Water Board received 17 comment letters during the comment period that are included in the agenda package (Attachment 4). Regional Water Board Staff written responses to all public comments received by May 9, 2009 are included in Attachment 5. Based on further review and consideration of the comments received, Regional Board staff will be providing recommendation for modifications to the tentative Order. These modifications may include clarifications and more substantive recommendations. All recommendations are provided to the Regional Board in the form of track changes to highlight any changes made to the original draft Order.

Summary of Proposed revisions to the Categorical Waiver

The tentative Order includes both minor (i.e., grammar and document organization) as well as more substantial changes (i.e., revising the categories, eligibility criteria, application and enrollment procedures and, monitoring requirements). New findings provide the rationale to support additional general and specific conditions of the waiver.

The following is a list of the most notable of the proposed changes/additions:

Non-Industrial Management Plans (NTMPs)

- Erosion Control Plans (ECP) would be required to be developed and implemented for entire NTMP. Previously enrolled NTMPs would have five years or more to submit an ECP for the entire NTMP
- Yearly winter period inspections would be required during periods when timber harvesting operations are being conducted
- Landowners would be required to develop long term road management plans. The implementation schedule would be proposed by landowner
- As an erosion and sediment control measure, surface runoff from logging roads would be required to be hydrologically disconnected to the extent feasible
- As a measure to achieve the Basin Plan Temperature Objective, shade and canopy retention requirements would be required that may exceed minimum current Forest Practice Rules .

Timber Harvesting Plans (THPs)

- Erosion Control Plans (ECP) would now be required to be developed and implemented for THPs. This is a similar requirement already established in the general WDR. Previously enrolled THPs would be automatically covered under the revised Waiver, and would not be required to meet the new specific conditions.
- Two winter period inspections per year would be required
- As part of erosion and sediment control measures, surface runoff from logging roads would be required to be hydrologically disconnected

- As a measure to achieve the Basin Plan Temperature Objective, shade and canopy retention requirements would be required that may exceed minimum current Forest Practice Rules.
- THPs that proposed clear cutting could now be enrolled in the waiver, provided that stream side riparian management zones are increased to 300 feet on fish bearing watercourses (Class I), 200 feet for watercourses with aquatic habitat for non-fish aquatic species (Class II), and 100 feet on watercourses with no aquatic habitat (Class III).

II. Detailed Discussion of Revisions

The following section describes in greater detail the background of the Categorical Waiver, the process of revising the waiver, significant changes and the rationale and justification for making the changes, compliance with CEQA, and consideration of the economic impacts to landowners resulting from the changes to the waiver.

a. Background

The current Categorical Waiver for timber operations was adopted by the Regional Water Board on June 23, 2004 (Order No. R1-2004-0016). The waiver defines five categories of timber harvesting activities or Projects that when in compliance with general and specific conditions, result in "low impact" to water quality and can therefore be waived from the issuance of Waste Discharge Requirements. To be eligible, each project must first be approved by California Department of Forestry and Fire Protection (now referred to as CAL FIRE). As the lead agency for timber harvesting activities and operations in California, CAL FIRE's approval process has been certified as a CEQA functional equivalent process. Additional conditions and eligibility criteria contained in the waiver are above and beyond the FPRs and are intended to meet water quality requirements. The number and type of Projects enrolled in the Categorical Waiver since its approval in 2004 are listed in Table 1.

Table 1: Enrollment in Categorical Waiver (2004 to present)*

Year	Cat C (TMDL)	Cat D (Modified THP)	Cat E (NTMPs)	Cat F (THPs)	Compared to Total**	
					NTMPs	THPs
2004	3	1	1	6	21	305
2005	1	1	14	15	27	258
2006	9	5	20	18	28	233
2007	0	5	11	13	21	207
2008	0	2	2	9	20	199
Total	**13**	**14**	**48**	**63**	**96**	**897**

* Cat A (Fire Safe) and Cat B (Emergencies and Exemptions) are automatically enrolled in the waiver and the number are not tracked.

**This is the year that the NTMP or THP was filed with Calfire. However, these projects are not required to be enrolled in the waiver until timber harvesting operations begin. Consequently, projects may actually enroll in the waiver during a future year

Several of the proposed new Waiver conditions may be more restrictive than the current conditions. However, the revised Waiver also proposes to allow THPs that have clearcut silviculture to be enrolled, which is currently not eligible under the current waiver.

b. Basis for Revising the Waiver

The process of revising and updating the existing Categorical Waiver was guided by the following principles and needs:

- To balance the additional requirements to ensure the necessary level of protection of water quality while not making compliance so rigorous that few if any plans would qualify, essentially revising the waiver out of existence.

- To incorporate any new policy, regulation, and Basin Plan amendments, such as
  - sediment and temperature TMDLs that have been adopted since 2004
  - the State Water Resources Control Board's (SWRCB) Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS), which was approved in 2004.
  - Total Maximum Daily Load Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region,
  - Regional Board's 'Guidelines For Implementation And Enforcement Of Discharge Prohibitions Relating To Logging, Construction, Or Associated Activities' (Section 4, pg. 26-29, Basin Plan 2007),
- Declining populations of anadromous salmonids in river systems throughout the north coast region and the changes in Federal and State Endangered Species Act (ESA) listings for steelhead trout and coho salmon in the North Coast Region.

