

**Public Comments and Responses  
On the  
Staff Report and Basin Plan Language  
For the  
Policy for the Implementation of the Water Quality Objectives for  
Temperature and Action Plans for the Mattole, Navarro, and Eel River  
Watersheds**

**November 2013**

The comments received on the draft *Policy for the Implementation of the Water Quality Objectives for Temperature* (Policy), *Action Plans for the Mattole, Navarro, and Eel River Watersheds Policy* (Action Plans), and the *Staff Report Supporting the Policy for the Implementation of the Water Quality Objectives for Temperature and Action Plan to Address Temperature Impairment in the Mattole River Watershed, Action Plan to Address Temperature Impairment in the Navarro River Watershed, and Action Plan to Address Temperature Impairment in the Eel River Watershed* (Staff Report) are presented below. Regional Water Board staff has grouped the comments into three categories: general comments, comments related to the California Environmental Quality Act (CEQA), and comments related to the economic analysis.

The Regional Water Board received comments from the following individuals and organizations:

Tim Hemstreet, Pacificorp  
Jason Poburko, RPF  
Alan Levine, Coast Action Group  
George Gentry, California Board of Forestry and Fire Protection  
William Snyder, Cal Fire  
Michael Tadlock, California Licensed Foresters Association  
Daniel Myers, Redwood Chapter of the Sierra Club  
Don McEnhill, Russian Riverkeeper  
Kari E. Fisher, California Farm Bureau Federation  
Pete Ribar, Campbell Timberland Management  
Tito Sasaki, Sonoma County Farm Bureau  
Ed Valenzuela, Siskiyou County Board of Supervisors  
Matt Greene, RPF  
Claire McAdams, McAdams Lands LP  
Vivian Helliwell, Pacific Coast Federation of Fishermen's Associations  
Rob DiPerna, Environmental Protection Information Center  
Jane E. Nielson

## **General Comments and Responses**

### **General Approach of Temperature Policy**

To provide context, this response first describes the general approach of the Policy for the Implementation of the Water Quality Objectives for Temperature (Policy) before addressing specific comments. The controlling language of the Policy is articulated in the three-page “Policy Statement for Implementation of the Water Quality Objective for Temperature in the North Coast Region” (Order No. R1-2012-0013). The very first sentence of the Policy incorporates the Temperature Resolution by reference. The Temperature Resolution contains more detail and specifics related to the second sentence of the Policy, which provides:

“The Regional Water Board shall address sources of elevated water temperature region-wide but on a case-by-case basis in the context of a given permit or other action as appropriate and necessary to reduce impairments and prevent further impairments.”

Any specific temperature requirements or other actions will be developed (if not already developed) in a site-specific public process, and will allow for additional input from the regulated community and the public. The Policy does not dictate any specific management measure that must be imposed, and contains a clear reservation of authority and discretion to develop measures for a specific land use, activity or geographic area.

The Basin Plan language is necessarily broad to articulate a general strategy and to avoid the discussion of specific programs and permits. This structure eliminates the problem of antiquated language in the Basin Plan as programs and permits are developed and implemented over time. In contrast, the Resolution describes specifically how riparian management and other temperature controls are or will be incorporated into region-wide permits. Similarly, the temperature implementation work plan (Policy action #12) provides a vehicle to describe and update the specific actions to implement the Policy.

The approach articulated in the Policy is consistent with the Regional Water Board’s existing approach to addressing temperature. It has been described as a “tool box” because it collects in one place all the tools available to the Regional Water Board to address temperature concerns. The Regional Water Board has been addressing temperature concerns consistent with this Policy for years. It is important for the Regional Water Board to describe its approach to temperature in one place in the Basin Plan for clarity and to ensure consistent implementation.

The Policy is meant to be comprehensive, and thus describes a full range of temperature implementation actions, both within the Regional Water Board’s permitting jurisdiction, and actions outside of the Regional Water Board’s permitting jurisdiction. This includes voluntary measures, restoration grants, and

actions that other agencies may take. This concept is consistent with the high-altitude and programmatic approach of the Policy. Again, additional specifics are better articulated via Board Resolution and workplan, considering the many components of the Policy and their ongoing implementation.

**General Comment #1: Approach**

Several comments raised issues related to the approach the Policy takes to address water temperatures. Some comments stated that actions and minimum standards are not well defined, implementing permits do not have comprehensive coverage or enforceability and don't ensure compliance, undeveloped programs are not adequate as currently scoped, and that the Policy relies too heavily on a project-by-project approach.

Response: The Policy is intended to provide clear direction regarding the activities and situations that must be assessed for compliance with the temperature objectives, and identifies the factors that are the focus of concern that the Regional Water Board must analyze. The Policy also establishes the importance of addressing shade in a way that makes clear to the Regional Water Board staff, other state agencies, and the public that compliance with water quality objectives requires this factor to be addressed.

At the same time, the approach articulated in the Policy is to establish a program that can be adapted, as necessary, without amending the Basin Plan. The temperature workplan and associated three-year cycle of review allows for the actions taken by the Regional Water Board to be discussed and re-evaluated in a public manner, on a regular basis. The Policy refrains from engaging in a level of specificity that has led to obsolete language in the Basin Plan in the past. Instead the Policy takes a higher altitude view of the approach to addressing temperature objectives by pointing to the tools the Regional Water Board will use to achieve the objectives. The Policy is not intended to create new tools, only describe how and what existing tools will be used. Parties will have the opportunity to provide input on temperature controls in the site-specific process. For example, minimum requirements and enforceability are appropriate concerns in the context of the development and adoption of a region-wide nonpoint source permit.

**General Comment #2: Certainty**

Some commenters stated that the approach fails to provide certainty to the regulated community, citing language such as "as appropriate", "where applicable", "potential", and "general."

Response: These terms in the Policy are necessary to balance flexible implementation allowing for activity-specific measures with the regulatory certainty associated with prescriptive requirements. A flexible implementation approach to addressing temperature concerns is supported by the scientific

literature review prepared by Sound Watershed Consulting for the Board of Forestry.

The Policy approach relies on the implementation of water quality regulatory programs for specific activities, such as timber harvesting, dairy operations, road maintenance, dredge and fill activities, production agriculture, and others activities the Regional Water Board administers, is developing, or may develop in the future. The Policy identifies regulatory programs for individual activities such as these as the appropriate level to establish specific restrictions and performance criteria.

At the same time, the Policy identifies activities and conditions that the Regional Water Board has identified as having potential to elevate water temperatures. By identifying those conditions, the Regional Water Board is providing the regulated community with information regarding the scope of implementation of the Policy. Again, parties will have the opportunity to provide input on temperature controls in the activity-specific process.

The Policy provides certainty to the regulated community in part by relying on regulatory programs already in place. The Policy does not necessarily propose to alter those regulatory programs. The regulated community subject to the existing programs is afforded the same level of certainty as previously provided by these programs. Regulatory programs under development or contemplated for development, such as the Agricultural Lands Discharge Regulatory Program or Basin Planning exercises to establish flow objectives, are subject to extensive public involvement processes involving hearings and public input. These processes have and will continue to provide the regulated community with certainty through participation in the public processes associated with them.

**General Comment #3: Site Potential Effective Shade**

Several comments stated that the term “site potential effective shade” is confusing because it is not a term used by foresters in common practice except as it relates to tree growth. One commenter suggested the term be replaced with “natural shade.” Commenters requested that the term be defined more clearly if it is to be used in a regulatory context. A few also commented that “site capacity” and “preservation shade” are poor terms, however these terms are not used in the Policy, Action Plans, Resolution R1-2012-0013, or the Staff Report.

Response: The response to these comments first explains what site potential effective shade means, and then explains how it can be applied.

The Policy identifies activities with the potential to reduce riparian shading of water as a controllable water quality factor of concern. As explained in the Resolution, temperature TMDL load allocations in the North Coast Region are expressed in terms of “site-potential effective shade.” Site-potential effective shade is explained in more detail in the Staff Report and is equal to the shade provided by topography and

full potential vegetation conditions at a site, with an allowance for natural disturbances. This metric was chosen because effective shade is directly proportional to heat, and it is readily measured in the field or calculated using mathematical models.

The term “site potential effective shade” refers to the effective shade that a site has potential to provide, given the conditions present at the site. The site potential shade concept accommodates the fact that the level of potential effective shade varies from site to site based on the type of vegetation growing at a site and other site conditions such as soils, hydrology, topography, geology, and geomorphology that determine the growth and height of vegetation. Site potential shade also implicitly recognizes that topography and emergent vegetation can also provide effective shade, in addition to riparian vegetation.

The use of the term “site potential effective shade” for water quality is consistent with the use of the term as it is used in forestry. In both cases the term is meant to denote the vegetation potential at a site. In the case of forestry it is often used to describe the potential rate of growth given the conditions present a site. The term is also used to describe tree heights, often in the context of buffer widths. The term “site-potential tree height” is used in the Northwest Forest Plan as a measure of length that is specific to the conditions at a site, as in “a buffer width of two site-potential tree heights.”

In an article titled “Forest site productivity: a review of the evolution of dendrometric concepts for even-aged stands”, Skovsgaard and Vanclay discuss the use of the terms “site” and “site potential”:

“The term site refers to a geographic location that is considered homogeneous in terms of its physical and biological environment. In forestry, site is usually defined by the location’s potential to sustain tree growth, often with a view to site-specific silviculture. Sites may be classified into site types according to their similarity regarding climate, topography, soils and vegetation. Site classification may serve a range of management purposes, including ecological stratification for optimizing the estimation of forest site productivity..... In a broad sense, the site potential is the capability of the site to produce plant biomass (cf. net primary production), irrespective of how much of this potential is utilized by the vegetation.” [Skovsgaard, J. P., & Vanclay, J. K. (2008). Forest site productivity: a review of the evolution of dendrometric concepts for even-aged stands. *Forestry*, 81(1), 13-31.]

In all uses of the term “site potential” described above, the term consistently refers to conditions that the site has the potential to produce. The term is a way of describing a potential condition in a way that explicitly takes into account the natural variability that exists in landscapes. The use of the term “site potential” as a modifier of “effective shade” is consistent with other uses of the term in forestry.

