California Regional Water Quality Control Board
North Coast Region

Order No. R1-2017-0032

Shasta River TMDL Conditional Waiver
of
Waste Discharge Requirements

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

1. The *Action Plan for the Shasta River Temperature and Dissolved Oxygen Total Maximum Daily Loads,* hereinafter the Shasta River TMDL Action Plan or Action Plan, was adopted by the California North Coast Regional Water Quality Control Board (Regional Water Board) on June 28, 2006 (Resolution No. R1-2006-0052) and amended into the *Water Quality Control Plan for the North Coast Region* (Basin Plan) on January 26, 2007 following approval by the United States Environmental Protection Agency.[1] The Action Plan describes the implementation actions necessary to achieve the Temperature and Dissolved Oxygen TMDLs and attain water quality standards in the Shasta River watershed. Table 4-14 of the Action Plan (Attachment A of this Order) sets forth specific implementation actions required of the Regional Water Board and Dischargers[2] to achieve these standards.

2. The Action Plan also contains a provision conditionally waiving the requirement to file a Report of Waste Discharge (ROWD) and obtain Waste Discharge Requirements (WDR), pursuant to Water Code section 13269, for Dischargers that choose to participate in on-going collaborative programs and implement applicable management measures outlined in Table 4-14 of the Action Plan.

3. Pursuant to Water Code section 13269, and consistent with California's Policy for Implementation and Enforcement of Nonpoint Source Pollution Control Program (May 20, 2004), the Regional Water Board adopted the Shasta River TMDL Conditional Waiver of Waste Discharge Requirements (Order No. R1-2012-0083 or 2012 Order) on October 4, 2012. To be eligible for coverage under the 2012 Order, the Dischargers are required to employ land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients (including animal waste), other oxygen consuming materials, and elevated solar radiation loads (including loss of riparian vegetation) from affecting waters of the Shasta River and tributaries. Order No. R1-2012-0083 expired on October 4, 2017.

[1] *http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/shasta_river/060707/finalshastatmdlactionplan.pdf*

[2] The term "Dischargers" is used in this Order and includes individuals or entities that are responsible for discharges of waste into the Shasta River watershed as well as those responsible for maintaining operations that may limit or control the discharge of waste, i.e. riparian shade.

4. On June 1, 2017 the Regional Water Board initiated a 37 day public comment period on Order No. R1-2017-0032 (2017 Order).

5. On June 14, 2017 the Regional Water Board held a staff workshop in Yreka and on June 29, 2017 held a Board workshop in Santa Rosa to solicit public comment on the draft 2017 Order.

6. The Regional Water Board now finds that to efficiently prioritize resources for Order implementation it is appropriate for staff to continue to focus on those activities and Dischargers that pose the highest risk to water quality. Regional Water Board staff are prioritizing staff efforts on a subset of Dischargers with operations adjacent to important reaches of the Shasta River and its tributaries with high habitat value for support of beneficial uses and activities with the highest risk to water quality.

7. Factors that increase risk to water quality include type and intensity of land use, proximity to streams, and the length of stream adjacent to such activities. Accordingly, this Order directs staff to continue its focus on working with Dischargers whose operations present higher risks to water quality. Factors that increase risk to water quality of the Shasta River watershed include, but are not limited to:

    - Excessive animal grazing in riparian corridors, including grazing that occurs after forage length is less than four inches, or grazing when animals favor woody species;
    - Unrestricted animal access to the Shasta River, tributary reaches, or springs and their associated wetlands in the Shasta River watershed, which can result in discharge of animal waste to surface waters;
    - Feeding in close proximity to riparian corridors, which increases the introduction of animal waste into surface waters;
    - Storage or stockpiling of manure, soil, plant waste and other debris in areas where they could be washed or eroded into surface waters;
    - Storage of chemical fertilizers, pesticides, fuels, oils and other potentially hazardous substances or nutrient containing substances in areas where they could be readily introduced to surface waters;
    - Application of nutrients, compost, soil amendments, irrigation water, or other materials above the agronomic rate, or in a manner whereby excess water or nutrients percolate beyond the root zone and into groundwater, or run off into surface waters;
    - Tillage practices that inhibit the development of riparian vegetation and/or lead to excessive loading of sediment into surface waters;
    - Unpermitted alterations to streambanks and streambeds;
    - Creating or maintaining unpermitted impoundments of surface water that lead to elevated surface water temperatures; and

- Unmitigated tailwater return flows to main stem and tributary reaches, or into springs and their associated wetlands such that elevated surface water temperatures result.

8. This Order requires the Dischargers to provide Regional Water Board staff access to properties for the purposes of assessing compliance with this Order.

9. The Shasta River TMDL Action Plan and this 2017 Order, authorize the Regional Water Board's Executive Officer, on a site specific as-needed basis, to require the development, submittal, and implementation of Ranch Management Plans and/or Tailwater Management Plans designed to prevent the discharges of fine sediment, nutrients and other oxygen consuming material, as well as elevated solar radiation loads, from impacting water quality standards in the Shasta River watershed.

10. Ranch Management Plans and Tailwater Management Plans can range from a simple submittal describing practices implemented to prevent discharge of waste, including fine sediment, nutrients and other oxygen consuming material, as well as elevated solar radiation loads, from affecting waters in the Shasta River watershed, to a more comprehensive plan. More comprehensive plans could include, but are not limited to, identification and description of:

    - Existing sources of waste or tailwater discharges and other nonpoint source activities;
    - Management practices employed to control those sources and activities; and
    - Monitoring and reporting program to document actions taken to control the sources and the effectiveness of such actions.

