

Staff Report for Draft Order No R1-2023-0005 Short-Term Renewal of Order No. R1-2018-0018 Scott River TMDL Conditional Waiver of Waste Discharge Requirements and Order No. R1-2018-0019 Shasta River TMDL Conditional Waiver of Waste Discharge Requirements

Geographic Setting

The Scott and Shasta Watersheds are in the Klamath Basin near California's border with Oregon, in Siskiyou County. The Scott and Shasta Rivers are important tributaries to the Klamath River that provide critical spawning and rearing habitat for the threatened Southern Oregon and Northern California Coastal Coho Salmon (NOAA, 2014). Land use in these watersheds is dominated by agricultural enterprises, including cow-calf operations, alfalfa cultivation, industrial forestry, and cannabis cultivation. Irrigation for these agricultural operations occurs through both surface and groundwater diversion. All cannabis cultivation is illicit in accordance with Siskiyou County ordinances. Other land uses include hard-rock mining operations and gravel extraction in the Scott and Federal management on United States Forest Service and Bureau of Land Management holdings in both the Scott and Shasta.

The Scott River drains an 813 square mile watershed, flowing generally northward into the Klamath river (Regional Water Board, 2005). Scott River hydrology depends largely on precipitation stored as snow at higher elevations in the mountains to the west and south of the Scott Valley, with annual precipitation in these mountains ranging from 60-80 inches. Streams leaving these mountains emerge into the valley and recharge the high-capacity aquifer of sand and gravel that underlies the valley. The alluvial fans created by these streams are areas where groundwater recharge occurs, and the streams often go dry as water percolates into the permeable gravels and cobbles. Groundwater elevation is the primary driver of summer base flow in the Scott River, and when groundwater levels fall below the elevation of the stream bed the Scott River can become disconnected.