In regard to the commenter's proposed term "natural shade", Regional Water Board staff appreciates the constructive nature of the comment, but have found that the term "natural" provides less clarity, not more. Some may interpret natural to mean that the canopy is pristine and unaltered, rather than simply consistent with the effective shade levels that result when the local vegetation is at its potential.

The Policy references "site potential effective shade" in item #1, which provides:

"Restore and maintain site potential effective shade conditions through nonpoint source control programs; individual and general permits and waivers, grants and loans, and enforcement actions; support of restoration projects; and coordination with other agencies with jurisdiction over controllable factors that influence water temperatures, as appropriate."

The Resolution and Staff Report provides more detail on how this can be applied in a site- or activity-specific context. The Resolution states in its description of site potential effective shade that the "policy is not intended to predetermine precise parameters for effective shade for a specific location or land use." (Resolution at 6.) The Resolution goes on to say that compliance is generally achieved by not removing or hindering vegetation that provides shade to a waterbody. This is accomplished by managing riparian areas differently than the surrounding land. Riparian buffers are also important for controlling discharges of sediment and other pollutants. When Regional Water Board staff evaluates the shade-related temperature controls provided through riparian management practices, staff evaluate whether the practices employed result in riparian shade conditions representative of site potential effective shade. The evaluation is not whether the vegetation conditions are, in fact, unaltered, but rather if the vegetation conditions result in solar radiation loads roughly equivalent to unaltered solar radiation loads at the water surface.

The term "site potential effective shade" illustrates a general concept, but should not be construed as a standard. Unlike incorporation of wasteload allocations in NPDES permits in federal law (40 CFR §130.2(h) [WLAs constitute a type of water quality-based effluent limitation and are allocated to point sources of pollution], load allocations are the portion of a receiving water's loading capacity that is attributed either to nonpoint sources of pollution or to natural background sources. "Load allocations are best estimates of the loading." (40 CFR §130.2(g). Load allocations are not automatically enforceable; rather, they must be translated and implemented through some sort of permitting mechanism and for the Regional Water Board, this is generally through implementation of best management practices for nonpoint source land use activities. The Resolution makes clear that relevant factors should be evaluated when determining shade controls and preserves the Regional Water Board's discretion to develop management measures as appropriate for a specific land use or geographic area.

There may be situations where reductions of effective shade to levels below the site potential may be appropriate when other water quality benefits are realized (see response to Comment #4 below). The Staff Report acknowledges that site potential effective shade levels are not subject to one-size-fits-all blanket interpretations, but dependent on site conditions such as the type of vegetation growing at a site and other site conditions such as soils, hydrology, topography, geology, and geomorphology that determine the growth and vigor of vegetation.

**General Comment #4: Site Potential Effective Shade Precludes Management**

A few comments assert that a requirement to manage riparian vegetation to achieve site potential effective shade conditions means that riparian areas are off limits, and the Policy takes a “do nothing and it will get better” approach to addressing effective shade.

Response: Again, the Policy does not assign any such prescription, and the applicability of any riparian management measures must necessarily be developed in the context of a given site-specific permit with input from the regulated community and the public. The Resolution provides that “[w]hen addressing compliance with the temperature objective, the geographic location, existing regulatory and nonregulatory programs, *and other relevant factors* should be evaluated in determining appropriate and necessary shade controls. (Resolution at 7 [emphasis added].)

Further, the Staff Report makes clear that this Policy would not preclude management in the riparian zone. The language of the Policy directs staff to “restore and maintain site potential shade conditions... as appropriate.” The Staff Report discusses situations in which reductions of effective shade are appropriate, such as projects to introduce large woody debris in streams and reduce fuel loads, thinning projects designed to increase the growth rate of dominant trees to increase shade levels in a shorter time, and other projects in which a short-term reduction of shade occurs while achieving a long-term benefit to beneficial uses. The Policy identifies the Trinity River Restoration Program’s practice of removing riparian vegetation and reconstructing shallow water habitat and provisions in the USFS Waiver as examples. The Staff Report also acknowledges that management can occur within riparian areas in a manner that is consistent with site potential effective shade conditions and cites practices such as flash grazing that can occur in these areas without expected reductions in effective shade.

**General Comment #5: Harmonizing the FPRs**

Some comments criticized the Policy’s approach to addressing temperature concerns through the Regional Water Board’s timber harvest regulatory program and the timber harvest planning process administered by Cal Fire that it builds on. These commenters state that Regional Water Board staff only review a small portion of the timber harvest plans (THPs) filed in the region, that no data exists to

document the effectiveness of the Forest Practice Rules (FPR), and that the FPR are inadequate to protect streams against elevated solar loads. Others commented that the Policy elements that relate to timber harvest activities are unnecessary because they duplicate the FPR and because the FPR prohibit the approval of a THP that violates Porter-Cologne.

Some commenters raised the point that the riparian management prescriptions contained in the FPRs don't ensure site potential effective shade will be achieved, such as those that do not have anadromous salmonids present. Others stated that the Policy is unnecessary because it duplicates the FPR.

Response: Before discussing these specific issues, note that the Policy does not specify any prescriptions for any land use activity. Again, the Policy provides a high altitude, programmatic direction for achieving temperature objectives and implementing temperature TMDLs. The Resolution contains a detailed discussion of temperature protection measures in the context of region-wide nonpoint source programs including riparian management. The Resolution describes how it is often possible for the same management measures to address multiple sources of pollution, and how incorporating TMDL implementation into broad-based nonpoint source programs can increase efficiency and avoid overlapping water quality regulation. The Resolution includes an extensive discussion on how the Regional Water Board can, and often does, rely on existing non-Water Board programs if those actions will result in attainment of water quality standards, with a focus on the significant progress made in this regard for timber harvesting. Because the timber harvesting program is advanced, we can discuss various details of that program, and provide a good example of how the Temperature Policy may be implemented; however, the specific water quality regulation of timber harvest is appropriately addressed when a timber permit is before the Regional Water Board or when a specific timber harvest plan is under review. Parties will have an opportunity to comment in those separate processes.

The criticism that staff only reviews a small portion of THPs does not reflect the provisions in the timber WDRs that allow staff to prioritize its reviews based on water quality risk. Staff of the Regional Water Board review all THPs filed in the region, and prioritize further staff review and oversight based on the initial review of the THP. Staff provides first review comments on the majority of THPs filed, and participate in pre-harvest field inspections of approximately half of the THPs. This approach allows staff to prioritize their review in a way that ensures THPs with potential to impact water quality receive more review.

The Regional Water Board's timber program includes Waste Discharge Requirements (WDRs) and Waivers for timber operations for specific watersheds and ownerships. WDRs and Waivers are the permitting mechanisms that Porter-Cologne provides for implementation of the Basin Plan. These WDRs are often based on prescriptions contained in aquatic habitat conservation plans which are designed



to be fully protective of threatened or endangered aquatic species and contain measures above and beyond those found in the Forest Practice Rules, particularly those for riparian canopy. As a result staff often prioritizes THPs that enroll in these WDRs as a lower priority for field inspection.

In addition, WDR termination inspections allow staff to verify that the management practices described in the THP were implemented and the erosion control plan required through the WDRs was implemented correctly. The termination inspections also provide staff feedback regarding the efficacy of the prioritization approach described above. Staff conducts termination inspections on 90% of the THPs filed in the region.

Regarding the points that the riparian management prescriptions contained in the FPRs don't ensure site potential effective shade will be achieved, and that the Policy is unnecessary because it duplicates the FPR, the Resolution states that "[r]ecent modifications to the [FPRs] to address anadromous fish habitat (ASP Rules) have resulted in canopy retention standards that are generally protective of shade and water temperatures in the areas where they apply. Compliance with the intrastate water quality objective for temperature may in some instances require additional canopy protections, particularly in areas outside the range of anadromy." (Resolution at 8.) This point is also acknowledged in the Staff Report and in comment letters previously submitted to the Board of Forestry. However, the Regional Water Board's timber harvest regulatory program provides a regulatory mechanism to ensure that temperature objectives are met, despite the acknowledged potential for reductions in effective shade in these stream categories inherent in the FPRs. In these situations, Regional Water Board staff requires enhanced riparian protection, if necessary, through provisions of the WDRs that require implementation of staff recommendations and compliance with the Basin Plan. Regional Water Board staff have been working in this manner for several years to ensure the temperature objectives are met.

In recent years staffs of the Regional Water Board and Cal Fire have made progress in aligning the roles of the two agencies for better protection of water quality. The recent collaborative process that arose from the non-industrial timber management plan permit development and adoption process has been helpful and resulted in much progress in this area. Regional Water Board staff expects these efforts to continue through collaborative efforts such as Cal Fire's Effectiveness Monitoring Committee. Regional Water Board staff looks forward to working with Cal Fire to reduce the scope of the uncertainty regarding the water quality protections afforded by the FPRs through the Effectiveness Monitoring Committee and other efforts to further align the shared goals of the agencies.

In the long run, it is the desire of the Regional Water Board that the Forest Practice Rules contain requirements that address all water quality concerns sufficiently to address the potential of water quality impacts from timber operations. Regional

Water Board staff will continue to work with Cal Fire and the Board of Forestry to make progress toward this goal.

**General Comment #6: Practicing Water Quality Protection vs Forestry**

Some comments asserted that the development of this Policy is illegal because the Regional Water Board does not have a Registered Professional Forester on staff, and that the development of the Policy equates to prescribe management of forested landscapes.

Response: This Policy does not prescribe management of forested landscapes. It defines conditions (site potential effective shade) that are generally necessary for achievement of water quality objectives, but also acknowledges that exceptions and discretion exist. The timber harvest program administered by Cal Fire that the Regional Water Board's timber program builds on includes a multidisciplinary review process that utilizes the expertise of different agencies in collaboration with a Registered Professional Forester.

The Board of Forestry's policy on the practice of forestry as it relates to other professions states: "the Board recognizes that performance of the following tasks does not constitute the practice of forestry or rangeland management unless the tasks are exclusively directed toward the management and treatment of forests and woodlands: mitigating or recommending mitigation of impacts from previous or proposed land use activities by other environmental experts within their field of expertise." The Policy is not "exclusively directed toward the management and treatment of forests and woodlands." When reviewing THPs and enrolling THPs under WDRs or Waivers, Regional Water Board staff are not practicing forestry. Staff input is directed toward water quality mitigation and practices.