    The level of detail required in a plan will be dependent on the site specific characteristics of an activity/operation, and will be specified in writing by the Regional Water Board's Executive Officer.

11. The Shasta River TMDL Action Plan and this 2017 Order, provide that the Regional Water Board's Executive Officer may direct the Dischargers to develop a site specific monitoring and reporting plan, including a description of specific monitoring and reporting requirements. Monitoring and reporting may include, but is not limited to, the following:

    - Photo documentation related to implementation of management measures;
    - Evaluation and documentation of instream and near-stream management measures (e.g., riparian buffer establishment affecting nutrient and temperature discharges); and/or
    - Collection of tailwater data, including impacts from tailwater discharge (e.g. collection of water temperature, nutrients, or dissolved oxygen data and estimates of tailwater discharge volumes).

The level of detail required in a site specific monitoring and reporting plan will be dependent on the site-specific characteristics of an activity/operation, and will be specified in writing by the Regional Water Board's Executive Officer.

12. The landowners who do not receive a letter requiring development and submittal of plans and/or other documentation (described in findings 9-11) need not file anything with the Regional Water Board and need not submit annual reports as previously required by the Shasta River TMDL Action Plan and the 2012 Order as long as they meet eligibility criteria and conditions of this 2017 Order. Regardless, all Dischargers are still required to comply with the provisions in Table 4-14 of the Action Plan (Attachment A of this Order). Appendices A through G of the Action Plan provide examples of applicable management measures that Dischargers should consider as part of their land stewardship activities.

13. This Order provides some examples of the types of management measures that minimize, control, or prevent the discharge of sediment and elevated solar radiation loads to the Shasta River watershed, consistent with Table 4-14 of the Action Plan (Attachment A). These types of management measures are the type that will control, minimize or prevent the discharge of waste and other controllable water quality factors associated with a site. Alternative site-specific management measures that achieve the equal or better level of performance as the measures contained in this Order may be developed in consultation with Regional Water Board staff for a specific site and activity.

14. Since adoption of the 2012 order, progress toward attaining the TMDL has been made utilizing an approach focused on activities with the highest risk to water quality. This progress in the Shasta River watershed includes the installation of 24 stockwater systems, 8 irrigation efficiency projects, 6 projects that divert tailwater return flow, and 3,750 linear feet of riparian plantings. Additionally, 23 ranches have been assessed by Regional Water Board staff. Approximately 133 miles of riparian fencing have been installed since the adoption of the Action Plan, protecting 91% of the mainstem of the Shasta River, 60% of the Little Shasta River, 49% of Parks Creek, 60% of Yreka Creek, and a cumulative 61% of the entire stream reach length of the Shasta River system. Since 2006 approximately $3.3 million has been awarded in grants to complete these projects and to support ongoing stewardship efforts within the watershed to implement the Action Plan.

15. Tailwater discharges continue to be one of the most significant and controllable threats to water quality subject to Regional Water Board regulatory jurisdiction, as does the lack of riparian fencing along tributaries of the Shasta River. Flow and increasing dedicated cold water to the Shasta River watershed is another high priority with efforts underway by Dischargers, The Nature Conservancy, Cal Trout, Montague

Water Conservation District, Shasta Valley Resource Conservation District, and the National Marine Fisheries Service.

16. The Regional Water Board, acting as the lead agency under the California Environmental Quality Act (Public Resources Code, sections 21000-21777) (CEQA), conducted an environmental analysis as part of the Shasta River TMDL development and adoption process in accordance with title 14, California Code of Regulations, section 15251(g). The implementation of this Order (the "project") will not result in any physical changes in the environment different from those that were analyzed in the Shasta River TMDL Action Plan. This Order does not require preparation of a subsequent or supplemental environmental document pursuant to California Code of Regulations, title 14, sections 15162 or 15163. There is no evidence to indicate that substantial changes are proposed for the project, that substantial changes have occurred with respect to the circumstances of the project, or that there is new information of substantial importance with respect to the project. The issuance of this Order is also exempt from the provisions of CEQA in accordance with the following categorical exemptions: title 14, California Code of Regulations sections 15301, (existing facilities); 15304, (minor alterations to land); 15306 (information collection); and 15307 and 15308 (certain actions by regulatory agencies to maintain, restore, or enhance natural resources and to protect the environment.) The Regional Water Board will file a notice of determination and exemption after adoption of this Order.

17. State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Resolution No. 68-16) requires Regional Water Boards, in regulating the discharge of waste, to maintain high quality waters of the state, and to ensure that discharges will not unreasonably affect beneficial uses, and will not result in water quality less than that described in Regional Water Board's policies. Order R1-2017-0032 is consistent with Resolution 68-16 because it requires management practices and measures to be implemented to achieve water quality standards and to prevent nuisance. The Shasta River TMDL Action Plan establishes an iterative process that includes evaluation and then implementation of management practices in a timely manner to reduce discharges of waste. These conditions are enforceable through this Order. Changes in water quality that may occur as a result will be to improve, over time, the quality of the waters, not to cause degradation. Thus, any change in water quality will be consistent with maximum benefit to the people of the state and will not unreasonably affect beneficial uses.