The most significant changes are intended to prevent controllable sediment discharge and protect and restore natural levels of shade to prevent elevating water temperatures, and reduce water temperatures where they are elevated.

c. Total Maximum Daily Load (TMDL)

The U.S. EPA has established sediment TMDLs for 19 watersheds in the North Coast Region, and temperature TMDLs for 7 of those watersheds. Regional Water Board staff are also developing or in the process of developing TMDLs in additional watersheds, such as the Klamath River, Russian River, Elk River, and Freshwater Creek. The TMDL process provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual waterbody impaired from loading of a particular pollutant.

Based on a review of TMDLs from throughout the North Coast Region, roads and road and harvest related mass wasting are some of the most common and significant sources of anthropogenic sediment discharge.

Regional Water Board staff conducted temperature studies during development of temperature TMDLs in the Scott and Shasta River watersheds. The studies and resulting temperature TMDLs attribute loss of effective shade caused by reductions in near stream canopy as one of the most significant factors affecting water temperature. Based on results of these studies, Regional Board staff are recommending to revise waiver conditions to require additional canopy retention on non-fish bearing streams as a direct and effective measure to meet the Basin Plan temperature objective.

d. Non-Point Source (NPS) Discharge

It is now recognized that in many areas nonpoint source discharges, such as stormwater runoff, are the principal sources of contaminant discharges to surface water and groundwater. In contrast to point sources, which discharge wastewater of predictable quantity and quality at a discrete point (usually at the end of a pipe), nonpoint source discharges are diffuse in origin and variable in quality. Management of nonpoint source discharges is in many ways more difficult to achieve, since it requires an array of control techniques customized to local watershed conditions.

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) was amended in 1999 to require the SWRCB to develop guidance to enforce the state's NPS pollution control program. The SWRCB adopted the NPS Implementation and Enforcement Policy on May 20, 2004. Nonpoint source pollution is a significant source of anthropogenic sediment discharge to streams throughout the North Coast Region, with timber harvesting and associated roads and skid trails being one of the major contributors. Polluted runoff from nonpoint sources accounts for more than 76 percent of the water bodies where Total Maximum Daily Loads (TMDLs) are required.

The NPS policy provides the State and Regional Boards consistent guidance on tools to regulate all nonpoint sources of pollution, using existing permitting authorities already established in Porter-Cologne. Nonpoint source pollution must be regulated by one of the following:

1. Basin Plan prohibitions
   The north coast region has adopted Basin Plan Prohibitions specific to timber harvest activities; logging, road construction, and associated activities:

   Prohibition 1: 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.

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

2. Waste Discharge Requirements (WDRs)
The Region a has implemented a multi-tiered regulatory approach that includes: General Waste Discharge Requirements, Order No 2004-0030 (GWDRs) for timber harvesting activities, and several individual WDRs for larger watershed wide activities on private land.

3. Waivers of WDRs.
Categorical waivers are also an integral part of the Region's regulatory program for regulating non-point source pollution resulting from timber harvesting activities. In June 2004, the Regional Water Board adopted Order No. R1-2004-0016, Categorical Waiver for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region (Categorical Waiver). Following THP approval by CAL FIRE, and prior to beginning timber harvest activities, landowners must apply for coverage under the General WDRs, the Categorical Waiver, an individual wavier or WDR, or in some cases a Watershed-wide WDR.
In March 2004, the Regional Water Board adopted Order No. R1-2004-0015, Categorical Waiver for Discharges Related to Timber Activities on Federal Lands Managed by the United States Department of Agriculture, Forest Service (USFS) in the North Coast Region. The USFS must seek coverage under this Waiver prior to beginning timber harvest activities.

Revisions to the Categorical Waiver, such as expanded ECP coverage, are intended in part to comply with the NPS policy. Furthermore, for waivers to be effective, they must be:

- conditional, meaning they can be terminated at any time,
- consistent with any applicable Basin Plan,
- subject to renewal every five years,
- enforceable.

e. Recent ESA Listings

State and Federal ESA listings for evolutionarily significant units (ESUs) for coho have been revised since the existing Categorical Waiver was approved in June 2004. Changes in State and Federal listings for anadromous salmonids include the following:

- In March, 2005, coho salmon between the Oregon border and Punta Gorda in Humboldt County were listed as threatened under the State ESA and continue to be listed as threatened under the Federal ESA.
- Coho salmon between Punta Gorda and San Francisco Bay were listed as endangered by the California ESA in March, 2005 and in August, 2005 under the Federal ESA

Steelhead trout and Chinook salmon remain listed as threatened under the Federal ESA throughout much of the North Coast Region. Both State (California Department of Fish and Game) and Federal (NOAA Fisheries) have approved or are working on recovery plans for listed Pacific salmonids. Protection and restoration of terrestrial habitat by reduction of anthropogenic sediment sources and retention of natural shade, which are goals of existing and revised waiver conditions, are essential components of any recovery plan.

f. Guidelines For Implementation And Enforcement Of Discharge Prohibitions Relating To Logging, Construction, Or Associated Activities (Section 4, pg. 26-29, Basin Plan, 2007)

The Basin Plan, amended in January 2007, includes guidelines with the objective of (1) defining the criteria by which the Regional Water Board will consider that violations of the prohibitions have occurred or threaten to occur; (2) instructing the Regional Water Board staff of procedures and actions they will take in implementing the prohibitions; (3) advising all potential dischargers of the scope and intent of the prohibitions; and (4) advising all interested parties that it is the intent of this Regional Water Board to carry out its responsibilities in this matter in a reasonable and effective manner. The proposed Waiver revisions are consistent with the Basin Plan.