**General Comment #7: Compliance with the 5 Key Elements in the NPS Plan**

Some comments stated that the Policy does not contain the five key elements of a nonpoint source (NPS) regulatory program described in the state nonpoint source policy.

Response: The Policy and Action Plans are not nonpoint source implementation plans<sup>1</sup>. The Policy and Action Plans direct staff to rely on existing nonpoint source implementation programs, such as the timber regulatory program, the dairy regulatory program, five counties salmonid conservation program, and nonpoint source programs currently in development, such as the agricultural discharge regulatory program, as well as other programs and processes such as the grants program, water rights permitting process, interagency coordination, and basin planning exercises. The Policy describes the approach the Regional Water Board will take to address temperature concerns and achieve temperature objectives. The

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<sup>1</sup> An NPS pollution control implementation program is a program developed to comply with State or Regional Water Board WDRs, waivers of WDRs, or basin plan prohibitions. (Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (2004) at 8.)

Policy is structured to rely in part on various NPS programs and other actions to achieve the temperature objectives.

California law requires a program of implementation for achieving objectives, which includes a description of actions necessary for achieving water quality objectives including recommendations for appropriate action by any entity, public or private; a time schedule for actions to be taken; and monitoring to determine compliance with objectives. (Wat. Code, § 13242.) The Policy and Action Plans include all the necessary elements of a program of implementation for achieving water quality objectives outlined in Water Code section 13242.

First, the Policy describes multiple actions that are necessary for achieving the water quality objectives for temperature. The Policy directs the Regional Water Board to prevent, minimize, and mitigate temperature alterations associated with the following factors:

1. Activities with the potential to reduce riparian shading of waterbodies;
2. Activities with the potential to increase sediment delivery;
3. The quality, quantity, location and timing of effluent, storm water, and agricultural return flow discharges;
4. The location, size, and operation of in-channel impoundments with the ability to alter the natural temperature regime;
5. Actions with the potential to change stream channel geometry;
6. Activities with the potential to reduce instream flows or reduce sources of cold water, including cold water refugia.

This is done through a combination of riparian management and other temperature controls as appropriate in nonpoint source control programs; individual and general permitting and waivers, grants and loans, and enforcement actions; support of restoration projects; and coordination with other agencies with jurisdiction over controllable factors that influence water temperature. This sufficiently describes actions necessary for achieving water quality objectives and includes recommendations for appropriate actions by other entities.

Second, the time schedules are implied in the Policy and vary depending on the action described. Generally, the time schedule for the entire Policy can be summarized as “current and ongoing.” The approach articulated in the Policy is the same approach the Regional Water Board has taken to address temperature concerns in recent years. The Regional Water Board has, and will continue to, address temperature in its own permitting processes, through voluntary programs, and in collaboration with other entities.

The Policy does reference revisions to existing permits and the development of future nonpoint source permitting programs, such as the Agricultural Lands Discharge Regulatory Program. This Program is in process and has its own time schedule. Dictating more specific time schedules for the development of permitting

programs through basin plan amendments is an unwise approach to managing the development of such programs. NPS programs can be large and very complex. The timing for development of such programs must be adaptable and responsive as new issues arise.

Waiting to adopt the Policy until all of the nonpoint source programs are in place would not provide clarity or consistent implementation of the objectives in a timely manner. Other Policy components rely on the actions of other parties, such as the Division of Water Rights, and cannot be scheduled or otherwise dictated by the Regional Water Board. Again, these collaborative processes are occurring now and will continue.

Finally, the Policy includes a monitoring component to determine compliance with temperature objectives. The temperature workplan and associated three-year cycle of review allows for the actions taken by the Regional Water Board to be discussed and re-evaluated in a public manner, on a regular basis.

The Policy directs the development of a regional temperature trend monitoring program to ensure the Policy is effective. The Staff Report describes the monitoring actions that the monitoring program will implement, which covers a wide range of activities including temperature monitoring through SWAMP, local assistance, collaboration with timber companies, local watershed groups, and other agencies. The Staff Report also identifies the Regional Water Board's participation in Cal Fire's Effectiveness Monitoring Program.

#### **General Comment #8: Implementation of the Objectives in Impaired and Unimpaired Waterbodies**

Some commenters asserted that there is no law or regulation that permits the Regional Water Board to establish a policy that applies to both impaired and unimpaired waterbodies, and therefore it is inappropriate to apply a policy that implements TMDLs to waterbodies that aren't impaired.

Response: The actions necessary to recover a water body that is temperature impaired due to alteration of the drivers of water temperature are the same types of actions that prevent a waterbody from becoming temperature impaired by such alterations. In order to prevent future temperature impairments and address existing temperature impairments, the regulatory approach to maintain consistency with the water quality objective for temperature and the regulatory approach to address elevated water temperatures should be consistent throughout the region. This concept was specifically evaluated by the peer reviewers, who supported the approach.

Regardless, the Policy provides a flexible approach to implementation. The site-specific approach to implementing the temperature objectives at the project scale also allows for Regional Water Board staff to make determinations that unique

circumstances exist that allow exceptions to standard practices employed for the protection of water temperature. For instance, the Regional Water Board has approved restoration projects conducted in temperature-impaired watersheds on the Mendocino Coast that involve the felling of riparian trees into watercourses to add large woody debris to the stream.

The authority to establish and implement water quality objectives is enumerated in sections 13241 and 13242 of the Porter-Cologne Water Quality Control Act, which makes no distinction between impaired and unimpaired water bodies. The mandate and authority for states to identify impaired waterbodies and develop Total Maximum Daily Loads is described in section 303(d) of the Federal Clean Water Act.

**General Comment #9: Protection of All Beneficial Uses**

Some commenters stated that the Policy is inappropriate because it does not consider the reasonableness of water quality objectives in light of all beneficial uses; it focuses exclusively on cold water fisheries, and does not consider the needs and impacts to other beneficial uses.

Response: The proposed Policy is intended to address compliance with temperature water quality objectives in order to support all beneficial uses, not to specifically focus on a single beneficial use. The determination of adverse effects on beneficial uses is based on the thermal requirements of the most sensitive beneficial use present. In most cases in the North Coast Region, the cold freshwater habitat beneficial use (COLD) is the most sensitive beneficial use. The Staff Report contains the most discussion of interpretation of the temperature objectives in the context of cold water ecosystems because they are often the most sensitive beneficial use present. However, the approach articulated in chapter 4 of the Staff Report applies to all beneficial uses.

**General Comment #10: Regulation of Controllable Factors**

The Regional Water Board's planning jurisdiction is broader than its permitting jurisdiction. "Water Quality Control" means the regulation of any activity or factor which may affect the quality of the waters of the state...." (Wat. Code, § 13050, subd. (i).) The Policy applies to activities subject to permitting by the Regional Water Board as well as activities that impact temperature that are outside of the Regional Water Board's permitting authority.

The California Farm Bureau Federation commented that the Policy is unreasonable because the regulation of controllable factors can only be regulated through WDRs and Waivers in the context of a discharge of waste, and furthermore that alternatives described in the environmental analysis that include regulating controllable factors through Waivers and WDRs in the absence of a discharge are illegal and thus invalid alternatives for consideration.

Another comment asserted that the Regional Water Board's authority does not extend to all controllable factors, and points to language in the Central Valley Regional Water Board's Basin Plan, which references controllable factors as factors that are subject to the Regional Water Board's authorities. The same commenter asserted that controllable factors can only be regulated in the context of pollution, which shade isn't.

Response: Regional Water Board staff agrees that regulation of controllable factors through permitting by the Regional Water Board must be in the context of a discharge of waste. The Staff Report states on page 29: "The Regional Water Boards regulate the thermal impacts associated with increased solar radiation loads and the shade provided by riparian vegetation in the context of other types of discharges." The language has been edited to remove the words "of other types" for clarity.

The argument that the Policy's environmental analysis doesn't comply with CEQA because it relies on an illegal vehicle for compliance, namely the reliance on Waivers and WDRs, appears based on the misunderstanding that the Policy directs the Regional Water Board to regulate controllable factors in the absence of a discharge of waste.

Regarding the comment that the Regional Water Board's authority does not extend to all controllable factors, pointing to language in the Central Valley Regional Water Board's Basin Plan, one region's Basin Plan does not condition the contents of another region's Basin Plan. Basin Plans are intended to be region-specific, as determined by the Board Members of that region. The North Coast Basin Plan is very clear that controllable factors are those actions, conditions, or circumstances resulting from anthropogenic activities that may influence the quality of the waters of the State and that may be reasonably controlled. Furthermore, section 13263 of the Water Code directs Regional Water Boards to implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, and regulation of any activity or factor which may affect the quality of the waters of the state. This provision provides authority for the Regional Water Board to place conditions on controllable water quality factors related to an activity that discharges waste. The Policy acknowledges other controllable water quality factors where it lacks permitting authority, and directs staff to use other tools/approaches for these sources.

**General Comment #11: Heat as a Pollutant**

One commenter asserted that solar radiation is not considered a nonpoint source pollutant in the Porter-Cologne Water Quality Control Act (Porter-Cologne) or the Clean Water Act.

Response: Heat is not considered a waste in Porter-Cologne for the purpose of the Regional Water Board's waste discharge permitting authority. However, Porter-

Cologne does not limit the Regional Water Board's planning authority to address pollution not associated with waste discharges, or ability to condition controllable factors associated with an activity that does discharge waste.

Further, heat is recognized as a pollutant under federal law. Section 502 of the Clean Water Act [33 U.S.C. 1362], General Definitions, states that the term "pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, **heat**, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (emphasis added).

**General Comment #12: Flow Issues**

Many of the comments received addressed the Policy's approach to addressing water temperature issues related to the control of stream flow conditions. Some comments stated that the Policy should set minimum flows and that encouragement is not likely to be effective. Other comments questioned the benefit of encouraging off-stream storage projects, and how progress on flow issues will be enforced.

Response: The Policy contemplates actions to be undertaken through the Regional Water Board's authority as well as the authorities of other state agencies such as the Coastal Commission, Cal Fire, and State Water Resources Control Board's Division of Water Rights. The Regional Water Board has no permitting authority that pertains to the permitting, licensing, and administration of water rights. However, the Regional Water Board has authority to establish and amend water quality control plans, which other state agencies are required to comply with unless otherwise directed or authorized by statute (see section 13247 of the Water Code). The Regional Water Board's basin planning authority includes authority to establish flow objectives necessary for the support of beneficial uses.