18. The Regional Water Board determines that the adoption of this Order will be consistent with the Basin Plan, will be in the public interest, and will not have a significant impact on the environment.

19. Following the expiration or replacement of this 2017 Order, the Regional Water Board intends to address water quality concerns associated with agriculture in the Shasta River watershed through a permitting program (i.e. order) more consistent with other approaches implemented in other parts of the state. The future order is anticipated to follow the same general approach as this 2017 Order, requiring the Dischargers to proactively implement land stewardship practices and activities that minimize, control, and prevent discharges of fine sediment, nutrients, other oxygen consuming materials, and elevated solar radiation loads to the Shasta River and tributaries. The future order would continue to involve on-site water quality assessments with Regional Water Board staff. However, the future order may differ from this Order by incorporating a tiered structure, employing multiple levels of permitting rigor commensurate with the level of discharge or threat of discharge, and may require active enrollment procedures and payment of fees. It is likely that the lowest risk tier would be for those properties that have already been assessed by Regional Water Board staff and successfully implemented practices that minimize, control and prevent discharges of fine sediment, nutrients, other oxygen consuming materials, and elevated solar radiation loads to the Shasta River and tributaries. Higher tiers with increased monitoring and reporting requirements would apply to those properties that have not developed plans or taken actions to comply with the conditions of this Order. Any future order would be subject to noticing and public comment before consideration of adoption by the Regional Water Board.

THEREFORE, IT IS HEREBY ORDERED that pursuant to Water Code sections 13263, subdivision (a), 13267, and 13269, the Regional Water Board waives the requirement to submit a report of waste discharge and the requirement to establish waste discharge requirements for landowners in the Shasta River watershed that comply with the following:

1. Dischargers that are implementing applicable management measures outlined in this Order will be considered eligible for coverage under this Order. Such Dischargers shall employ land stewardship practices as described below and in Attachment A of this Order.

2. If required in writing by the Regional Water Board's Executive Officer, Dischargers shall develop Ranch Management and/or Tailwater Management Plan(s).

3. The Regional Water Board's Executive Officer may also direct the Discharger to develop and implement a site specific monitoring and reporting plan. When required by the Executive Officer, Dischargers shall develop and provide a site specific monitoring and reporting plan for Executive Officer's review and approval. Monitoring and reporting may include, but is not limited to, the following:

    a. Photo documentation related to implementation of management measures;

b. Evaluation and documentation of instream and near-stream management measures (e.g. riparian buffer establishment affecting nutrient and temperature discharges);
c. Collection of tailwater data, including impacts from tailwater discharge (e.g. collection of water temperature, nutrients, or dissolved oxygen data and estimates of tailwater discharge volumes).
d. Annual summary of progress towards implementing management measures in an approved Ranch Management or Tailwater Management Plan(s), or other activities designed to prevent or minimize potential water quality impacts;
e. Monitoring results.

4. When any plan as described above is required and subsequently approved by the Executive Officer, the Discharger shall implement the plan. Failure to submit or implement the plan as approved is a violation of this Order.

5. Dischargers shall comply with management measures that minimize, control and prevent the discharge of fine sediment, nutrients (including animal waste), other oxygen consuming materials and elevated solar radiation loads that affect the Shasta River watershed. The following are management measures that will limit or prevent the discharge of waste and elevated solar radiation loads to the Shasta River watershed. Dischargers shall implement management measures to comply with these standard conditions or management measures developed in consultation with Regional Water Board staff that provide equal or better protection:

a. Riparian areas are managed in a manner that allows the natural establishment and abundance of native vegetation;
b. Riparian areas are managed in a manner that allows sufficient vegetation to prevent surface erosion;
c. Riparian areas are managed in a manner that maintains their essential functions supporting beneficial uses (e.g. sediment filtering, woody debris recruitment, streambank stabilization, nutrient cycling, pollutant filtering);
d. Grazed lands are managed in a manner that prevents pollutant discharges;
e. Periodic grazing in riparian areas is limited to the late winter/early spring period, when impacts to woody species are minimized;
f. Grazing within riparian corridors occurs for short durations, and only when forage consisting of non-woody vegetation is available;
g. Livestock are removed from riparian areas when stubble height reaches 4 inches, or livestock shift preference to browsing of woody species, whichever occurs first;
h. Livestock are prevented from disturbing sediment discharge sites and other unstable features adjacent to watercourses;
i. At no time shall grazing in riparian areas cause a discharge of waste to surface waters;

j. Manure, soil, plant waste, and other debris are stockpiled away from areas where they could be washed or eroded into streams;
k. Management practices are in place to prevent irrigation water or tailwater from reaching surface waters;
l. Tillage practices do not prevent the natural establishment and abundance of native riparian vegetation;
m. Management practices, such as buffer strips and cover crops, are in place to prevent the erosion of sediments that could reach waterbodies;
n. Nutrients from fertilizers, compost, soil amendments, or other sources are applied at agronomic rates to prevent nutrient runoff into surface water or percolation into groundwater at levels that violate water quality standards;
o. Roads and related infrastructure are constructed and maintained in a manner that prevents and minimizes the discharge of sediment to the waterbodies;
p. Pesticides are stored, handled, used, and disposed of in manner that avoids delivery to surface water or groundwater; and
q. Petroleum products and other liquid chemicals, such as gasoline, diesel, biodiesel, and oil shall be stored, handled, used, and disposed of in a manner that avoids delivery to surface water and groundwater.