III. **New Findings and Directives**

Significant new findings are presented below along with a brief summary of justifications and references supporting each one.

Finding 9

Populations of several species of anadromous salmonids listed as threatened or endangered under both the Federal Endangered Species Act or the California Endangered Species Act have declined significantly during the past half century in the majority of waterbodies in the North Coast Region. Degradation of freshwater habitat by land use activities is a major contributing factor to the decline in populations, with discharges of waste from timber harvesting and associated activities among the most significant factors.

Supporting basis

Declines in populations of all species of Pacific salmonids that were once plentiful throughout the North Coast Region have been well documented. The causes of the declines may be varied and the subject of much debate, however, it is widely recognized that degradation of terrestrial habitat due to various land uses is a major factor. There is abundant evidence that timber harvesting has been one of the land uses that has had profound impacts on waterbodies in the region and is associated with the degradation of salmonid habit and the resulting population declines. Widespread post

WWII tractor logging, with significant road and skid trail construction and practices that pre-dated the current Forest Practice Rules (FPRs) caused massive disturbance, resulting in huge anthropogenic sediment inputs to streams and loss of riparian habitat and shade.

Many of these past practices are now longer permitted under the FPRs. The impacts of modern timber harvesting practices are less well understood. However, many studies have established a direct link between upslope disturbance from timber harvesting and declines in salmonid populations. Reeves et al. (1993) found that coastal river basins where timber harvest exceeded 25% disturbance supported only one salmonid species, while river basins with lower percent harvesting supported more diverse assemblages. Coats and Miller (1981) concluded that river basin tributaries that were harvested at greater than 30% of the watershed in a ten year period suffered substantial sediment impacts. Among the many additional studies that show a direct causal link between timber harvesting and impacts to salmonid are Brown, et al. (1994), Cederholm, et al. (1981), and Meehan (1991).

Finding 10

Harvest methods resulting in intensive canopy removal, such as clearcutting, can cause impacts to water quality from higher and more intensive peak flows, increased surface erosion, and higher rates of mass wasting. Unevenaged management or evenaged management that retains a substantial overstory canopy is less likely to result in adverse impact to water quality. As such, harvesting methods that result in intensive canopy removal are limited under this Waiver. Intensive canopy removal, such as clearcutting, is allowed under this Waiver when buffers are provided for streams that are significantly larger than the minimum required under the Forest Practice Rules.

Supporting basis

Some of the effects of intensive timber harvesting, particularly clearcutting, include changes in hillslope hydrology and slope stability, increases in sediment discharges, and changes in downstream channel morphology. Forest canopy intercepts, traps, and reevaporates approximately 20% of storm rainfall (Reid, 2000). Consequently, removing canopy affects hydrologic processes throughout the watershed. There is an increase in the effective rainfall that reaches the forest floor, which increases the amount of surface runoff and infiltration (Jones and Grant, 1996).

Ziemer (1981a) documented increased peak flows following logging, particularly during storm events that occur early in the rainy season. Increased runoff and higher peak flows increase discharge throughout a drainage during storm events, causing an increase in the amount of sediment that can be mobilized and transported to a watercourse. Lewis (1998) found increases in suspended sediment load correlated with increased flows following logging. Recently clearcut slopes are more susceptible to mass wasting (landslides) due to loss of material strength provided by the root system of trees (Ziemer, 1981 b) and increased pore water pressures (Keppeler, 1994). Several studies, including Robison et al. (1999), Schwab (1983), Swanson and Dyrness (1975),

Gresswell et al. (1979), have observed increased rates of landslides on recent clearcuts, so that a causal connection can be inferred.

Tree removal also affects groundwater and soil moisture conditions. Increased infiltration rates can cause a rapid rise in transient perched groundwater levels causing an increase in pore pressure. Increased pore pressure in the subsurface decreases effective soil strength, thereby increasing the risk of causing or reactivating landslides (Reid, 2000). Another significant factor leading to an increase in pore pressures after removing trees is the decrease in the amount of groundwater removed by evapotranspiration. Keppeler (1994) found increases in the pore water pressures following clearcut logging in Caspar Creek.

Finding 11
Timber harvesting activities on landslides, or on those portions of the landscape that are vulnerable to landsliding, can increase rates of sediment delivery from landslides. This increase in the rate of landslide related sediment delivery can be prevented or minimized by avoiding or minimizing ground disturbance and canopy removal on vulnerable areas, or implementing recommendations made as a result of site characterization by a licensed geologist experienced in slope stability investigations. As such, no timber harvesting activities may be conducted under timber harvesting plans covered by this Waiver on landslides and geomorphic features related to landsliding without site characterization and input into Project design by a licensed geologist.

Supporting basis
See above discussion of impacts of canopy removal on slope stability.

Construction of logging roads and skid trails associated with timber harvesting activities on steep forested slopes with high landslide potential likely causes more landslides than any other factors. Review by a licensed geologist on areas identified as vulnerable to mass wasting processes is necessary to characterize the risk of increasing the rate of landslide related sediment delivery from timber harvesting activities and inform management decisions to minimize that risk.