The Action Plans provide a clear signal to water users interested in taking action to protect water quality and/or actions to preclude the development of regulations addressing flow conditions, such as the establishment of flow objectives, through the Action Plan elements that encourage all water users to implement water conservation practices and develop off-stream storage facilities to minimize water diversions during low flow periods.

Regarding the establishment of minimum flows, the Policy directs the Regional Water Board to coordinate with the Division of Water Rights (and Department of Fish and Wildlife) on instream flow studies and the establishment of flow objectives, as necessary. Establishment of such objectives requires in-depth analysis beyond the scope of this policy development exercise, including water quality considerations beyond temperature.

Regarding the promotion of off-stream storage, there are at least two situations where development of off-stream storage has potential to alleviate temperature concerns: the elimination of direct diversion in the warm, dry months of the year, and elimination of on-stream dams that adversely alter the temperature regime downstream. In the case of conversion of a direct diversion, the Regional Water Board would take actions to ensure the associated riparian water right was converted to an appropriative right, either as a condition of use of grant funds, or through coordination with the Division of Water Rights.

Regarding enforcement of flow-related issues, the Policy recognizes the Regional Water Board's limited authority related to water right administration. The Policy directs the Regional Water Board to use all available means at its disposal to address these issues, as appropriate. The primary means of addressing flow-related temperature issues is through coordination with the Division of Water Rights, including providing recommendations and identifying water quality conditions that are necessary to ensure that activities permitted by the Division will comply with water quality standards.

**General Comment #13: Stipulated Agreement**

Multiple comments objected to an incorrect understanding that the sole reason for pursuing this policy is to settle a lawsuit.

The Sierra Club and Pacific Coast Federation of Fishermen's Associations, both parties to the settlement, argue that the Action Plans do not comply with the stipulated agreement described in section 6.1 of the Staff Report because they do not direct staff to develop compliance and trend monitoring plans on a watershed scale as the Scott River TMDL Action Plan does. Another comment stated that the Action Plans do not meet the agreement because they have much fewer pages than the Action Plans for the Scott and Shasta TMDLs.

Response: It is not the case that the Policy is being developed solely to settle a lawsuit. The Regional Water Board had already decided to develop a regional temperature policy prior to the settlement of the lawsuit. It is true that the lawsuit compelled the development of the individual action plans for the Mattole, Navarro, and Eel River watersheds. However, the regional temperature Policy was already being pursued, as acknowledged in the stipulated agreement. In fact, the genesis of the regional temperature Policy dates to 2004, when the Regional Water Board adopted the Sediment TMDL Implementation Policy. A temperature policy was the obvious next step, but was delayed due to the allocation of significant staff resources to the development of the Klamath River TMDL.

The Policy generally tracks the structure articulated in the settlement agreement with various details added that developed through the public process. The proposed Policy meets, and in some cases exceeds, the original goals envisioned for it. The three action plans were added because of commitments in the settlement agreement



that call for independent plans for these three watersheds. The actions for the three watersheds are delineated with greater specificity, but are all consistent with what the general Policy provides.

The stipulated agreement describes the scope of the action plans that the Regional Water Board agreed to develop:

“These stand-alone implementation plans should generally follow the patterns set by the Shasta River and Scott River implementation plans. Those implementation plans clearly identify the source of the problems, the parties involved and the actions to be taken. Their remedial framework employs a mix of existing regulatory tools such as permits, waivers and prohibitions combined with site-specific recommendations arising from water rights regulations and water quality issues.”

This language from the stipulated agreement is a valid description of the Action Plans as they have been developed, but makes no mention of monitoring plans. The lack of direction to develop temperature monitoring plans for the three Action Plan watersheds is moot, however, because the Policy directs the development of a regional temperature monitoring plan. Regional Water Board staff intend to organize the monitoring plan based on watersheds.

It is a fact that the Action Plans are much shorter than the Action Plans for the Scott and Shasta River TMDLs. The main reason the Action Plans for the Mattole, Navarro, and Eel are shorter than the Scott and Shasta TMDL Action Plans is that they do not contain summaries of the TMDLs. Instead, the TMDLs are incorporated by reference. This approach was chosen because summarizing each of the eight TMDLs (i.e., the problem statement, source analysis results, load allocations, and other TMDL components) would add scores of unnecessary pages to the Basin Plan. For instance, the Scott River TMDL Action Plan is 14 pages, however the implementation actions are described in just four of those pages. Similarly, the Shasta River TMDL Action Plan is 31 pages, but the implementation requirements are found on 13 of those pages. The Action Plans for the Mattole, Navarro, and Eel watersheds are five, four, and five pages long, respectively. Another factor relating to the length of the Action Plans is the fact that there are more nonpoint source programs in place now than at the time the Scott and Shasta River TMDLs were developed. Those Action Plans described details of actions that are now incorporated into the USFS Waiver, 5 County Coho Conservation Program Waiver, and Caltrans stormwater permit. The TMDLs are available online and at the Regional Water Board office.

The number of pages for an Action Plan and how items are referenced are procedural in nature. What is most important is that the Action Plans contain substantive components that meet the requirements in the stipulated agreement. The Action Plans identify sources, responsible parties, and actions to be taken that

employ a mix of existing regulatory tools, as well as watershed-specific recommendations for water rights. Staff has gone above and beyond the settlement requirements to make sure that every possible implementation possibility is addressed in the Action Plans for these three watersheds.

**General Comment #14: Conservation vs Preservation**

Some commenters objected to the use of the word “preservation” in the text of the Staff Report, and point out that the definition of the word ‘preserve’ includes concepts such as protect, maintain unchanged, and keep or maintain intact. These commenters assert that preservation is beyond the authority of the Regional Water Board.

Response: There is no regulatory distinction between preservation and conservation in the Policy. The term “preservation” is not found in the Policy or Resolution. It is used in the Staff Report in a way that mirrors the COLD beneficial use definition, and several times in the environmental analysis portion of the Staff Report, that are not consequential.

The above point notwithstanding, preservation is often a necessary element of conservation. The protection and maintenance of riparian shade, as appropriate, may be necessary for the achievement of temperature water quality objectives and the beneficial uses that objectives are intended to achieve. This approach is completely consistent with the authorities articulated in sections 13241 and 13263 of the Porter-Cologne Water Quality Control Act. It is also an appropriate term in the context of voluntary actions, and grants and loans.

**General Comment #15: Adequacy of Scientific Discussion**

Some commenters stated that the science presented in the Staff Report is inadequate because it does not include a number of studies identified by the commenters. These studies include: Cajun James’ doctoral dissertation, Sound Watershed Consulting’s literature review of forest management effects on riparian functions, the Central Coast Regional Water Board’s review of timber harvest operations, monitoring reports prepared by the Timber Products Company, and a published study of a riparian experiment on Green Diamond Resource Company timberlands authored by Wilzbach, Harvey, White, and Nakamoto.

**Dr. Cajun James’s Study**

Many comments suggested that the experimental research conducted by Dr. Cajun James refutes the interaction between solar radiation and water temperature described in the Staff Report. One commenter stated that Regional Water Board staff did not incorporate the study because the study site is outside of the North Coast Region.

Response: Regional Water Board staff’s reluctance to cite Dr. James’ study is based on the fact that the study has not been published and is not easily obtained. The

study is cited below, and thus added to the administrative record. Also, the study doesn't advance the understanding beyond the results of other studies that are published in peer-reviewed journals and more easily obtained by the public.

The results of Dr. James' study are consistent with and support the concept of preserving shade to prevent water temperatures increases. Dr. James' experiment measured temperature change associated with a small change in solar radiation reaching the water surface. In her experiment, vertical canopy coverage was reduced 7% on average (55-58% overhead canopy pre-harvest to 49-50% overhead canopy post-harvest). Angular canopy density (a measure of canopy between the path of the sun and observer) was reduced by 5% mid-stream to 85%. The difference in average daily water temperature between the most upstream and downstream sites increased up to 0.5 °C at the hottest time of year. Also, the difference in daily maximum water temperature between upstream and downstream sites indicate the possibility of as much as a 1.0 °C to 1.8 °C increase in temperature through the reach following the second phase of the study, in which the width of the riparian buffer was decreased from 175' to 100'. [C.E., James 2003. *Southern Exposure Research Project: A Study Evaluating the Effectiveness of Riparian Buffers in Minimizing Impacts of Clearcut Timber Harvest Operations on Shade-Producing Canopy Cover, Microclimate, and Water Temperature along a Headwater Stream in Northern California* [dissertation]. Berkeley, California. University of California. 41p.]

The results of Dr. James' research support the concept of preserving shade to prevent water temperatures increases embraced in the proposed Policy. In the case of her study, a small increase in solar radiation resulted in a small increase in temperature.

#### Sound Watershed Consulting's Literature Review

Some commented that the Staff Report should have cited the literature review and summary prepared by Sound Watershed Consulting on behalf of the Board of Forestry. Some also said the review did not support the claims of the Staff Report.

Response: Staff have modified the Staff Report to summarize and cite the Sound Watershed Consulting literature review. Regional Water Board staff has found the summary of the literature review to support the principles regarding riparian shade and water temperature that the Policy incorporates. For instance, the opening sentences of the report's section titled "Inferences for Forest Management" states:

"The literature on riparian heat exchange tells us that shade from riparian timber stands is a key factor controlling heat input to streams. Therefore, maintaining riparian vegetation to block direct solar radiation (i.e., shade) is the intent of forest practice prescriptions for protecting stream temperature during the summer. However, water temperature is a function of a host of physical factors that control heat transfer between air, water, and the

streambed. Consequently, the relative importance of riparian vegetation to influence stream temperature varies by location (geographic province) and by site specific conditions (stream width, depth, flow, groundwater inflow, streambed substrate composition, valley orientation, topographic shading and watershed position). This spatial variability indicates that a simple fixed-width buffer or canopy closure prescription (e.g., minimum 50% canopy cover as required in CA) will probably not achieve management goals in all cases.”