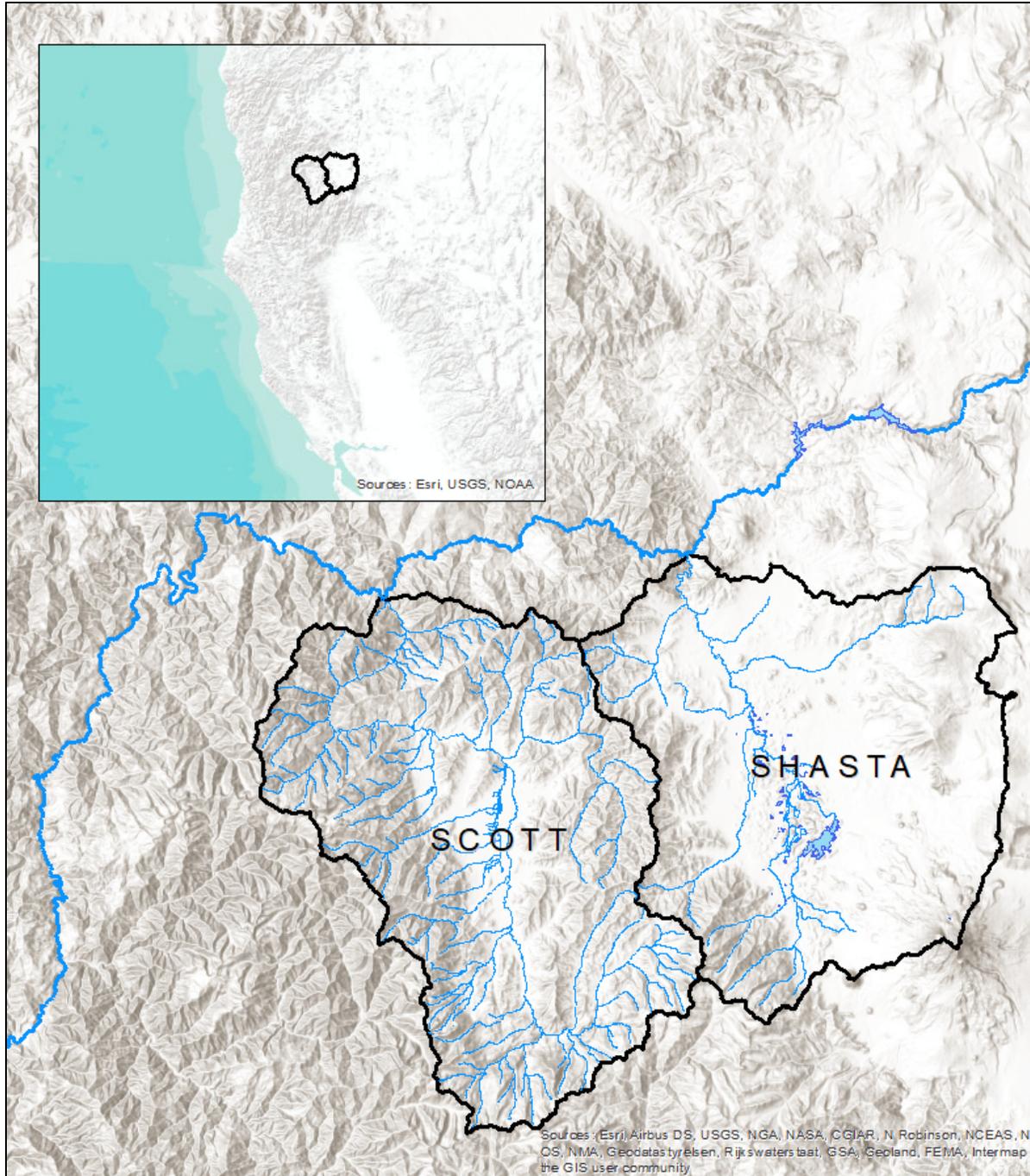


Figure 1 - Scott and Shasta Watershed Location

The Shasta River drains a 795 square mile watershed, flowing generally northward into the Klamath River (Regional Water Board, 2006). The Shasta River originates in the Scott Mountains on the north slope of Mt. Eddy as a precipitation and snow melt based stream. Mount Shasta contributes significantly to the hydrology of the basin, with snow melt and glacial melt percolating through fractured basalt and emerging in various springs across the valley, including the Big Springs Complex, which has an estimated

unimpaired flow of 110-120 cfs (Regional Water Board, 2006). This significant spring flow provides a stable base flow in the Shasta River even in years of extreme drought. The Shasta River is dammed at river mile 40.6 by Dwinnell Dam, which impounds Lake Shastina to provide water storage for agricultural use, municipal supply for the town of Montague, and recreational use.

Purpose of Order No. R1-2023-0005

Due to staff time constraints described below related to emergency drought response, the Regional Water Board was unable to complete the work necessary to conduct a substantive review and update of Order No. R1-2018-0018 and Order No. R1-2018-0019. The purpose of this short-term renewal is to provide continuity of regulatory coverage provided by these orders while the work related to reviewing and updating these orders occurs.

Regulatory Background

Scott and Shasta TMDLs and Waivers of Waste Discharge Requirements

The Action Plan for the Scott River Sediment and Temperature Total Maximum Daily Loads (Scott River Action Plan) was adopted by the Regional Water Board on December 7, 2005, and amended into the *Water Quality Control Plan for the North Coast Region* (Basin Plan) on September 8, 2006 following approval by the United States Environmental Protection Agency. The Shasta River Temperature and Dissolved Oxygen Total Maximum Daily Loads (Shasta River Action Plan) was adopted by the Regional Water Board on June 29, 2006, and amended into the Basin Plan on January 26, 2007. The Action Plans for the Scott River TMDL and the Shasta River TMDL include, in part, their respective total maximum daily loads (TMDLs) including load allocations, a description of the implementation actions necessary to achieve the TMDLs, load allocations, and attain water quality standards in the Scott and Shasta River watersheds. The Shasta River Action Plan additionally contains a provision conditionally waiving the requirement to file a Report of Waste Discharge and obtain Waste Discharge Requirements for responsible parties that participate either individually or in on-going collaborative programs and implement applicable management measures. On August 6, 2006 the Regional Water Board adopted Order No. R1-2006-0081, the Conditional Waiver for Discharges Related to Specific Land Management Activities in the Scott River Watershed North Coast Region (Scott River Waiver).