6. This Order shall not apply to any discharges for which an individual WDR or waiver of WDRs has been issued by the Regional Water Board. It also does not supersede or limit the requirements of any enforcement actions (e.g., cleanup and abatement orders) that are issued by the State or Regional Water Board.

7. Pursuant to Water Code section 13267, the Regional Water Board staff or its authorized representatives may investigate the property of persons subject to this Order to ascertain whether the purposes of the Porter-Cologne Act are being met and whether the landowner is complying with the conditions of this Order. This inspection shall be made with the consent of the landowner, or if consent if withheld, with a duly issued warrant pursuant to the procedure set forth in Title 13 Code of Civil Procedure Part 3 (commencing with section 1822.50). However, in the event of an emergency affecting the public health or safety, an inspection may be performed without consent or the issuance of a warrant.

8. Nothing in this Order precludes the Regional Water Board from taking enforcement actions for violations of any discharge prohibition in the Basin Plan, California Water Code, or requiring cleanup and abatement of existing sources of pollution, where appropriate.

9. This Order shall not create a vested right, and discharges of waste shall be considered a privilege, as provided for in Water Code section 13263.

10. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). Dischargers are responsible for meeting all other applicable requirements of local, state, and federal regulations and/or required permits.

11. Discharges shall not cause conditions of pollution or nuisance as defined by Water Code section 13050.

12. This Order does not preclude the need for permits that may be required by other governmental agencies, nor does it supersede any requirements, ordinances, or regulations of any other regulatory agency, including necessary certification and permitting for the application of pesticides and herbicides and proper handling of human/domestic waste.

13. This Order expires upon Regional Water Board adoption of a superseding regulatory action or after five years, whichever occurs first.

Certification

I, Matthias St. John, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of Order R1-2017-0032, adopted by the California Regional Water Quality Control Board, North Coast Region, on October 19, 2017.

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Matthias St. John
Executive Officer

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management	• Parties Conducting Grazing Activities • Landowners and managers owning and operating property adjacent to the Shasta River and its tributaries	**Landowner/User Actions:** Landowners should employ land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients, and other oxygen consuming materials from affecting waters of the Shasta River and tributaries. Landowners should also employ land stewardship practices and activities that minimize, control, and preferably prevent elevated solar radiation loads from affecting waters of the Shasta River and its **Class I and II tributaries**. Those that oversee and manage grazing and range land activities in the Shasta River watershed should implement the applicable management measures for agriculture and grazing from the following sources: • *Policy for the Implementation and Enforcement of the Nonpoint* Source *Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • Shasta *Watershed Restoration Plan* (November 1997). • Shasta *Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • Recovery *Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix A of this Action Plan for examples of some of these applicable measures. Landowners may need to develop and implement management measures in addition to those specified above to address site-specific conditions. This may include determining appropriate riparian widths for tree planting activities such that the appropriate width buffer is created to ensure effective stream shading and oxygen consuming material discharge elimination. Landowners shall submit annually to the Regional Water Board a written summary of all range and riparian management actions taken to achieve compliance with water quality standards, the TMDLs, and the NPS Policy, either individually or through the Shasta Valley RCD and its CRMP or through the CDFG Coho ITP.
	• Shasta Valley Resource Conservation District (Shasta Valley RCD) • Shasta Coordinated Resource Management and Planning Committee (Shasta CRMP)	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist landowners in developing and implementing management practices that minimize, control and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, as well as elevated solar radiation loads from affecting waters of the Shasta River and tributaries. • Assist landowners in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the range and riparian management actions taken by the landowner.
	• California Department of Fish and Game (CDFG)	**State Actions:** CDFG will: • Assist landowners in developing and implementing management practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials as well as elevated solar radiation loads from affecting waters of the