The report goes on to discuss the potential of watershed scale analyses to identify stream reaches most sensitive to temperature changes, and combining rankings of temperature sensitivity with assessments of site-specific conditions to identify specific shade requirements to protect individual reaches from temperature increases, buffering class II streams to prevent temperature increases in class I receiving waters, and the need to consider the temperature needs of salmonids. The section of the report ends with the following:

“Finally, riparian stand effectiveness for shading is a function of the forest canopy density, height, and species composition, which is related to stand type and age. Because stand type and age may vary by geographic province and disturbance history the buffer width that is adequate for shading will vary as well. This fact undermines the one-size-fits-all (i.e., fixed width) prescription that is commonly applied in forest management. Research shows that effective shading can be provided by buffer widths ranging from 10 m to 30 m (30 to 100 ft) depending on stand type, age, and location. However, quantitative relationships between buffer width and shade for typical forest types and stand age classes in California are not reported in the literature. Potential quantitative relationships between stand density and shade or basal area and shade are lacking. Consequently a riparian stand metric that may function as a reliable surrogate for shade has not been developed.”

The Sound Watershed Consulting literature review supports the principles that management of shade is paramount for control of elevated water temperatures, that a fixed-width buffer or canopy closure prescription is not likely to achieve management goals in all cases, and that site-specific considerations need to be made on a case-by-case basis. Notably absent in the conclusions are findings that describe the relationship of shade reductions to temperature increases, and methodologies for determining canopy conditions (width and density) that keep temperature increases to negligible levels. However, Regional Water Board staff acknowledge that the report is a literature review and those concepts aren't described in the literature very well.

Central Coast Regional Water Board's Review of Timber Harvest Operations

The following statement from the Central Coast Regional Water Quality Control Board (CCRWQCB) Staff Report provides clarification on the conclusions made by CCRWQCB staff:

“[CCRWQCB] staff concurs that it is not possible to determine the extent to which temperature effects should be attributed to harvest operations. In the absence of reliable preharvest data and considering the limitations and constraints of temperature monitoring in general, it is not possible to determine if downstream monitoring points exceeding water temperature at their upstream counterparts is a natural phenomenon, the result of anthropogenic influences, or a combination of each. In any case, since the downstream levels do not indicate risk to fish, staff finds it appropriate to modify temperature monitoring requirements.”

Response: Clearly CCRWQCB staff were unable to make a determination of temperature impacts due to the fact that temperature conditions prior to riparian disturbances were unknown. Thus the report does not add any appreciable understanding that relates to the Policy.

Monitoring Reports Prepared by the Timber Products Company

Some commenters pointed to the monitoring reports prepared by Timber Products Company documenting pre- and post-harvest canopy, temperature, and microclimate conditions. The commenters assert that the harvests specifically mimicked harvests allowed under the Forest Practice Rules prior to the adoption of the anadromous salmonid protection (ASP) rules package.

Response: Regional Water Board staff is very aware of these reports and the harvests they reported on. These harvests implemented prescriptions that were alternatives to the pre-ASP rules, and did not specifically mimic pre-ASP forest practice rule prescriptions. These harvests implemented no-cut inner buffers of 50' to 75', with outer buffers that reduced canopy density to a minimum of 50%. It is noteworthy that these plans, located in watersheds impaired by temperature, were approved by the Regional Water Board, and the establishment of the Policy would not preclude approval of similar plans in the future.

Wilzbach, Harvey, White, and Nakamoto's Riparian Experiment on Green Diamond Resource Company Timberlands

Another study cited by some as appropriate for inclusion in the Staff Report is the study by Wilzbach and others [“Effects of riparian canopy opening and salmon carcass addition on the abundance and growth of resident salmonids”; Wilzbach, Harvey, White, and Nakamoto; 2005; Can. J. Fish. Aquat. Sci. 62: 58–67].

Response: This study is now referenced in the Staff Report. This study analyzed the effects of an experiment designed to test the hypothesis that more nutrients and

sunlight will increase primary productivity resulting in higher salmonid growth rates. The study involved removal of riparian hardwoods and addition of salmon carcasses along 100 meter stream reaches, and measurement of fish biomass and density responses, as well as temperature. The study found that “in light-limited settings where temperature gains associated with canopy opening are not problematic for aquatic resources, gains in salmonid production might be achieved by selective trimming of riparian hardwoods.” The study also found that in one instance temperatures increased by 1.5 °C over 100 meters of a reach. The results of the study indicate that salmonids may benefit from increases in solar radiation in specific situations, and that the risk of temperature increases from such treatments has to be carefully considered.

**General Comment #16: The Policy Relies on a Single Application of a Temperature Model**

Multiple stakeholders commented that the Policy is flawed because it relies on a model simulation that the commenters object to. Some of the comments also implied that the approach articulated in the Policy and Action Plans is solely based on a single model run.

Response: The temperature TMDLs developed in the North Coast Region have utilized many models, applied to dozens of scenarios. These models (discussed in section 2.4 of the Staff Report) were developed to identify the relative importance of various temperature factors, demonstrate the applicability of concepts described in scientific literature to local stream environments, and to calculate load allocations. The Policy and the concepts that it draws on are not based on any single application of a model or suite of models.

The model application identified by commenters as misrepresenting FPR requirements (Houston/Cabin Creek forest practice scenarios contained in the Scott River Temperature TMDL) is not the basis of the Policy. Staff acknowledges that the conditions represented in the model go beyond what the FPR allow. The model results are not described in the staff Report as representing FPR prescriptions. However, the inclusion of the results of the model run is still informative of expected changes in temperature resulting from a range of microclimate conditions.

**General Comment #17: Forest Practice Rules, Fish, and Amphibians**

One comment stated that staff have insisted that the FPRs allow for take of state or federally listed fish and amphibian species, despite the California Department of Fish and Wildlife (DFW) views that the FPR are protective.

Response: Neither this Policy nor the Staff Report make this claim. This comment relates to the Regional Water Board’s comments and position on the protectiveness of the FPR. The Regional Water Board’s concerns about the FPR are described in section 5.3.1. Regional Water Board’s timber GWDR program and involvement in

the timber harvest process are intended to ensure that water quality conditions support all beneficial uses.

**General Comment #18: The Basin Plan Doesn't Allow for Regulation of All Stream Types**

One comment stated that the Basin Plan defines “stream or watercourse” in the context of the sediment prohibition for logging, construction, and associated activities as a natural watercourse designated in USGS topo maps, and thus this Policy is not allowed under the Basin Plan because it applies shade controls to all watercourses within the Region.

Response: This Policy is not limited to watercourses addressed by any specific prohibitions. The Regional Water Board is proposing this Policy as a program of implementation for the water quality objectives for temperature. This Policy only applies to streams that are susceptible to temperature increases. The site- and activity-specific temperature controls for a given area have, or will be, determined in a separate public process.

**General Comment #19: Shade and Air Temperature**

One comment stated that the relationship between shade, air temperature, and water temperature is not well enough understood, and that the peer reviewers that reviewed the Policy didn't support the Policy's focus on effective shade.

Response: The peer reviewers were unequivocal in their support of the idea of addressing shade as a means of controlling elevated water temperatures, though they did have suggestions to improve the Staff Report. For instance, Dr. Thompson stated “It is well established that increased levels of solar radiation often play an important role in elevating stream temperatures. ...It is therefore legitimate to consider regulation and manipulation of stream shading as a management tool for stream temperatures. This approach is supported by broad-based scientific evidence.” Similarly, Dr. Stella stated: “From the large number of studies conducted, it appears that riparian shade is the major driver of water temperature that can be controlled directly by human land management actions....” (Reviewers Comments, Appendix 1.)

It is true that Dr. Stacey suggested that the interaction of the effects of air temperature, shade, and flow needed further explanation. In addition, Dr. Thompson questioned how rising air temperatures associated with climate change was incorporated into the Policy. Regional Water Board staff addressed these comments with an expanded discussion of the interaction of temperature drivers in section 2.2, and a discussion of the ramifications of climate change as it relates to the regulation of water temperatures in sections 2.2 and 4.0 of the Staff Report.

**General Comment #20: Comments Specific to the Klamath TMDL**

Pacificorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by Pacificorp are relevant to this process and are addressed below.

**General Comment #21: Use of the Klamath River TMDL Temperature Model is not an Appropriate Example of a Method to Estimate Natural Temperatures**

Pacificorp commented that the Staff Report's reference to the Klamath TMDL modeling exercise as an example of estimating natural temperatures is inappropriate because the model is flawed, uncertainty was not quantified, that a site-specific approach should be taken to implementing temperature load allocations in permits, and that the Staff Report should acknowledge that models evolve and the most up-to-date information should be considered for establishment of regulatory requirements.

Response: The points raised by Pacificorp regarding specific aspects of the modeling have been previously addressed in the TMDL process. The models used in the development of the Klamath TMDL are cited to describe how temperature impacts associated with changes in hydrodynamics are evaluated, and natural temperatures are estimated in complex situations. The Regional Water Board agrees that temperature considerations should be incorporated into project-specific regulatory requirements on a site-specific basis, with consideration of all available information. Regional Water Board staff agree that models evolve as information improves.

**General Comment #22: Typos and Incorrect Citations in the Staff Report**

Pacificorp identified an incorrect citation and typos in the Staff Report. Staff has incorporated changes in the Staff Report to address these minor corrections.

**General Comment #23: Benefits of Shade Related to Thermal Refugia**

Pacificorp questioned how shade can benefit thermal refugia.

Response: One example of how shade can benefit thermal refugia is where a refuge is provided by a shallow back-watered channel fed by hyporheic flow. Where the refuge is shallow, slow moving, and near the streambank, solar radiation can have a significant impact on temperatures that can be greatly reduced by the presence of shade.



**General Comment #24: System-Specific Analyses of Shade Restoration Potential**

Pacificorp recommended that “each system should be examined for potential for shade restoration, including a quantification of such benefits.”

Response: This Policy directs the Regional Water Board to consider the benefits of any specific action to address elevated water temperatures, including shade restoration, on a site-specific, case-by-case basis. However, conducting such an analysis for every stream in the region without a specific project context is unnecessary and wouldn’t allow for the same level of site-specific interpretation as occurs during a project-specific evaluation.

**General Comment #25: Heat Flux and Equilibrium Temperature**

Pacificorp commented that the discussion of equilibrium in section 2.2, Interaction of Temperature Drivers, is incomplete, misquoting the following sentence: “The strongest driver of equilibrium temperature is air temperature.” Pacificorp goes on to make statements about factors related to heat flux, before recommending the sentence be modified to more clearly state the drivers of equilibrium temperatures. Pacificorp states that the Staff Report should further explain the dynamics of heat flux and equilibrium temperature.