Following initial adoption on August 6, 2006, the Scott River Waiver was temporarily extended through March 31, 2012 by the Regional Water Board through adoption of Order No. R1-2011-0063 on June 22, 2011. The extension was granted to allow time to assess the effectiveness of the implementation of the program. On March 15, 2012, the Regional Water Board adopted Resolution R1-2012-0030 extending the 2006 order until October 31, 2012. On October 4, 2012 the Regional Water Board adopted Order No.

R1-2012-0084 updating the Scott River Waiver and extending its coverage until October 4, 2017.

Following incorporation of the Shasta River Action Plan into the Basin Plan, which included a waiver of waste discharge requirements, on January 26, 2007, the Regional Water Board adopted the Short-Term Renewal of Conditional Waiver for Discharges Related to Specific Land Management Activities in the Shasta River Watershed on January 19, 2012, (Order No. R1-2012-0008). On August 23, 2012, the Regional Water Board renewed the Short-Term Waiver (Order No. R1-2012-0070), allowing staff additional time to prepare a revised waiver. On October 4, 2012 the Regional Water Board adopted the revised waiver as Order No. R1-2012-0083 updating the Shasta River Waiver and extending its coverage until October 4, 2017. While these Waivers were set to be renewed in October of 2017, the Nuns and Tubbs fires in Sonoma County disrupted board actions in the month of October and the renewal hearing was rescheduled to April of 2018.

On April 23, 2018, the Regional Water Board adopted Order No. R1-2018-0018 and Order No. R1-2018-0019 as the Scott River Waiver and Shasta River Waiver, respectively. These orders were substantively revised and updated what had previously been management measure guidance to become conditions of compliance. Based on the best professional judgement of Regional Water Board staff through implementation of the Scott River Waiver and Shasta River Waiver, these management measures had shown good progress towards ameliorating water quality impacts and increasing waste assimilative capacity when applied on farming operations. Other substantive revisions included clarified monitoring and reporting requirements, as well as a finding (Finding 18 in both of the 2018 Waivers) that outlines the intent of the Regional Water Board to address water quality concerns associated with agriculture in the Scott and Shasta watersheds through a future permitting program more consistent with approaches implemented in other parts of the state. Finding 18 states that this could include a tiered permitting structure based on past compliance and current threat to water quality.

To be eligible for coverage under the Shasta River Waiver, responsible parties 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 and tailwater discharges) from affecting waters of the Shasta River and tributaries. Similarly, to be eligible for coverage under the Scott River Waiver, responsible parties are required to employ land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment and elevated solar radiation loads (including loss of riparian vegetation and tailwater discharges) from affecting waters of the Scott River and tributaries.

Implementation Approach and Progress Since 2018

Implementation of the Scott River Waiver and the Shasta River Waiver has focused on the unique characteristics and needs of each watershed and is described in detail below. For both watersheds, current implementation of the Waivers includes an on-the-

ground staff assessment of properties according to priority, preparation of a staff assessment report that catalogues observed water quality concerns, and, if deemed necessary, a request for a plan to address any water quality concerns that includes effectiveness monitoring (a Ranch Management and Monitoring Plan in the Shasta or a Grazing and Riparian Management and Monitoring Plan in the Scott).

Waiver Implementation in the Shasta River Watershed

In the Shasta, staff first attempted a watershed-scale outreach effort to enroll each landowner based on their submittal of a self-reporting questionnaire transmitted to each landowner via a mailing. This initial approach proved to be inefficient of staff time, and largely ineffective. Beginning in 2012, the subsequent approach focused on areas known by staff to provide critical habitat, primarily focusing on the cold-water springs fed by groundwater emerging from the Plutos Cave Basalt¹. These areas of cold-water refugia provided the cool, slow-moving water and high primary production that could support the most sensitive beneficial uses addressed by the Shasta River TMDL.