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management (cont.)	• CDFG (cont.) • Regional Water Board	Shasta River and tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved). The Regional Water Board will: • Work cooperatively with the Shasta Valley RCD and its CRMP to: 1. Provide technical support and information to individuals, landowners, and community members in the Shasta River watershed. 2. Coordinate monitoring, educational and outreach efforts. 3. Develop a monitoring program to evaluate and document implementation and effectiveness of the range and riparian management actions taken by the landowners. • Should efforts fail to be implemented or effective, the Regional Water Board's Executive Officer shall require, on a site specific as-needed basis, the appropriate responsible parties to develop, submit, and implement a ranch management plan designed to prevent discharges of fine sediment, nutrients and other oxygen consuming materials, as well as elevated solar radiation loads from affecting waters of the Shasta River and tributaries. The ranch management plan shall describe in detail: 1. Locations discharging and/or with the potential to discharge nutrients and other oxygen consuming materials, and elevated solar radiation loads to watercourses which are caused by livestock grazing or related activities. 2. How and when identified sites are to be controlled and monitored, and management practices that will be implemented to prevent and reduce future discharges of nutrient and other oxygen consuming materials, and elevated solar radiation loads to the Shasta River and its tributaries. Group and/or individual ranch management plans shall be implemented upon review, comment, and approval by Regional Water Board staff and their Executive Officer for compliance with water quality standards, the TMDLs, and the NPS Policy. • The Regional Water Board shall address the removal and suppression of vegetation that provides shade to a water body through development of a Stream and Wetland System Protection Policy. This will be a comprehensive, region-wide riparian policy that will address the importance of shade on instream water temperatures and will potentially propose riparian setbacks and buffer widths. The Policy will likely propose new rules and regulations, and will therefore take the form of an amendment to the Basin Plan. Other actions under this section may be modified for consistency with this policy, once adopted. With funding already available through a grant from the U.S. EPA, Regional Water Board staff are scheduled to develop this Policy for Regional Water Board consideration and adoption by the end of 2007. • Within two years of EPA approval of the TMDL Action Plan (by January 26, 2009), the Regional Water Board's Executive Officer shall report to the Regional Water Board on the status of the preparation and development of appropriate permitting actions.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management (cont.)	• Regional Water Board (cont.)	• The Regional Water Board shall take appropriate permitting actions as necessary to address the removal and suppression of vegetation that provides shade to a water body in the Shasta River watershed. Such actions may include, but are not limited to, prohibitions, waste discharge requirements (WDRs) or waivers of WDRs for grazing and rangeland activities, farming activities near water bodies, stream bank stabilization activities, and other land uses that may remove and/or suppress vegetation that provides shade to a water body. Should prohibitions, waivers or WDRs be developed, they may apply to the entire North Coast Region or just to the Shasta River watershed. • Within ten years of EPA approval of the TMDL (by January 26, 2017), all identified discharges associated with riparian land use activities shall be in compliance with water quality standards, the TMDLs, and the NPS Policy.
Tailwater Return Flows	• Irrigators	**Landowner Actions:** Those that oversee and manage tailwater discharges from irrigated lands in the Shasta River watershed, which may include landowners, lessees, and land managers (collectively referred to as irrigators), should employ land stewardship and irrigation management practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries. Irrigators should implement the applicable management measures for tailwater return flows from the following sources: • Policy *for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • Shasta *Watershed Restoration Plan* (November 1997). • Shasta *Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • *Recovery Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix B of this Action Plan for examples of some of these tailwater return flow measures. In addition, landowners may develop and implement management measures suitable for their site-specific conditions. Irrigators should submit annually to the Regional Water Board a written summary of all tailwater return flow management actions taken to help achieve compliance with water quality standards, the TMDLs, and the NPS Policy, either individually or through the Shasta Valley RCD and its CRMP or through the CDFG Coho ITP.
	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist irrigators in developing and implementing management practices that minimize, control and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Tailwater Return Flows (cont.)	• Shasta Valley RCD and Shasta CRMP (cont.)	• Implement the recommended actions specified in the Shasta Watershed Restoration Plan, Coho Recovery Strategy, and the ITP (when approved). • Assist irrigators in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the tailwater management actions taken by the irrigators.
	• CDFG	**State Actions:** CDFG will: • Assist irrigators in developing and implementing management practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved).
	• Regional Water Board	Regional Water Board will: • Work with the Shasta Valley RCD and its CRMP to develop a monitoring program to evaluate and document implementation and effectiveness of the tailwater management actions taken by the irrigators. • Evaluate the effectiveness of tailwater management actions and develop recommendations for the most effective regulatory vehicle to bring tailwater discharges into compliance with water quality standards, the TMDLs, and the NPS Policy. • Should efforts fail to be implemented or effective, the Regional Water Board's Executive Officer may require irrigators, on a site specific as-needed basis, to develop, submit, and implement, upon review, comment and approval by the Regional Water Board's Executive Officer, a tailwater management plan designed to prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated solar radiation loads from affecting waters of the Shasta River and its tributaries. • Within one year of EPA approval of the TMDL (by January 26, 2008), the Regional Water Board's Executive Officer shall report to the Regional Water Board on the status of the preparation and development of appropriate permitting actions to bring the discharge into compliance with water quality standards, the TMDLs, and the NPS Policy. • Within five years of EPA approval of the TMDL (by January 26, 2012) and based on Regional Water Board staff recommendation(s) derived from the evaluation phase for tailwater management, the Regional Water Board shall adopt prohibitions, WDRs, waivers of WDRs, or any combination thereof, as appropriate. • Within ten years of EPA approval of the TMDL (by January 26, 2017), the discharge of all tailwater return flow shall be in compliance with water quality standards, the TMDLs, and the NPS Policy.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Water Use and Flow	• Water Diverters	**Water Diverter(s) Actions:** Water diverters should employ water management practices and activities that result in increased **dedicated cold water instream flow** in the Shasta River and its tributaries. Water diverters should participate in and implement applicable flow-related measures outlined in the following sources: • *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • *Shasta Watershed Restoration Plan* (November 1997). • *Shasta Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • Recovery *Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix C of this Action Plan for examples of flow related measures. In addition, landowners may develop and implement management measures suitable for their site-specific conditions. Within two years (by January 26, 2009), and again within four years of EPA approval of the TMDL (by January 26, 2011), water diverters shall report in writing to the Regional Water Board, either individually or through the Shasta Valley RCD and its CRMP, on the measures taken to increase the dedicated cold water instream flow in the Shasta River by 45 cfs or alternative flow regime that achieves the same temperature reductions from May 15 to October 15. Within five years of EPA approval of the TMDL (by January 26, 2012), water diverters shall provide a final report to the Regional Water Board, either individually or through the Shasta Valley RCD and its CRMP, on documenting dedicated cold water instream flow in the Shasta River in relation to the 45 cfs goal or alternative flow regime that achieves the same temperature reductions from May 15 to October 15. This recommended flow measure does not alter or reallocate water rights in the Shasta or Klamath River watersheds, nor bind the Regional Water Board in future TMDLs, the State Water Board's Division of Water Rights in any water rights decision, or state and federal courts.
	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist water diverters in developing and implementing management practices that increase dedicated cold water instream flows in the Shasta River and tributaries. • Assist water diverters in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken to increase dedicated cold water instream flows in the Shasta River.
	• CDFG	**State Actions**: CDFG will: • Assist water diverters in developing and implementing management practices that increase dedicated cold water instream flows in the