Response: The sentence quoted actually states: “The strongest driver of equilibrium temperature is air temperature, while shading, wind sheltering, and groundwater inputs are the greatest modifiers of the relationship of air temperature to equilibrium temperature (Bogan et al. 2003, Morrill et al. 2005, Mohseni et al. 2002).” The same paragraph ends with the following sentence: “Despite the sensitivity of equilibrium temperature to air temperature and wind speed, solar radiation (which is represented in Figure 2.1 by total shade and possible sun) has been demonstrated to result in heat fluxes an order of magnitude higher than those associated with air temperature and wind speed (i.e., convection and evaporation), which explains why shade is so important for stream temperature control (Johnson 2004).” Regional Water Board staff believe the discussion presented in section 2.2, read as written and taken as a whole, adequately explains the relationship of temperature drivers to both equilibrium temperature and heat flux.

**General Comment #26: The Importance of Shade in the Context of Wide Stream Channels**

A comment submitted by Russian Riverkeeper stated that shade can be important in wide streams where the stream runs along the streambank. An image of the Russian River where this is the case was provided as an example. Pacificorp commented on the same discussion in the staff report (pg. 6) and stated that it contradicts the statement on the same page that says “This concept is the basis of TMDL load allocations prescribed in every north coast temperature TMDL.” Pacificorp suggested modifying the statement to state “most TMDLs” instead of “all TMDLs”.

Response: The Policy directs the Regional Water Board to take a site-specific approach to addressing temperature concerns that allows for consideration of the issue raised by Russian Riverkeeper. The Staff Report also discusses the benefits of riparian vegetation beyond shade that are additional considerations when evaluating any near-stream project.

The statement that importance of shade is the basis of TMDL load allocations prescribed in every north coast temperature TMDL is a true statement. The Klamath TMDL contains load allocations for riparian shade, though they do not apply to the mainstem.

**General Comment #27: General Statements Regarding the Importance of Shade in the Context of Other Factors**

Pacificorp submitted a number of comments encouraging the Regional Water Board to take a holistic approach to addressing temperature, such as flow transactions, and not exclusively focus on shade.

Response: Regional Water Board staff agree; the Policy directs the Regional Water Board to take address temperature concerns comprehensively, using all available means, both regulatory and nonregulatory. While the Policy places great emphasis on addressing shade concerns, it also emphasizes addressing flow and sediment concerns.

**General Comment #29: Analysis of Temperature Benefits Associated with Prescriptions**

Pacificorp commented that the Policy should direct the Regional Water Board to quantify temperature benefits of prescriptions developed using temperature models.

Response: The specific level of analysis necessary to address temperature concerns is beyond the scope of this Policy. The Policy requires a site-specific approach which implicitly acknowledges that one-size-fits-all approaches to temperature regulation are not appropriate, including approaches to analyzing temperature impacts employed in the course of regulating temperature. There are instances when the level of analysis suggested by Pacificorp is appropriate, but Regional Water Board staff disagrees that broadly applying this approach is necessary to identify appropriate measures to address temperature concerns.

**General Comment #30: Site Specific Implementation**

Pacificorp commented that section 4.3 should acknowledge situations where temperature impacts associated with factors other than shade may be justified, and should clarify how thermal refugia are considered in such cases.

Response: Regional Water Board staff have modified the text in section 4.3 of the Staff Report to address the comment.

**General Comment #31: Addressing Effects of Other Reservoirs**

Pacificorp stated that the Staff Report should use other reservoirs besides those on the Klamath River as examples of temperature effects because they would be subject to actions of the Regional Water Board.

Response: The regulatory process for addressing Klamath reservoirs is essentially the same as any other reservoir: coordination with the Division of Water Rights. The Division of Water Rights is the primary administrator of the regulatory process for reservoirs regardless of whether the reservoir is a FERC facility, or simply a water supply reservoir. (See e.g. State Water Board Order No. WQ 89-18 [Central Valley Regional Water Board issued WDRs to the Bureau of Reclamation for its high temperature releases from Shasta dam; however, the State Water Board opted to address water quality issues using its water rights authority to better coordinate water supply issues].)

**General Comment #32: Gravel Mining Concerns**

The Regional Water Board received a comment expressing concern regarding the effects of gravel mining, with particular concern expressed about channel incision exposing more water to solar radiation by forcing water to flow over rather than through gravel, and from incision leading to draining adjacent aquifers.

Response: This Policy directs the Regional Water Board to continue addressing temperature concerns associated with gravel mining through the 401 water quality certification program. The Regional Water Board establishes enforceable conditions to prevent water quality impacts, including those associated with channel incision, often building on local planning processes such as the Sonoma County Aggregate Resource Management Plan and the County of Humboldt Extraction Review Team.

**General Comment #33: SB 617 Compliance**

Several comments raised the issue of compliance with the newly enacted Senate Bill 617. Specific comments embedded under this comment address individually in response to the specific contention, i.e. adequacy of science, and need for regulation.

Response: The Administrative Procedure Act (APA) establishes rulemaking procedures and standards for state agencies in California (Gov. Code, §§ 11340 *et. seq.*) to ensure that regulations are clear, necessary and legally valid. SB 617 appears to amend existing OAL requirements to require a “standardized regulatory impact analysis” for a major regulation. The Regional Water Board intends to comply with applicable OAL requirements including submittal of a clear and concise summary and a summary of the necessity for the regulatory provision. However, Chapter 3.5 of the APA (as amended by SB617) generally does not apply to the adoption or revision of water quality control plans and guidelines pursuant to Division 7 (commencing with Section 13000) of the Water Code pursuant to Government Code section 11353.

Even if provisions of SB617 did apply to Basin Plan amendments, SB 617 requirements apply to a major regulation proposed on or after November 1, 2013. The Temperature Policy was proposed as early as November, 2011. Nevertheless, similar factors that inform any “regulatory impact analysis” have been considered and balanced in the drafting of the proposed policy and are already reflected in the final proposal.

**General Comment #34: Taking of Private Property**

Several comments charge that any requirement on land use activity to manage riparian land differently would constitute a taking of private property without just compensation.

Response: Staff do not agree that implementation of the Temperature Policy would result in any taking of property. First, a taking occurs when a landowner is deprived all economic use of their property. A riparian management area generally constitutes only a small portion of the land where a given nonpoint source activity occurs. Second, the Policy is clear that riparian management can be tailored for a specific activity or geographic area, and relevant factors can be considered before defining the precise nature of a management measure. Finally, this charge is not timely, as this type of analysis would need to be considered when a riparian management measure is imposed in a site- or activity-specific process.

**Comments and Responses Related to CEQA**

**CEQA Comment #1 (PacifiCorp)**

Dam removal is a compliance measure under the Policy only for projects under the jurisdiction of or within existing authority of the NCRWQCB and not dams regulated by FERC under the Federal Power Act.

Response: The Policy is meant to be comprehensive, and thus describes a full range of temperature implementation actions, both within the Regional Water Board’s permitting jurisdiction, and actions outside of the Regional Water Board’s permitting jurisdiction. It is correct that FERC projects, water rights, and local land use planning actions are not under the direct jurisdiction of the Regional Water Boards. However, other state and federal agencies must comply with the applicable Basin Plan objectives and take such plans and polices into consideration when taking discretionary actions. For example, an applicant seeking a Federal license or permit where the proposed activity may result in a discharge to surface water is required to obtain a Clean Water Act Section 401 water quality certification. The purpose of the 401 certification is to ensure that waste discharged to these waters from a proposed activity meets water quality standards and other appropriate requirements of the applicable Basin Plan.

State 401 Certification conditions become mandatory conditions of any federal license or permit for the project. When the State Division of Water Rights issues a 401 Certification for a FERC project or a water diversion project, they must certify that the project complies with the applicable water quality objectives and associated implementation plans within a region's Basin Plan. In turn the proposed Policy would rely on the jurisdiction of other agencies and their responsibility to adhere to the Basin Plan. Therefore, the examples of dam removal, which range from projects directly under the Regional Water Board jurisdiction to those under the Division of Water Rights, are reasonable and foreseeable compliance measures as a result of the proposed Policy which a CEQA impact analysis must consider. It should be noted that this analysis does not infer that particular effects associated with those measures will occur; only that it is a reasonable means of compliance that could occur.

**CEQA Comment #2 (PacifiCorp)**

The use of large-scale dams and PacifiCorp-owned dams are inappropriate examples of compliance measures related to the proposed Policy. The staff report should clarify how temperature effects at other impoundments will be addressed.

Response: All types of stream impoundments can be used as additional examples of in-stream structures potentially affected by the proposed Policy. For example, as stated in the Staff Report, there are several large dams in the North Coast Region; additionally, there are smaller impoundments – often termed “flashboard” dams – that are used to raise the water levels in streams to provide for diversion (either direct or pumping) primarily for agricultural use. Additionally, the Staff Report points to programs of implementation and compliance measures including the construction of off-stream ponds, embankment ponds, bypass flow structures and dam removal.

The specific example of the PacifiCorp dams was used to further illustrate the concept that the proposed Policy is intended to affect decisions and actions taken by other agencies, such as the Division of Water Rights or Bureau of Reclamation. Additionally, the use of the PacifiCorp dams as examples was essential in discussing the potentially significant impacts to the environment as result of a project-level action. As presented-in the Klamath Facilities Removal Environmental Impact Statement/Environmental Impact Report, December 2012, prepared by the U.S. Department of the Interior and California Department of Fish and Wildlife, several significant and unavoidable impacts to the environment are anticipated if dam removal proceeds. By disclosing impacts for a large project such as the Klamath Dam Removal Project, the analyses capture a range of impacts broad enough to cover small projects as well.

**CEQA Comment #3 (PacifiCorp)**

There is no discussion in the Staff Report on interim conditions subsequent to dam removal, which could have a remarkable impact on fisheries, water quality, scenic conditions and other recreational values.