Following the adoption of Order No. R1-2012-0083, the National Atmospheric and Oceanographic Administration (NOAA), California Department of Fish and Wildlife (CDFW) and landowners in the Upper Shasta area² began negotiations on a Federal Safe Harbor Agreement focused on supporting the recovery of salmonids in the Shasta River. These negotiations were conducted under a confidentiality agreement between the parties; thus, the Regional Water Board was not a party to these negotiations or the approval of the final agreements. This group of landowners in the Upper Shasta included those with cold-water springs fed by the Plutos Cave Basalt as well as landowners with other cold-water springs. These negotiations were completed after adoption of the existing Shasta River Waiver; therefore, beginning in April 2021 Regional Water Board staff focused on ensuring the monitoring and reporting programs associated with the Upper Shasta Safe Harbor Agreement were in alignment with the requirements of the Shasta River Waiver. This process included coordinating with NOAA and CDFW staff on photopoint monitoring locations and assessing if the water quality monitoring at each property would satisfy effectiveness monitoring for their site plans required pursuant to the Safe Harbor Agreement. In some cases, the Shasta River Waiver required landowners to collect additional monitoring data and implement land management practices above and beyond what the Upper Shasta Safe Harbor Agreement required.

Key implementation actions conducted under the authority of the Shasta River Waiver after the adoption of Order No. R1-2018-0018 are listed below (See Figure 1 - Waiver

¹ Plutos Cave Basalt is a geologic unit of fractured basalt rock located in the south eastern portion of the Shasta Valley that overlays historic alluvial sediments deposited by the Shasta River prior to the last eruption of Mt. Shasta.

² The Upper Shasta Area includes the area of the Shasta Valley that encompasses Parks Creek, Hole in the Ground Creek, Big Springs Creek, Little Springs Creek, and the mainstem Shasta River from Dwinell Dam to the confluence of Julien Creek.

Implementation by Order Year in the Shasta River Watershed for a visual representation of implementation to date).

- *Inspection of the property containing Big Springs, Big Springs Lake, and the upper reach of Big Springs Creek (Big Springs Lake Ranch) upstream of the Shasta Big Springs Ranch (owned by CDFW).* This inspection resulted in fencing of Big Springs Lake and the issuance of annual monitoring and reporting requirements directed under the authority of the Shasta River Waiver and California Water Code section 13267. Big Springs Lake Ranch was not a party to the Upper Shasta Safe Harbor Agreement. Big Springs Creek and its associated springs provide the majority of flow to the Shasta River, with impaired flows ranging from approximately 50-70 cfs of cold water, and unimpaired flows estimated to be between 100 and 125 cfs (Regional Water Board, 2006). Flow from Big Springs is identified in the Shasta River Temperature TMDL as being critical to reaching temperature compliance and the Shasta River TMDL Action Plan estimates the need of an additional 45 cfs of cold water from the Big Springs Complex to meet downstream temperature targets. Importantly, data collected pursuant to the Waiver and 13267 has shown that nutrient levels within Big Springs Lake increase following grazing in the pastures adjacent to the lake, which has informed on-ranch management and underscores the importance of fencing the Lake and riparian corridor of Big Springs Creek. Additionally, data collected has shown that as spring flow decreases into Big Springs Lake, temperature increases across the lake, pH readings within the lake increase to above 9, and the conditions that support ammonia toxicity develop (Willis, 2022). These results underscore the critical importance of this spring to the overall health of the freshwater ecosystem in Big Springs Creek and the Shasta River. Existing data suggests the spring flow decreases are tied to groundwater use within the Big Springs Complex, and a coordinated effort that involves Big Springs Irrigation District, Siskiyou County's Groundwater Sustainability Agency, and adjacent overlying groundwater uses is likely required to sustain sufficient flows from Big Springs Lake during critical summer months when solar radiation and ambient air temperatures are at their peak.
- *Inspection of Seldom Seen, Parks Creek, and Hole in the Ground Ranches, owned by Emmerson Investments, Inc.* These inspections resulted in 1) the requirement to develop grazing management plans with a specific focus on riparian grazing controls on these ranches, 2) acknowledging the riparian nature of much of the land area of these ranches, and 3) the requirement for additional monitoring, which are above and beyond the minimum required by the Upper Shasta Safe Harbor Agreement. Emmerson Investments, Inc. is a party to the Upper Shasta Safe Harbor Agreement, and their property contains multiple cold-water springs that appear to be at least partially outside of the Big Springs Complex but provide critical over summer rearing habitat for salmonids. Parks Creek Ranch encompasses reaches of Parks Creek that have historically hosted salmonid spawning. Emmerson Investments, Inc. has been the recipient of Clean Water Act section 319(h) (CWA 319(h)) funding to build critical infrastructure and habitat improvements on their ranches. Of particular importance to staff is the ongoing use and maintenance of the publicly funded infrastructure. Reporting out

of operational data for this infrastructure, including diversion and bypass information was also required under the authority of the Waiver and California Water Code section 13267.