Finding 12
Sediment discharge sources, or threatened discharge sources, from past timber harvest activities are present throughout the north coast region and continue to pose risks to water quality. A condition of the Waiver requires landowners to prepare Erosion Control Plans, which identify controllable sediment discharge sources and implement prevention and minimization measures, thereby eliminating a significant pollutant source from those Project areas.

Supporting basis
Preparation of erosion control plans submitted to comply with water quality requirements is widely accepted throughout the timber industry as a standard part of timber harvesting planning. Current regulations from various state and federal agencies

are intended to prevent and minimize creation of new sediment discharge sources. Erosion control plans are an effective means for landowners to survey, identify, and implement plans to treat existing controllable sediment discharge sources (CSDS) that meet the following conditions:

1. is discharging or has the potential to discharge sediment to waters of the state in violation of water quality requirements or other provisions of this Categorical Waiver,
2. was caused or affected by human activity, and
3. may feasibly and reasonably respond to prevention and minimization management measures.

CSDS sites can vary from a recently constructed site that is not functioning properly to older sites, often referred to as "legacy" sites, that were results of activities that predated current regulations and harvesting practices. For example, so called Humboldt crossings were stream crossing that were made with logs placed into a stream with no water conveyance and covered with dirt to create a running surface for log trucks and heavy equipment. During storm events, these crossing may fail, resulting in a discharge of earthen material into the stream. Many crossings such as these and other types of sites with stored sediment remain scattered across the landscape throughout the North Coast Region, much of it in a position where it may discharge to watercourses, constituting a threatened discharge.

Many old sites may have initially failed in the past, but stored sediment, that will continue to discharge over time, remains. The prevalence of existing sites on timberlands in the region essentially represent "time release" sediment sources widely distributed throughout most watersheds. Much of the anthropogenic sediment originally discharged from past timber harvesting remains stored in fluvial systems as is attested by the large number of watersheds listed as impaired due to excess sediment. Ongoing discharge of sediment from dispersed sources likely reduces the capacity of streams to remove the stored material and slows the process of recovery. Erosion control plans are one of the most effective tools for achieving TMDL and NPS Policy compliance and restoration of impaired beneficial uses.

The third element from the definition of a CSDS above, "*may feasibly and reasonably respond to prevention and minimization management measures*," allows a good deal of flexibility and professional judgment. Regional Water Board staff and landowners frequently weigh the relative merits of treating a site against the potential impacts from renewed disturbance of the site and unresolved disagreements are uncommon.

<u>Finding 13</u>
Most water bodies in the North Coast Region are listed as impaired due to either excess sediment and/or elevated water temperature (Section 303(d) of the Clean Water Act). Discharges of sediment resulting from past land use activities, with timber harvest being one of the leading sources, are recognized as major contributing factors causing the

impaired conditions. Federal regulations require that a total maximum daily load (TMDL) be established for 303(d) listed water bodies for each pollutant of concern.

Supporting basis

With the exception of the Smith River, every major watershed in the North Coast Region has been listed under Section 303d of the Clean Water Act for impairments due to excess sediment and/or elevated water temperatures. Technical TMDLs from throughout the region as well as many other published watershed studies and reports such as the North Coast Watershed Assessment Program [NCWAP], the Klamath Resource Information System [KRIS], Reid (1994), Reid (1993), Ligon (1999), Dunne et al. (2001), have established a strong causal connection between upslope disturbance from timber harvesting activities and in-stream impacts. There is clear and substantial evidence that severe impacts to streams throughout the north coast resulted from timber harvesting activities conducted prior to the enactment of the Forest Practice Act and implementation of the Forest Practice Rules. It is less clear what are the ongoing impacts that occur from current timber harvesting activities conducted in accordance with the Forest Practice Rules. There is general agreement that the magnitude of impacts to streams from timber harvesting under the FPRs have decreased dramatically over impacts from earlier logging. Some maintain that no impacts occur from timber harvesting under the FPRs. Examples exist of watershed wide impacts occurring from timber harvesting occurring when significant amounts of road construction and intense harvesting are concentrated within a watershed in a short period of time, such as evidenced in Elk River and Freshwater Creek in Humboldt County.

The Board of Forestry's Monitoring Study Group, a multi-agency group who's goal is to develop and implement a long-term monitoring program that will provide timely information on the implementation and effectiveness of forest practices related to water quality, have repeatedly found that the FPRs are mostly effective when implemented properly.

Finding 14

The United States Environmental Protection Agency (EPA) has established sediment TMDLs for 19 watersheds in the North Coast Region. The majority of these TMDLs identified erosion from roads and timber harvest as major contributing factors to sediment discharge from anthropogenic sources and called for significant reductions in such discharges. The EPA includes recommendations to reduce sediment delivery from the major sources identified in those TMDLs. The Total Maximum Daily Load Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region (TMDL Implementation Policy), provides that the Regional Water Board shall control sediment pollution by using existing permitting and enforcement tools. The goals of the Policy are to control sediment waste discharges to impaired water bodies so that the TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment.