Response: Interim impacts (immediately after dam removal) are discussed extensively throughout Chapter 9, and are a prime example of the potential impacts to water quality, recreation, fisheries and scenic resources. Additionally, impacts to the environment from dam removal include elevated exhaust levels; fugitive dust; vehicle and GHG emissions; turbidity; suspended sediment loads; reductions of dissolved oxygen; potential negative alteration of critical habitat for multiple fish species; potential alterations to water supply causing increased demand on groundwater resources; potential disturbance or alterations of historical, archaeological, cultural and paleontological resources from heavy equipment or reservoir drawdown; potential negative alterations to lake skiing and whitewater boating; impacts by exceeding local noise ordinances, exposing people to groundborne vibrations and increasing the ambient noise levels for outdoor receptors. Again, the disclosure of impacts from the Klamath Dam Removal Project was used as an example for other projects that may occur (and would obviously need a project-level CEQA analysis).

**CEQA Comment #4 (PacifiCorp)**

The Staff Report states short-term impacts are defined as weeks to months, but does not explain the timeframe associated with long-term impacts.

Response: On page 161 of the Staff Report, under mandatory findings of significance, short-term impacts associated with dam removal are inferred to last weeks to months. However, it should be noted that short-term effects could last days, weeks, months and in some cases even one to two years. In this instance, and generally, long-term impacts refer to several years to decades.

**CEQA Comment #5 (Jason Poburko-RPF, Kari Fisher-CFBF, Matt Greene-RPF, Michael Tadlock-CLFA, Alan Levine-CAG, Don McEnhill-Russian Riverkeeper)**

The alternatives analysis is inadequate and must include legal, reasonable, non-speculative, specific and more detailed alternatives.

Response: For legality of the alternatives selected, see response regarding controllable factors. The Policy describes a full range of temperature implementation actions, both within the Regional Water Board's permitting jurisdiction, and actions outside of the Regional Water Board's permitting jurisdiction. This includes voluntary measures, restoration grants, and actions that other agencies may take. Pursuant to California Code of Regulations, title 23, section 3777, subdivision (b)(3), the Staff Report includes an analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts. Section 9.3 of

the Staff Report presents four alternatives that were considered by staff during the development of the proposed Policy and Basin Plan amendment. The alternatives analyzed include: 1) the required no project alternative; 2) a land use prescriptive and waste discharge prohibition based alternative; 3) individual watershed TMDL development; and 4) the preferred alternative of a regional Temperature Implementation Policy and TMDL Action Plans for the Eel, Mattole and Navarro Rivers.

As stated in the project description Section 9.2.1., the objective is to document in one place the tools and actions available and necessary to achieve temperature water quality standards so as to protect and restore the beneficial uses of water in the North Coast Region. Alternative one, the required no action alternative, does not achieve this goal and was eliminated. Alternative two was an outgrowth of the scoping process and therefore analyzed as a potential alternative to address shade. However, the requirement for hard and fast riparian buffer zones does not address all controllable factors such as flow, and lacks a documented and organized strategy to help guide other agencies to ensure regional action to attain and maintain the water quality objective for temperature throughout the region. Additionally, it was thought to be overly burdensome in some instances to apply blanket prescriptive requirements regardless of the site-specific effect on beneficial uses. This type of program was not viewed as warranted at this time because it could result in excessively applied restrictions to some streams that may not be affected by the presence or absence of shade and therefore would be overly burdensome to some landowners or project proponents.

Alternative three, the status quo approach to individual TMDL development, has been determined to be inefficient, inequitable and an antiquated model of watershed-scale pollution reduction for ubiquitous pollutants or impairments such as sediment or temperature.

Based on a number of technical TMDL analyses, a regional policy that addressed the discharges of waste and common controllable factors in conjunction with a site-specific or programmatic evaluation was the preferred alternative.

Finally, the alternative analysis process under CEQA requires a screening of potential proposals/projects that could achieve the project goals and the reasons why the preferred alternative was selected. However, it is not required to conduct a fully equivalent environmental impact or cost benefit analysis for each alternative.

**CEQA Comment #6 (Jason Poburko-RPF and Kari Fisher-CFBF)**

Staff has dismissed significant impacts to timberlands, agricultural use in lands mapped as Prime Farmland, Unique Farmland or Farmlands of Statewide Importance.

Response: Potentially significant and unavoidable impacts to agricultural and forest resources were identified and discussed throughout Chapter 9 of the Staff Report. Compliance measures such as riparian buffers could lead to a loss of agricultural or forest lands production and as acknowledged, there is no mitigation for loss of land production.

**CEQA Comment #7 (Jason Poburko-RPF and Kari Fisher-CFBF)**

The staff report states that no element of the proposed action will rezone or force the rezoning of Timberland Production. This statement is true; however, this Policy will effectively place a no-harvest encumbrance on these lands and eliminate their potential to produce timber resources.

Response: It is true that this Policy will not rezone or force rezoning any timberlands. Additionally, the Policy does not prohibit management or eliminate their potential to produce timber resources. Landowners managing riparian areas have always been obligated to manage in such a way as to ensure adequate shade, stream flow and erosion control protections and to meet water quality objectives. This policy only states the requirement more directly. It is important to note that the approach articulated in the Policy is consistent with the Regional Water Board's existing approach to addressing temperature. The Regional Water Board has been addressing temperature concerns consistent with this Policy for years. The focus on effective shade to address elevated water temperature is not new, and will not change as a result of the adoption of the Policy. The aspect of this Policy that is new is the incorporation into the Basin Plan. For additional discussion see the response to General Comment #5.

**CEQA Comment #8 (Jason Poburko-RPF, Matt Greene-RPF, Don McEnhill-Russian Riverkeeper)**

The potentially significant impacts to biological resources have been underestimated. The Policy will: greatly increase fuel loading regardless of firebreaks or fuel treated areas; reduce and exclude non-shade tolerant species; limit hardwood regeneration and autochthonous energy inputs into the local stream environment; negatively affect endangered species such as red-legged frogs; and negatively affect and not adequately support macro-invertebrates.

Response: The Policy calls for site-specific implementation and has mitigation measures such as firebreaks and forest thinning activities incorporated to reduce potential fire hazards and reduce evapotranspiration that could have negative effects on the environment. These mitigation measures are incorporated by reference into the Policy Resolution No. R1-2013-0058 guiding staff to consider these mitigations where appropriate when providing written comments on plans or participating in site visits, inspections, pre-consultations, multi-agency meetings, or pre-harvest inspections.



Mitigation measures such as the agency consultation process to prevent species take are incorporated as well. There are already projects where the Regional Water Board and California Department of Fish and Wildlife agree on the implementation of site potential shade versus the low lying or shade intolerant plants. Macro-invertebrates and red-legged frogs are protected under the beneficial uses of Wildlife Habitat (WILD) and Rare, Threatened, or Endangered Species (RARE). The Policy calls for the restoration, preservation and maintenance of stream shade; the control of anthropogenic sediment delivery; and actions that support stream flows, to achieve natural temperatures that support all beneficial uses. The Policy promotes shade and acknowledges times when reductions of shade or alterations of uplands, forests and riparian areas may be needed to manage energy inputs, nutrients, and biological resources necessary to support all beneficial uses.

**CEQA Comment #9 (Jason Poburko-RPF)**

The use of this Policy destroys rural communities and eliminates the real infrastructure necessary to correct the problems.

Response: This comment misconstrues the structure of the proposed Policy, which provides additional public review on a site- or activity-specific context when developing temperature controls. For a detailed discussion, please see the discussion of the general approach of the Policy at the beginning of this response to comment document. Chapter 9 of the Staff Report acknowledges that potentially significant and unavoidable impacts to utilities and service systems may occur with implementation of compliance measures. As previously stated, in most cases in the North Coast Region the cold freshwater habitat beneficial use (COLD) is the most sensitive beneficial use. This Policy was designed and selected to provide balance and flexibility in protecting the COLD beneficial use while allowing for flexible yet attentive land use practices throughout the region.

**CEQA Comment #10 (Alan Levine-CAG, Don McEnhill-Russian Riverkeeper, Vivian Helliwell-PCFFA)**

The Policy relies on non-specific actions, actions in development and non-existent programs; and therefore does not provide a complete project description as required by CEQA, is piecemealing the project, and does not meet the requirements for effectiveness monitoring.

Response: The project is described throughout the Staff Report; however, a specific description of the proposed activity is reiterated in Section 9.2.1. In short, the proposed project is the adoption of a Policy and Action Plans, which comprehensively address controllable factors that adversely affect stream temperatures. Controllable factors include increased exposure to solar radiation due to loss of stream shade, physical stream channel alteration in response to elevated sediment loads, engineered stream channel alteration, and alteration of hydrology resulting from impoundments, water diversions, and landscape alteration.

The intent of the Policy and Action Plans is to document in one place the tools and actions available and necessary to achieve temperature water quality standards so as to protect and restore the beneficial uses of water in the North Coast Region. Many of the actions described in the Policy are already in effect and being implemented through 401 Certifications, NPDES permits, WDRs, and Waivers. Some permits have more explicit findings as compared to others, and staff acknowledges that the regional temperature implementation work plan should identify the need for more explicit findings in relevant permits being adopted or coming up for renewal.

Finally, as described in Chapter 7.0 Description of Surveillance Activities, the Regional Water Board staff will develop and implement a region-wide temperature monitoring plan to assist the Regional Water Board in determining whether this policy is effectively reducing and preventing elevated temperatures over the long-term. The monitoring plan will have the following elements:

- Long-term trend monitoring at established sites monitored by the Surface Water Ambient Monitoring Program (SWAMP).
- A regional cooperative monitoring, coordination, and data sharing program drawing on the voluntary efforts of landowners and organizations collecting water temperature data.
- A cooperative monitoring equipment loan and data sharing program.
- Special studies to support investigations of discrete temperature issues.
- Participation in the Board of Forestry's Effectiveness Monitoring Committee.
- Guidance and criteria for staff to consider regarding temperature monitoring requirements.

For more detail on effectiveness monitoring see Chapter 7 of the Staff Report.

**CEQA Comment #11(Alan Levine-CAG)**

The alternatives in the Staff Report are not evaluated for effectiveness, greenhouse gas (GHG) emissions or global warming as compared to one another.