- *The Inspection of Bel Campo Meat Company's (Bel Campo) Parks Creek Ranch located upstream of Emmerson Investments, Inc. Parks Creek Ranch, as well as their North Annex Ranch located on the Shasta River.* Bel Campo's Parks Creek Ranch includes cold-water springs that appear to be outside of the Plutos Cave Basalt and were observed providing cold-water refugia to fish at the time of the inspection. After identifying these cold-water areas, CWA 319(h) funding was secured to install fencing, off-stream stockwater systems, and conduct riparian plantings on an approximately 5-mile reach of Parks Creek. This fencing has been installed to manage cattle access to the riparian area and facilitate managed riparian grazing conducted under a grazing plan that must be approved by Regional Water Board staff. The fenced area has setbacks greater than 35-feet from the break in slope of the riverbank, with larger setbacks where field observation of the geomorphic structure warrants (e.g. areas showing historic scour or abandoned oxbows holding water into early summer). Bel Campo is also a party to the Upper Shasta Safe Harbor Agreement.

In total, 13 Ranches have been assessed for compliance, approximately 19 miles of the Shasta River mainstem frontage, the entire Parks Creek and Big Springs Creek frontage, and approximately 1.3 miles of the Little Shasta River, as illustrated in Figure 1, with pink polygons highlighting properties assessed pursuant to the Waiver adopted in 2012 and orange polygons highlighting properties assessed pursuant to the Waiver adopted in 2018. Unshaded areas have not been assessed. All 13 ranches operate under Ranch Management and Monitoring Plans due to documented water quality concerns, or equivalent plan determined by Regional Water Board staff to be in compliance with Waiver requirements (for example, Safe Harbor Agreement Site Plans that staff have deemed sufficient to address documented water quality concerns).

In addition to these actions resulting from the implementation of the current Shasta River Waiver, staff continues to work collaboratively with other agencies, non-profits, and watershed groups to forward voluntary restoration, data collection, and watershed-scale efforts. These include, but are not limited to, the following.

- Securing funding for the Shasta Valley Resource Conservation District (RCD) to collect status and trends data in accordance with the Shasta River Watershed Water Quality Monitoring Plan (Shasta Valley RCD, 2018). The current implemented field network includes 11 dissolved oxygen stations, 31 temperature stations, 4 meteorological stations measuring riparian conditions, and 1 tailwater flow meter. The data from meteorological stations provide information related to the intensity of solar radiation, ambient air temperature, and relative humidity, which are primary drivers of instream temperatures and primary production within the Shasta River.
- Administering \$1.5 million in active grants to restoration groups to implement riparian protections, flow improvement projects, and riparian plantings.

- Leading an ongoing bi-weekly flow group to address flow needs in the Shasta and Scott rivers during the current multi-year drought.
- Participating in the Big Springs Creek Fisheries Technical Group, organized by CDFW, to address actions they can take on their property in the Shasta River, which contains some of the most critical habitat for juvenile salmonids.
- Providing support for the Division of Water Rights in their development and implementation of emergency drought regulations, which established minimum instream flow requirements, curtailment authority, and information order authority in the Scott and Shasta watersheds. Key information related to this work is described in Section 3 below.