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Water Use and Flow (cont.)	• CDFG (cont.)	Shasta River and tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved). • Assist in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken by the water diverters to increase dedicated cold water instream flows in the Shasta River.
	• Department of Water Resources (DWR)	DWR should: • Coordinate and assist water diverters in developing and implementing a monitoring program through a watermaster service to evaluate and document implementation and effectiveness of the actions taken by the water diverters to increase dedicated cold water instream flows in the Shasta River.
	• Regional Water Board	The Regional Water Board will: • Work cooperatively with water diverters, the Shasta Valley RCD and its CRMP, CDFG and DWR, wholly or in part, to establish monitoring and reporting programs to gauge implementation and effectiveness of the actions taken by responsible parties. • If the Executive Officer receives credible evidence that the Shasta River flows are diminishing, the Executive Officer shall promptly report this to the Regional and State Water Board.
	• State Water Resources Control Board (State Water Board)	• If after five years, the Regional Water Board's Executive Officer finds that the above measures have failed to be implemented or are otherwise ineffective, the Regional Water Board may recommend that the State Water Board consider seeking modifications to the decree (*In re* Waters of Shasta River and its Tributaries, No. 7035 (Super. Ct. Siskiyou County Dec. 29, 1932)), conducting proceedings under the public trust doctrine and/or conducting proceedings under the waste and unreasonable use provisions of the California Constitution and the California Water Code.
Irrigation Control Structures, Flashboard Dams, and other Minor Impoundments (Collectively referred to as minor impoundments)	• Individual Irrigators • Irrigation Districts • DWR • Others owning, operating, managing, or anticipating construction of minor impoundments	**Irrigator(s) Actions**: Irrigation districts, individual irrigators, and others that own, operate, manage, or anticipate constructing instream minor impoundments or other structures capable of blocking, impounding, or otherwise impeding the free flow of water in the Shasta River system shall comply with one or more of the following measures: • Permanently remove minor impoundments in the Shasta River mainstem. • Re-engineer existing impoundments to decrease surface area of impoundment. • Not construct new impoundments unless they can be shown to have positive effects to the beneficial uses of water relative to water quality compliance and the support of beneficial uses, including the salmonid fishery, in the Shasta Valley. Within one year of EPA approval of the TMDL (by January 26, 2008), report in writing to the Regional Water Board methods and management practices they shall implement that will reduce sediment oxygen demand rates by 50% from baseline behind all minor impoundments.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Minor impoundments (cont.)	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist in developing and implementing minor impoundment removal, re-engineering or initial design work for compliance with water quality standards, the TMDLs, and the NPS Policy. • Implement the recommended actions specified in the Shasta Watershed Restoration Plan and the ITP (when approved). • Assist in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken to remove, re-engineer or limit construction of minor impoundments on the mainstem Shasta River.
	• CDFG	**State Actions**: CDFG will: • Assist in developing and implementing the removal, re-engineering, or limitation on the construction of minor impoundments in the Shasta River mainstem. • Administer the Coho Recovery Strategy and the ITP (when approved). • Assist in the development and implementation of a monitoring program to evaluate and document the implementation and effectiveness of the actions taken to remove, re-engineer, or limit construction of minor impoundments on the mainstem Shasta River.
	• Regional Water Board	The Regional Water Board will: • Work with CDFG to establish monitoring and reporting elements of their programs in order to gage their effectiveness. • Work with the Shasta Valley RCD and its CRMP to establish monitoring and reporting programs to gage the implementation and effectiveness of the Shasta Watershed Restoration Plan. • Include appropriate conditions in Clean Water Act water quality certification permits for minor impoundment removal or re-engineering activities that comply with water quality standards, the TMDL, and the NPS Policy.
Lake Shastina	• MWCD • City of Weed • County of Siskiyou • Caltrans • Communities of Lake Shastina • U.S. Forest Service (USFS) • U.S. Bureau of Land Management (BLM) • Private timberland owners	Within 2 years of EPA approval of the TMDL(by January 26, 2009), the responsible parties shall complete a study of water quality conditions and factors affecting water quality conditions in Lake Shastina, and develop a plan for addressing factors affecting water quality conditions to bring Lake Shastina into compliance with water quality standards, the TMDLs, and the NPS Policy. The study and plan shall be submitted to the Regional Water Board Executive Officer for review, comment and approval. Within 5 years of EPA approval of the TMDL (by January 26, 2012), the responsible parties shall begin implementing the plan.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Dwinnell Dam	• Montague Water Conservation District (MWCD)	Within 2 years of EPA approval of the TMDL (by January 26, 2009), the MWCD shall report in writing to the Regional Water Board on a plan to bring the discharge from Dwinnell Dam into compliance with water quality standards, the TMDLs, and the NPS Policy.
City of Yreka Wastewater Treatment Facility (Yreka WWTF)	• City of Yreka • Regional Water Board	**Yreka Wastewater Treatment Facility Actions**: The Yreka WWTF shall comply with existing Regional Water Board Orders and Monitoring and Reporting Programs. **Regional Water Board Actions**: The Regional Water Board will: • Pursue aggressive compliance with Order No 96-69 and CAO No. R1-2004-0037. • Continue vigorous oversight and enforcement of Monitoring and Reporting Program No. R1-2003-0047 to ensure timely submittal of sampling and analytical results from the operators of the Yreka WWTF.
Urban and Suburban Runoff	• City of Yreka • City of Weed • City of Montague • Community of Edgewood • Communities of Lake Shastina • Other landowners with suburban runoff • Regional Water Board	**Actions:** The cities of Yreka, Weed, Montague, the communities of Lake Shastina, and other landowners with suburban runoff should identify possible pollutants, their sources, and volumes of polluted runoff from urban and suburban sources within their spheres of influence that may discharge, directly or indirectly, to waters of the Shasta River watershed. Cities and other landowners with suburban runoff should implement the applicable measures from the NPS Policy. See Appendix D of this Action Plan for examples of some of these applicable measures. Within two years of EPA approval of the TMDL (by Jan. 2009), cities and landowners with suburban runoff shall develop a plan to minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials and elevated temperature waste discharge from affecting waters of the Shasta River and its tributaries. The plan shall be submitted to the Regional Water Board's Executive Officer for review, comment and approval. Within 5 years of EPA approval of the TMDL (by Jan. 2012), cities and landowners with suburban runoff shall begin implementing the plan. **State Actions**: The Regional Water Board will: • Work cooperatively with responsible parties to implement their plan, including appropriate management measures and reasonable time schedules which minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials and elevated temperature waste discharge from affecting waters of the Shasta River and its tributaries.
Activities on Federal Lands	• USFS	**USFS Actions**: The USFS should consistently implement the best management practices for timber harvest activities, grazing, and other activities included in the: • Klamath *National Forest Land and Resource Management Plan* (USFS 1995) or as amended as long as equivalent or better water quality protections are required. • Shasta-Trinity National Forest Land and Resource Management Plan (USFS 1995) or as amended as long as equivalent or better water quality protections are required. • *Water Quality Management for Forest System Lands in California, Best Management Practices* (USFS 2000) or as amended as long as