Supporting basis

Combined with Finding 15

Finding 15

The TMDL Implementation Policy also directed staff to develop the Staff Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds (Work Plan) that describes the actions staff are currently taking or intend to take over the next ten years, as resources allow, to control human-caused excess sediment in the sediment-impaired water bodies of the North Coast Region. This Order furthers the objectives defined in the TMDL Implementation Policy and Work Plan. Conditions and eligibility criteria required for enrollment in this Waiver are intended to contribute to reductions in anthropogenic sediment discharges from the sources identified by EPA and constitute early implementation of TMDLs, thus furthering the objectives contained in the Work Plan.

Supporting basis

Regarding findings 14 and 15, the Categorical Waiver is an essential component of the Regional Water Board's regulatory framework for the TMDL Implementation Policy. Approximately 61% of the North Coast Region drains to rivers and streams that are impaired by too much sediment (2006 Clean Water Act Section 303(d) list).

As part of the an effort to control sediment waste discharges and restore sediment impaired water bodies, the Regional Water Board adopted the Total Maximum Daily Load Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region, which is also known as the Sediment TMDL Implementation Policy, on November 29, 2004. This Policy was adopted through Resolution R1-2004-0087. The Sediment TMDL Implementation Policy states that Regional Water Board staff shall control sediment pollution by using existing permitting and enforcement tools. The goals of the Policy are to control sediment waste discharges to impaired water bodies so that the TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment.

The Sediment TMDL Implementation Policy also directs staff to develop: (1) a Work Plan, that would describe how and when permitting and enforcement tools are to be used; (2) the Guidance Document on Sediment Waste Discharge Control; (3) the Sediment TMDL Implementation Monitoring Strategy; and (4) the Desired Conditions Report

Supporting basis for Findings 16 through 19 are combined

Finding 16

The temperature of a stream is significantly influenced by the amount of solar radiation the stream receives. Removing shade canopy in riparian zones can increase the amount of solar radiation that reaches a watercourse, potentially resulting in an increase in water temperature. Canopy retention standards above the minimums established in the Forest Practice Rules and restrictions on shade reduction required under this Waiver are necessary to meet Basin Plan Temperature Objectives.

Finding 17

The North Coast Region has adopted Temperature TMDLs for 12 watersheds in the north coast region of California. These watersheds include three of the major Klamath

River tributaries: the Salmon, Scott, and Shasta River watersheds. The twelve temperature TMDLs have evaluated the effects of shade on stream temperatures and have consistently reached the same conclusion regarding stream shade. These conclusions are consistent with published literature and temperature analyses conducted in the Pacific Northwest.

The Basin Plan contains the following temperature objectives, which apply to surface waters:

- *The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.*
- *At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature.*
- *At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperature.*

Finding 18
Given the similarity among the majority of north coast watersheds and the universal nature of the laws of thermodynamics, the conclusions of shade-related analyses from previous temperature TMDLs apply region-wide, and especially to those tributaries not already assigned TMDL shade allocations. In order to protect, maintain, or restore natural water temperature, riparian shade controls are also needed in many watersheds not subject to an existing TMDL Action Plan or in watersheds that are not currently impaired due to elevated water temperatures.

Finding 19
The load allocation for excess solar radiation assigned in previous TMDLs is also an appropriate allocation for excess solar radiation to meet Basin Plan temperature objective in watersheds throughout the North Coast Region. The load allocation for solar radiation is expressed as its inverse, shade. The load allocations for this source category are the shade provided by topography and full potential vegetation conditions at a site, with an allowance for natural disturbances such as floods, wind throw, disease, landslides, and fire. Riparian zone canopy and shade retention standards included as conditions of this Waiver are intended to preserve natural shade to meet the Basin Plan temperature objective.

Supporting basis for Findings 16 through 19.
Much of the documentation supporting findings 16 through 19 is contained in the TMDLs and staff reports for the Scott and Shasta Rivers. Much of the supporting work is based on temperature studies conducted by Regional Water Board staff during development of the TMDLs, and is described in detail in those documents. While the water temperature studies conducted for development of those TMDLs is specific to the Scott and Shasta Rivers, application of some aspects of their conclusions to a wider geographic extent can be supported due to the universal nature of the physical processes involved in transfer of heat to streams.

Direct solar radiation is the primary factor influencing stream temperatures in summer months. The energy added to a stream from solar radiation far outweighs the energy lost or gained from evaporation or convection (Beschta and others, 1987; Sinokrot and Stefan 1993; Johnson, 2004). Because shade limits the amount of direct solar radiation reaching the water, it provides a direct control on the amount of heat energy the water receives.

Shade is created by vegetation and topography; however, vegetation typically provides more shade than topography. The shade provided to a water body by vegetation, especially riparian vegetation, has a dramatic, beneficial effect on stream temperatures. The removal of vegetation decreases shade, which increases solar radiation levels, which, in turn, increases stream temperatures. Additionally, the removal of vegetation increases ambient air temperatures, can result in bank erosion, and can result in changes to the channel geometry to a wider and shallower stream channel, all of which also increase water temperatures.