Response: The Staff Report does acknowledge air quality (in particular as related to global warming or climate change) and greenhouse gas emissions as potentially significant impacts in the short term associated with potential compliance measures. However, the Policy is anticipated to have a beneficial effect on the environment, GHG emissions, and climate change overall in the long term and will improve the resilience of North Coast watersheds and water resources as we face the uncertainty of climate change. As stated in Chapter 8 of the Staff report, a statewide GHG inventory conducted by the California Air Resources Board indicates that of the total GHG emissions in California in 2004, sectors rank as follows by percent contribution: transportation (38%); electricity generation (25%); industrial processes, including landfills and wastewater treatment (20%); commercial and residential fuel uses (9%); agriculture and forestry (5%); and unspecified emissions (3%). The estimate of agriculture and forestry contributions to GHG emissions

includes consideration of the carbon sequestration services provided by trees and rangeland.

The proposed Policy has active components to promote funding for stream restoration projects including riparian planting, which is lacking from alternatives one and two. Additionally, alternative one and two lack the comprehensive approach of synchronized temperature and sediment controls in conjunction with water right coordination, which in turn is likely to promote more sequestration of carbon and improve resilience. Alternative three would likely promote the same actions, but would be on a longer timeframe of implementation; thus less effective as compared to the proposed Policy. Therefore, the most effective policy in regards to climate change and GHG emission reduction is still the proposed Policy.

For additional discussion on inadequate alternatives analysis see response to CEQA comment #5.

**CEQA Comment # 12 (Kari Fisher-CFBF and Claire McAdams, Ph.D-McAdams Lands LP)**

The Staff Report lacks a proper analysis of impacts to timberlands and agricultural lands taken out of production due to the cost of compliance and lacks a thorough analysis of the impacts to agricultural lands vitality, production, water use and resources.

Response: Staff acknowledges the potentially significant and unavoidable impacts to agricultural lands throughout Chapter 9 of the Staff Report. In many instances the Policy will not affect agricultural lands; however, there are likely instances where compliance measures implemented would result in a loss of land production along the stream corridor or potentially change the use of a water right in order to protect beneficial uses. Compliance measures such as those listed in Section 9.4 illustrate the potential actions required to meet the water quality objective for temperature.

During the project scoping period, the California Farm Bureau Federation (CFBF) raised several concerns regarding potentially significant impacts to agricultural lands. After evaluating the reasonably foreseeable compliance measures, staff determined that acknowledging the potential effects of the Policy on agricultural lands was sensible. In this analysis staff agrees with the CFBF that on a programmatic level there could be potentially significant impacts. However, without a specific project, the level of analysis regarding direct effects to agricultural lands can't be analyzed in further detail.

As several commenters noted, agricultural resources should be acknowledged as a resource that benefits the region and California. In this line of logic. taking a minimal fraction of the state's overall prime agricultural out of production is not likely a significant impact. However, from the perspective of an individual landowner, the selection of a compliance measure (e.g., riparian buffer) in an area of

prime agricultural land or high value timber land could result in a local impact. Yet, it must be stressed that riparian buffers are not the only compliance measure to be implemented and do not result in a de facto taking of lands. The site-specific nature of the Policy is intended to include flexibility to attain mutually beneficial outcomes.

**CEQA Comment #13 (Kari Fisher-CFBF and Claire McAdams, Ph.D-McAdams Lands LP)**

The mitigation measures for increased fire risk and higher evapotranspiration rates are inadequately explained or inconsistent with the proposed actions requiring the maintenance of site potential shade.

Response: Staff acknowledges that an increase in vegetation leads to an increase in fuel for wildfires and increases the rate of evapotranspiration which could have potentially adverse effects on aesthetics and hydrology/water quality. Mitigation measures such as upland thinning, selection harvesting and firebreaks in either riparian or upland areas can mitigate such impacts to a level of less than significant. Firebreaks in riparian areas may be allowable when shade is not a factor in stream temperatures due to the stream orientation or surrounding topography. Further, additional fuel management measures such as understory removal, thinning or selection harvest prescriptions can reduce evapotranspiration rates that have the potential to decrease stream flows in areas where fire suppression has altered the forest ecology. For additional discussion see response to CEQA Comment #8 (impacts to biological resources).

**CEQA Comment #14 (Kari Fisher-CFBF)**

In regards to Land Use, the findings of less than significant with mitigation are incorrect as the proposed Policy conflicts with the existing forest practice rules by placing a virtual moratorium on all timber harvest due to its proposed riparian buffers.

Response: The proposed Policy does not include proposed riparian buffers, rather it builds on the existing forest practice rules, which in most cases are protective of water quality and found to be adequate tools of implementation for the Policy. However, in specific instances such as on smaller water courses and in locations above anadromy, the Policy would require additional preservation and maintenance of site potential shade. Therefore, there is no conflict of existing regulation for the purpose of avoiding or mitigating an environmental effect. For additional discussion see the response to General Comment #5.

**CEQA Comment #15 (Kari Fisher-CFBF)**

In regards to Public Services, the findings of less than significant with mitigation are unsupported as the Staff Report acknowledges the potential risk of increased fire.

Response: It was determined that the impacts associated with increased fire risk could be mitigated to less than significant levels. Therefore, there is no increased demand on fire services. For additional clarification see responses to CEQA Comments #8 (impacts to biological resources) and #13 (mitigation measures for fire and evapotranspiration).

### **Comments and Responses Related to the Economic Analysis**

#### **ECON Comment #1 (Jason Poburko-RPF)**

On page 169 the Staff Report implies the cost to preserve, maintain and restore shade exceeds the \$50 million threshold requirements of SB 617. The canopy retention costs of \$11,375.51/acre exceed \$50 million on less than 4,400 acres.

Response: This comment appears to reflect a misunderstanding in the information summarized in Table 10-1. This is understandable as the terms “riparian herbaceous cover,” “riparian forest buffer” are used. What staffs’ are attempting to convey in Table 10-1 are estimated costs generally gathered from the local field office technical guide of the U.S. Department of Agriculture - Natural Resource Conservation Service (NRCS) and from local restoration project research. The \$11,375.51/acre cost was a midpoint cost for active restoration projects in accordance with the NRCS estimates and is not intended to be interpreted as canopy retention costs. The terms “riparian herbaceous cover,” “riparian forest buffer” and “wetland restoration” are the NRCS practices terms used in the context of habitats where the existing plant community has been disturbed, destroyed, or the species diversity is unable to provide adequate habitat and hands on restoration of vegetation is necessary.

The foregone profit associated with canopy retention cost and the preservation of shade on timberlands would require a project level analysis and is beyond the scope of this analysis. The practice applies in rangeland, pasture, cropland, and forests where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. The cost estimates in the table are a summary and range of costs and are intended to capture preservation, maintenance and the restoration of riparian areas as an example and are not intended to be interpreted as Policy prescriptions. More specific examples are provided below.

Practice 390 Riparian Herbaceous Cover Scenario #1 cost \$1,996.54 per acre  
Site adapted species of grasses, legumes, and/or forbs are planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Practice applies in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period.

Practice 390 Riparian Herbaceous Cover Scenario #2 costs \$22,916.06 per acre

The riparian area is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittent flooding and saturated soils where the existing plant community has been disturbed, destroyed, or the species diversity is unable to provide adequate habitat. Site adapted species of grasses, legumes, and/or forbs are planted as plugs to improve success.

Practice 391 Riparian Forest Buffer Scenario #1 costs \$165.04 per acre

Establish a buffer of trees and/or shrubs to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of trees or shrubs planted through direct seeding. Planting rate will be approximately 3000 seed per acre.

Practice 391 Riparian Forest Buffer Scenario #2 costs \$6,262.13 per acre

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of tree and/or shrub poles and live stakes (whips) planted by hand. The ratio of whips to poles will be 5:1. The cuttings will be planted in a mosaic pattern while still dormant. Tree mesh will be placed on the large cuttings.

Practice 391 Riparian Forest Buffer Scenario #3 costs \$2,999.74 per acre

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of hand planted bare-root shrubs, evergreen, and deciduous trees. One third of the area will be planted to each woody plant type. Planting for shrubs will be done at 6' x 6' spacing, evergreen tree spacing will be 12' x 15' and deciduous tree spacing at 15' x 15'. Tree shelters will be placed on the hardwoods and evergreens.

Practice 391 Riparian Forest Buffer Scenario #4 costs \$1,525.71 per acre

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of machine planted bare-root shrubs, evergreen, and deciduous trees. One third of the area will be planted to each woody plant type. Planting for shrubs will be done at 6' x 6' spacing, evergreen tree spacing will be 12' x 15' and deciduous tree spacing at 15' x 15'. Tree shelters will be placed on the hardwoods and evergreens.

**ECON Comment #2 (Jason Poburko-RPF and Claire McAdams, Ph.D-McAdams Lands LP)**

There are no California Registered Professional Foresters (RPFs) on staff with the Regional Water Board and therefore are unqualified to conduct an economic analysis on timberlands. Further, the economic analysis does not account for economic burdens such as WDR fees.

Response: The economic analysis must consider the compliance measures and cost to implement those measures as well as potential sources of funding. Identification of a compliance measure's price range is not a practice exclusive to RPFs and is not akin to practicing forestry. Staff acknowledges the expertise of RPFs and the site specific nature of the Policy and concludes that the economic considerations related to individual timber harvest plans are too complex to estimate at a regional policy level.

**ECON Comment #3 (Jason Poburko-RPF, Kari Fisher-CFBE, Matt Greene-RPF, Michael Tadlock-CLFA, Claire McAdams, Ph.D-McAdams Lands LP, George Gentry-BOF)**

The economic analysis prepared is inadequate, doesn't capture WDR fees, and provides no real analysis. Staffs' claim that it is too complex to estimate timber costs. However, a licensed forester is capable of such computation and one such analysis was completed for the BOF's ASP rules.

Response: The economic analysis requirements are limited to an estimate and range of the cost of compliance measures and identify potential sources of funding, not economic losses from foregone timber harvest. Even with the Board of Forestry's (BOF) requirements to analyze economic impacts regarding the ASP rules, it was concluded in the Initial Statement of Reason (ISOR), May 2009, that there was no information at the time to estimate the opportunity of foregone timber harvest from the area within Del Norte, Humboldt, Trinity, Siskiyou, Sonoma, or Mendocino Counties. Subsequent to additional public input, the BOF acknowledged in the 2009 Final Statement of Reason (FOSR), October 2009, that there is evidence supporting statewide adverse economic impacts to geographically specific locations. The Regional Water Board and BOF analysis are in agreement that the level of significance of these impacts varies depending on the circumstances and estimates of foregone profit will vary from plan to plan.