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Activities on Federal Lands (cont.)	• USFS (cont.)	equivalent or better water quality protections are required. See Appendix E of this Action Plan for some examples of these measures.
	• Regional Water Board	**Regional Water Board Actions**: The Regional Water Board will: • Continue its involvement with the USFS to periodically reassess the mutually agreed upon goals of the 1981 Management Agency Agreement between the SWRCB and the USFS. • Work with the USFS to draft and finalize a Memorandum of Understanding (MOU). The MOU shall be drafted and ready for consideration by the appropriate decision-making body of the USFS within two years of EPA approval of the TMDL (by January 26, 2009). The MOU shall include, in part, buffer width requirements and other management practices as detailed in Appendix E.
	• BLM	**BLM Actions**: BLM shall implement best management grazing strategies that are detailed in a joint management agency document titled: • *Riparian Management, TR 1737-14, Grazing Management for Riparian*-Wetland *Areas, USDI-BLM, USDA-FS (1997).* See Appendix F of this Action Plan for some examples of these measures.
	• Regional Water Board	**Regional Water Board Actions**: The Regional Water Board will work with the BLM to draft and finalize a Memorandum of Understanding (MOU). The MOU shall be drafted and ready for consideration by the appropriate decision-making body of the BLM within two years of EPA approval of the TMDL (by January 26, 2009). The MOU shall include buffer width requirements and other management practices as detailed in Appendix F of this Action Plan.
Timber Harvest Activities on Non-Federal Lands	• Private Parties Conducting Timber Harvest Activities	**Timber Harvest Related Actions**: Parties conducting timber harvest activities should employ land stewardship practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials from affecting waters of the Shasta River and tributaries. Landowners should also employ land stewardship practices and activities that minimize, control, and preferably prevent elevated solar radiation loads from affecting waters of the Shasta River and its Class I and II tributaries.
	• California Department of Forestry (CDF)	**State Actions:** CDF will: • Ensure timber operations in the Shasta River watershed are in compliance with the water quality standards, the TMDLs, and NPS Policy.
	• Regional Water Board	Regional Water Board Actions: The Regional Water Board shall use appropriate permitting and enforcement tools to regulate discharges from timber harvest activities in the Shasta River watershed, including, but not limited to: • Participation in the CDF timber harvest review and approval process. • Use of general or specific WDRs and waivers of WDRs, if applicable, to regulate timber harvest activities on private lands in the Shasta River watershed.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Timber Harvest Activities on Non-Federal Lands (cont.)	• Regional Water Board (cont.)	• Timber harvest activities on private lands in the Shasta River watershed are not eligible for Categorical Waiver C included in the Categorical Waiver of *Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region* (Order No. R1-2004-0016) simply through the adoption of this TMDL Action Plan. However, timber harvest activities on private lands in the Shasta River watershed may be eligible for Categorical Waivers A, B, D, E, and F, as appropriate. • If the California Forest Practice Rules (Title 14 CCR Chapters 4, 4.5 and 10) are changed in a manner that reduces water quality protections, the Regional Water Board shall require plan submitters to maintain the level of water quality protection provided by the 2006 Forest Practice Rules. See Appendix G of this Action Plan for select examples of 2006 Forest Practice Rules.
California Department of Transportation Activities (Caltrans)	• Caltrans • Regional Water Board	**Caltrans Actions**: Caltrans shall implement the requirements of its stormwater program. **Regional Water Board Actions**: Regional Water Board shall: • Within two years of EPA approval of the TMDL (by January 26, 2009), complete an initial evaluation of the Caltrans Stormwater Program. • After the initial two-year evaluation is completed, the Regional Water Board shall continue periodic reviews of the program to assure ongoing compliance.