The following reasoning supports the approach of applying the principles governing increases in water temperature to guide specific conditions regulating canopy retention in the Categorical Waiver throughout the Region:

- Temperature modeling results show that reducing canopy along the riparian zone from 95% to 85% does not result in a significant increase in water temperature, but reducing canopy from 95% to 50% results in an increase in stream temperature between 0.5 C to 1.5 C, with an additional 0.5 C increase when microclimate effects are considered,
- These results indicate that minimum canopy retention standard allowed under the FPRs can lead to increases in stream temperatures *under scenarios simulated in the model [note- different modeled scenarios could lead to significantly different results, including the potential for both larger as well as smaller changes in stream temperatures],*
- Forest Practice Rules for retention of canopy on Class II watercourses may not meet the Basin Plan Temperature Objective,
- The Temperature Objective applies to streams throughout the entire region, *not just those waterbodies impaired due to elevated water temperature*,
- The best strategy for maintaining (or restoring) the natural temperature regime of surface waters is to maintain (or restore) natural shade,
- Riparian conditions throughout the region vary in an infinite number of ways, and as such, there is an infinite number of site specific tactics for maintaining (or restoring) natural shade on streams.
- The revised categorical waiver allows landowners the flexibility to propose site specific prescriptions for harvesting trees in the riparian zone when they can demonstrate to the satisfaction of Regional Water Board staff that the proposed prescriptions meet the temperature objective,
- Landowners wishing to harvest trees in the riparian zone may also choose the general default strategy that Regional Water Board staff determined to be adequate to meet the temperature objective for harvesting trees in the riparian

zone, along fish bearing streams (Class I) and streams with aquatic habitat for non-fish aquatic species (Class II), which is to retain 85% of overstory canopy within 75 feet of a Class I (50 feet for Class II) and 65% overstory canopy in the remainder of the WLPZ.

We acknowledge that in comparing different scenarios with the model we took a conservative approach. In developing protection standards to meet Basin Plan objectives and meet the waiver "low impact" standard, we have acted out of an abundance of caution and believe that a conservative approach is warranted. We believe that the result from the temperature model showing an increase in water temperature when canopy along the riparian zone is reduced from 85% to 50% is valid under the modeled conditions, as is the conclusion that Forest Practice Rule minimum canopy retention standards for Class II watercourses do not fully meet the Basin Plan temperature objective. While it may not be realistic to assume that the canopy throughout the entire riparian zone would be harvested to the minimum levels allowed at any given time, many watersheds in the north coast region have been subject to quite high rates of harvest under current rules and it is useful to evaluate the worst case scenario.

IV. New or Revised Special Conditions

The new conditions that will result in additional work by Dischargers fall into three general categories;

1. Erosion Control Plans (ECPs) required for NTMPs and THPs
2. Road Management Plans (roads) for NTMPs
3. Shade canopy retention requirements to implement Basin Plan Temperature Objective.

The section below describes new or revised conditions that apply to the sections of the waiver that apply to NTMP (Categorical Waiver E) and THP (Categorical Waiver F) which have the most significant revisions and may result in additional cost to landowners. The majority of the new conditions address either conditions to minimize sediment discharges or that prevent elevated receiving water temperature.

Erosion Control Plans (ECPs) and Road Management Plans are two important tools to achieve the objective of reducing and preventing sediment discharges from current and former timber harvesting practices. They are discussed together because there is significant overlap between them, both in their goals, which are prevention and minimization of sediment discharge, as well as spatially, in that the majority of ECP sites are typically located on roads.

Much of the ongoing sediment discharges from timberlands comes from old truck roads, skid trails, watercourse crossings, and landings used for timber activities that have resulted in soil, rock, and other earthen materials placed in locations where it is or can be discharged (threatened discharges) to waters of the state in violation of the waste

discharge prohibition 2 from the Action Plan for Logging, Construction, and Associated Activities contained in the Basin Plan, which states:

> *"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."*

Part of an active THP requires that older roads are upgraded to current standards. Removing sediment that is temporarily stored in a position where it will likely discharge to streams is widely accepted within the timber industry as effective means of reducing sediment inputs from both past and ongoing timber activities. Expanding the practice of development and submission of ECPs to the waiver is a reasonable adaptation of existing practice to restoration of sediment impaired waterbodies and furthers the goal of implementation of TMDL and NPS Policy.

It would not be in the public interest to waive waste discharge requirements without a concurrent effort to treat threatened discharges within the project site concurrently with timber harvesting activities. The following is a summary of the ECP and road management plan requirements:

a. Development of Erosion Control Plans (ECP) will be required for an entire area of a new Non-industrial Timber Management Plan (NTMP) (Cat Waiver E) prior to seeking coverage under the revised Non-Federal Timber Waiver. Currently, the ECP is required only for those portions of an NTMP where harvest operations occurred. Extending the ECP to the entire plan area will increase the likelihood that potential sediment discharge sources will be identified and treated prior to failure.

   In response to potential economic strain this additional requirement would place on landowners, NTMPs that were waived under the 2004 waiver will have five years to prepare an ECP and until the first NTO submitted after June 4, 2014 to implement with this condition.

b.. Development of Erosion Control Plans (ECP) will be required for THPs (Cat F). The current waiver does not require the THPs include an ECP. The new requirement will likely result in controllable sediment discharge sources being identified and corrected on a larger land base. ECPs are commonly prepared for THPs that are enrolled in the Region's General WDR.

c. Two winter period inspections are proposed along with preparation of an annual report for Categories E and F. Inspections are intended for landowners to monitor project areas to ensure measures to prevent and minimize sediment discharges are effective, to identify and correct problems in a timely manner, and to provide a feedback mechanism to the Regional Water Board on the

effectiveness of conditions of the Non-Federal Timber Waiver. This is an essential component, which will likely increase the effectiveness of ECPs in controlling sediment discharge. A monitoring component also complies with one of the key elements of the NPS Implementation and Enforcement Policy.

d. Road management plans are intended to continue to prevent and reduce sediment discharges once timber harvest activities are completed. Portions of roads where surface runoff can directly discharge to watercourses would be required to be treated, such as by hydrologically disconnecting, to the extent feasible. Hydrologically disconnecting roads means minimizing alteration of natural drainage patterns and preventing concentrated storm runoff from discharging into watercourses. This is an effective method to reduce the potential for sediment delivery to watercourses from surface erosion on roads on a greater land base than previous waivers.

   Since roads used for logging of NTMPs are often used for other uses other than logging, the waiver proposes to require long term management plans for roads (Road Plan) be developed for all NTMPs. The goal of Road Plans is to prevent and minimize sediment discharge from roads by ensuring that roads and road watercourse crossings meet current standards and are maintained on a regular basis. The Road Plan requires Project proponents to inventory roads and road watercourse crossings and implement a schedule for upgrading and maintaining road segments that do not meet current standards. Landowners would have five years after enrolling their NTMP in the Wavier to submit the Road Plan.

<u>Shade canopy retention requirements to implement Temperature Objective.</u>

In order to be waived from the issuance of waste discharge requirements, a NTMP and or THP should implement the most conservative and protective method to ensure that the temperature objective is met and natural levels of shade on streams are maintained. The Basin Plan temperature objective for COLD interstate waters, specifies that the following applies to surface waters:

"The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.
At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature."

Elevated water temperature can be a significant limiting factor for anadromous salmonid and is often linked to the loss of riparian vegetation and to a lesser extent excess sediment. During preparation of the Scott River Temperature TMDL, Regional Water Board staff studied the affects of reductions in direct shade on streams from removal of trees in the riparian zone that provide direct shade to watercourses. Temperature modeling conducted as part of that study showed that reductions in canopy density

along the entire riparian zone along three miles of stream from 95% to 85% produced minimal changes in water temperature. However, when shade was reduced from 95% to 50%, significant water temperature increases of 0.5 C to 1.5 C would occur. When microclimate effects are taken into account temperatures may increase an additional 0.5 C. The results of the temperature study demonstrates the canopy retention standards for Class II watercourses in the Forest Practices Rule, which allow for removal of 50% of the total canopy (shade) covering the ground, is not adequate to maintain natural shade.

To comply with the Regional Water Board water temperature objective, project proponents may propose an approach for meeting that objective. In lieu of an acceptable approach to meeting the temperature objective for natural stream temperatures, project proponents can comply with a minimum 85% overstory canopy within the first 50 feet of watercourses that have cold-water beneficial uses or that are within 1000 lineal feet of a fish bearing streams (defined as Class II watercourse and lake protection zone (WLPZ) in the Forest Practice Rules) and 65% retention within the remainder of the WLPZ. The current Waiver requires THPs to retain a 70% overstory canopy throughout the entire Class II WLPZ. The current waiver does not require NTMPs to maintain WLPZ canopy beyond that established in the forest practice rules.

The recommended condition provides for project proponents to propose shade canopy to be retained, based on site specific conditions, when it can be demonstrated that such alternatives provide equal or better protection. The shade requirement may extend outside the WLPZ when the overstory canopy within the first 75 feet of a Class I WLPZ (50 feet for Class II WLPZs) is less than 85% or when the overstory canopy beyond the first 75 feet of a Class I WLPZ (50 feet for Class II WLPZs) is less than 65%. The 2004 Non-Federal Timber Waiver did not contain conditions for retention of shade trees beyond the Forest Practice Rules. This is intended to meet the region wide Basin Plan temperature objective.

<u>THPs that have Clearcutting can be waived</u>
To encourage more THPs to qualify for the waiver, a new condition is proposed that would allow project proponents of THPs that have clearcutting to be waived when additional stream buffers are in place: Landowners and representatives of the timber industry have expressed their wish that more plans be eligible for the waiver. Since the purpose of the Waiver is for low impact projects, we have sought to craft conditions that would expand the pool of plans for which it would be appropriate to waive WDRs, while still ensuring that such plans could be considered to be “low impact.”

The new eligibility criterion is proposed that allows evenaged (ie. clearcutting) harvesting methods, which is defined in the Waiver as post harvest canopy closure of less than 65%, comprised of commercial species at least 30 feet in height. To be eligible, the Project must include a riparian management zone (RMZ) within 300 feet of a Class I watercourse, 200 feet from a Class II watercourse, and 100 feet of a Class III watercourse. Harvesting within the RMZ would be: 1) no harvest for the first 30 feet on Class I and II watercourses and 10 feet for Class III watercourse; 2) retention of 85%

total canopy between 30 and 150 feet from Class I watercourses, 30 and 100 feet of Class II watercourses, and 50 feet of Class III watercourses; and 3) retention of 65% overstory canopy between 150 and 300 feet Class I watercourses, 100 and 200 feet of Class II watercourses, and 50 and 100 feet of Class III watercourses.

Expanding the waiver to include clearcutting with riparian zone restriction may increase the number of harvest plans that will be eligible for the Waiver while ensuring that timber harvesting activities do not pose a significant threat to water quality.