IX. Glossary

Adjusted Potential Effective Shade:
The percentage of direct beam solar radiation attenuated and scattered before reaching the ground or stream surface from the potential vegetation conditions, reduced by 10% to account for natural disturbance such as fire, windthrow, disease, and earth movements that reduce actual riparian vegetation below the site potential.

Biochemical Oxygen Demand (CBOD):
An analytical method used as an indicator for the concentration of biodegradable organic matter present in a sample of water. It measures the rate of uptake of oxygen by micro-organisms in the sample of water over a given period of time, and can be used to infer the general quality of the water and its degree of pollution.

Carbonaceous Deoxygenation:
Refers to the consumption of oxygen by bacteria during the breakdown of (decomposition) of organic (carbon-containing) material.

Class I Tributary:
This watercourse must have one of the following properties in order to be considered a Class I tributary, according to California Forest Practice Rules: (1) domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area, and/or (2) fish are always or seasonally present onsite, includes habitat to sustain fish migration and spawning.

Class II Tributary:
This watercourse must have one of the following properties in order to be considered a Class II tributary, according to California Forest Practice Rules: (1) fish always or seasonally present offsite within 1000 feet downstream, (2) is an aquatic habitat for nonfish aquatic species, and/or (3) excludes Class III waters that are tributary to Class I waters.

Compliance and Trend Monitoring:
Monitoring intended to determine, on a watershed scale, if water quality standards are being met, and to track progress towards meeting water quality standards.

Dedicated Cold Water Instream Flow:
Water remaining in the stream in a manner that that the diverter, either individually or as a group, can ensure will result in water quality benefits. Temperature, length, and timing are factors to consider when determining the water quality benefits of an instream flow.

Implementation Monitoring:
Monitoring used to assess whether activities and control practices were carried out as planned. This type of monitoring can be as simple as photographic documentation, provided that the photographs are adequate to represent and substantiate the implementation of control practices.

Instream Effectiveness Monitoring:
Monitoring of instream conditions to assess whether pollution control practices are effective at keeping waste from being discharged to a water body. Instream effectiveness monitoring may be conducted upstream and downstream of the discharge point or before, during, and after the implementation of pollution control practices.

Irrigation Return Flows:
See Tailwater Return Flow.

Natural Potential Vegetation Conditions:
The most advanced seral stage that nature is capable of developing and making actual at a site in the absence of human interference. Seral stages are the series of plant communities that develop during ecological succession from bare ground to the climax community (e.g., fully mature, old-growth).

Nitrification:
The oxidation of an ammonium (NH_4^+) compound to nitrite (NO_2^-) and nitrate (NO_3^-), a process that consumes oxygen.

Nitrogenous Deoxygenation:
The conversion of organic nitrogen to ammonium (NH_4^+) and the subsequent oxidation of ammonium to nitrite (NO_2^-) and then to nitrate (NO_3^-), a process that consumes oxygen

Nitrogenous Biochemical Oxygen Demand (NBOD):
A measure of the amount of oxygen consumed from the conversion of organic nitrogen to ammonium (NH_4^+) and the oxidation of ammonium to nitrite (NO_2^-) and subsequently (NO_3^-).

Nitrogenous Oxygen Demand:
The conversion of organic nitrogen to ammonium by bacteria, a process that consumes oxygen.

Potential Effective Riparian Shade:
That shade resulting from topography and natural potential vegetation that reduces the heat load reaching the stream. The difference between existing (baseline) and adjusted potential effective shade reflects the amount of effective riparian shade increase (i.e. reduced solar transmittance) that is necessary to achieve natural receiving water temperatures.

Potential Solar Radiation Transmittance:
Potential solar radiation transmittance is the amount of solar radiation that passes through the vegetation canopy and reaches the water surface, when natural potential vegetation conditions are achieved.

Reaeration:
The process whereby atmospheric oxygen is transferred to a waterbody.

Salmonids:
Fish species in the family Salmonidae, including but not limited to: salmon, trout, and char.

Sediment:
Any inorganic or organic earthen material, including, but not limited to: soil, silt, sand, clay, peat, and rock.

Sediment Oxygen Demand (SOD):
The consumption of oxygen by sediment and associated organisms (such as bacteria and invertebrates) through both the decomposition of organic matter and respiration by plants, bacteria, and invertebrates.

Solar Radiation Transmittance:
Solar radiation transmittance is defined as the amount of solar radiation that passes through the vegetation canopy and reaches the water surface. A value of 1.0 represents no shade; a value of 0.0 represents complete shade.

Tailwater Return Flow:
Water applied to a field for irrigation at rates that exceed soil infiltration and evaporation rates, resulting in runoff of irrigation water to a surface water body. Same as Irrigation Return Flows.

Water Quality Compliance Model Scenario:
A computer water quality model scenario developed by Regional Water Board staff that characterizes Shasta River watershed conditions under which the Basin Plan narrative temperature objective and numeric dissolved oxygen are met in the Shasta River.