I. Economic considerations

We recognize that some of the proposed conditions represent and additional cost to the landowner. It is important for the Regional Board to consider economics in its decision process for this Waiver. We have asked stakeholders for estimates of what it might cost to comply with the conditions of the updated waiver. In these economic considerations, we hope to provide the board with a range of costs that stakeholders believe they may incur when complying with new requirements under the updated waiver.

A full economic analysis is beyond the scope of this project. A full economic analysis would require research on normalized costs of conducting inspections, preparing technical documents, implementing erosion control measures, and reducing harvest. It would also require research into the cost equivalents of environmental benefits that would occur as a result of the increased protections under the waiver. Such an analysis would be invaluable but would require a staff time commitment greater than that for the waiver renewal itself. It is not reasonable at this time to provide a full economic analysis.

Instead, we hope to provide specific examples of what stakeholders believe to be the economic impacts of waiver compliance. We have asked stakeholders for estimates of what it will cost to comply with the conditions of the updated waiver and have attempted to solicit an average cost of compliance by asking generalized questions with given acreages. We received responses from three professionals, and are not including in the discussion any actual estimated dollar amounts. We did not ask for the costs of implementing the waiver, such as installing culverts and upgrading roads, because ownerships within our region are too diverse to offer a generalized impression of these costs. Case-by-case discussion of the proposed revisions follows:

- Development of Erosion Control Plans (ECP) will be required for an entire area of a new Non-industrial Timber Management Plan (NTMP) prior to seeking coverage under the revised Non-Federal Timber Waiver.

  Based on comments made during the public workshop on March 24, 2009 in Fortuna, this new condition will add a financial cost for landowners with existing NTMPs, as it requires a forester to conduct a survey of the project area and prepare the inventory and implementation schedule. In order to somewhat reduce the potential economic impact to these landowners, older NTMPs that were waived

under the 2004 waiver will have until the first NTO submitted after June 4, 2014 to comply with this condition.

For new NTMPs, the added costs associated with development of an ECP would be associated with the time it takes to prepare the ECP and make estimates as to volume and probability of delivery at each site. The forester will already be evaluating the entire plan area so minimal additional costs would be incurred for spending additional time in the field. The added costs associated with the development of an ECP on new NTMPs is minimal.

- A new condition for Category F that ECPs be developed and implemented for Timber Harvesting Plans (THP). `

  Again, the added costs associated with development of ECPs for category F THPs would be associated with the time it takes to write up the ECP and make estimates as to the volume and probability of delivery at each site. The forester will already be evaluating the entire plan area so minimal additional costs would be incurred for spending additional time in the field. The added costs associated with the development of an ECP for category F THPs is minimal.

- Erosion control plans submitted for compliance with conditions of Categories E and F now will include two winter period inspections of the project area and submittal of an annual report to the Regional Water Board.

  Added costs for two winter inspections on category E and F plans would be associated with taking the time to do the inspections or paying a forester to do them, writing the inspection report, and sending it in. These would be entirely new costs for category E and F plans. The Waiver does not require that qualified professionals conduct the inspections. This can eliminate the additional expense of paying a forester by allowing landowners to conduct the inspections. The inspections constitute an unknown, but recognized additional cost to verify that the erosion control measures are performing adequately, and to identify and correct them where they are not.

- Once timber harvest activities are completed, roads on THPs and NTMPs will now be required to be hydrologically disconnected from watercourses, to the extent feasible. Road segments that cannot feasibly be hydrologically disconnected from watercourses shall be treated to prevent and minimize surface erosion.

  This condition closely resembles FPR criterion for roads, which 14CCR 923.4 requires must be, "maintained in a manner which minimizes runoff, soil erosion, and slope instability and which prevents degradation to the beneficial uses of water during timber operations and throughout the prescribed maintenance period." This condition is needed to encourage landowners to stabilize the surface on road segments that cannot be disconnected from watercourses. There is no specific rule requiring stabilizing the surface of road segments that drain directly to watercourses.

Added costs for hydrologically disconnecting roads would vary widely based on ownership. Some ownerships will already have disconnected some or all of their roads and the number of watercourse crossings on ownerships will vary.

On new THPs and NTMPs, the forester will already be evaluating the entire plan area so minimal additional costs would be incurred for spending additional time in the field. On existing NTMPs, the landowner would incur the cost of evaluating the road system. The added costs from performing the work of hydrologically disconnecting the roads would vary based on how much road in an ownership is already disconnected and how many watercourse crossings exist. The additional cost of stabilizing the surface on road segments the drain directly to watercourses would vary from significant for the most robust treatments, such as paving or chip sealing, to minimal treatments such as slash packing (packing tree branches and other vegetation generated during timber operations into the road surface) or seeding and mulching. The added costs for hydrologically disconnecting roads can be expected to range from minimal to high based on the ownership.

- Long term management plans for roads (Road Plan) will now be required to be developed for all NTMPs.
  Much of what is required under the proposed Road Plans is already required under the FPRs. Added costs for developing long term management plans would vary based on ownership. There would be overlap with the ECP requirement described above and with existing requirements under the FPRs. Costs would be related to inventorying the road system, designing and writing up a management plan, performing inspections and writing reports according to a self-designed inspection and reporting plan, and performing additional road work. The added costs for developing long term management plans would range from minimal to high based on the ownership.

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