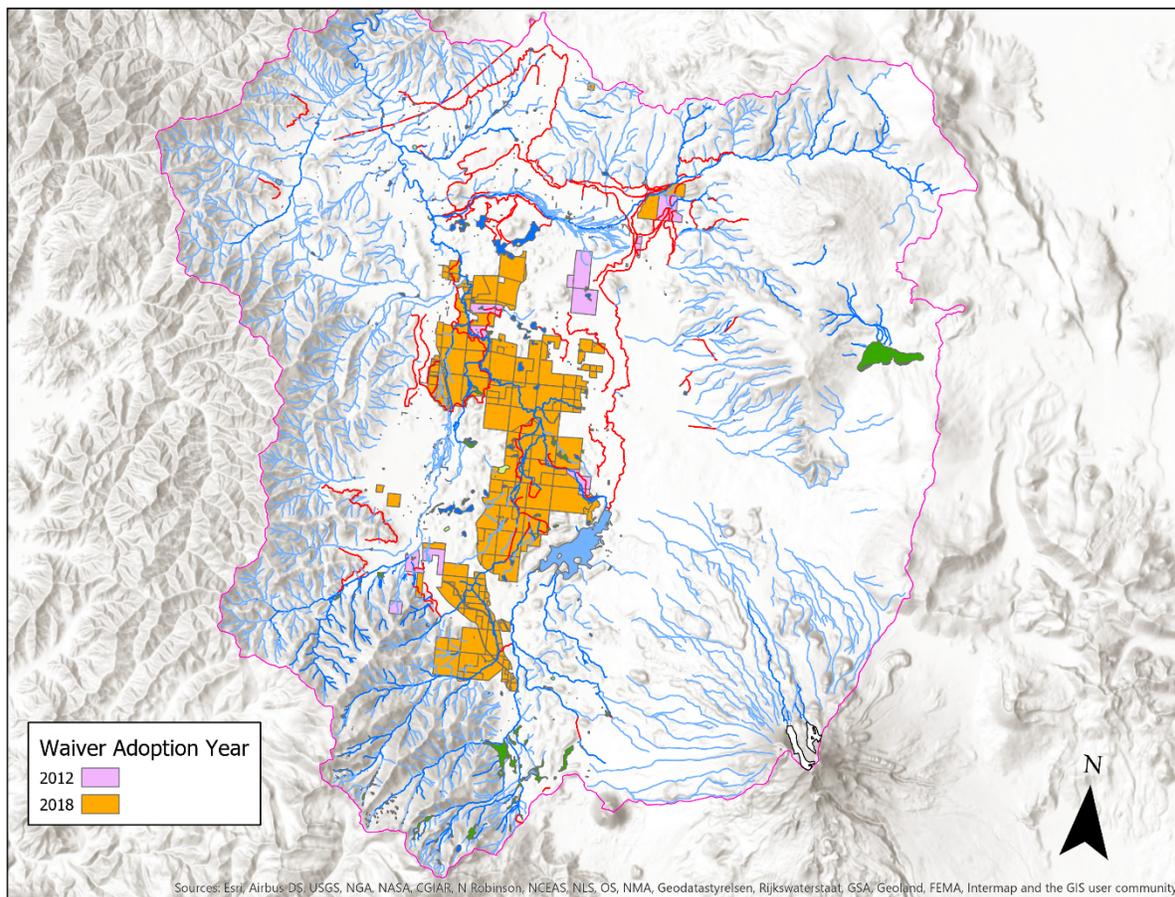


Figure 2 - Waiver Implementation by Order Year in the Shasta River Watershed

Waiver Implementation in the Scott River Watershed

In the Scott River Watershed, implementation has focused on first prioritizing the top 15 landowners in the watershed based on stream frontage. This approach aimed at staff time efficiency, ensuring that each inspection covered as much stream frontage as possible. Since the adoption of Order No. R1-2006-0081, a total of 25 ranches have been assessed pursuant the Scott River Waiver and CWC section 13267, accounting for 31% of the stream frontage adjacent to agricultural operations in the Scott River

Watershed. Notable assessments include, but are not limited to, the following (See Figure 2 - Waiver Implementation by Order Year in the Scott River Watershed for a visual representation of implementation to date).

- AP Cattle Ranch in 2017, a large ranch in the East Fork Scott River watershed with a total of approximately 10.7 miles of stream frontage assessed. Specific locations where erosion was occurring or tailwater was found to comingle with river water were identified and have been progressively addressed since the assessment.
- Scarface Investments, LLC in 2019, a large ranch in the Moffett Creek Watershed, a watershed known for mobilizing fine sediments into the lower Scott River and Klamath River due to upland and bank erosion, with approximately 20 miles of stream frontage assessed. A Grazing and Riparian Management and Monitoring Plan has been approved and is now being implemented.
- Jenner Family Ranch, a large ranch encompassing Kidder Creek, Big Slough/Patterson Creek, and Etna Creek. Approximately 9.5 miles of stream frontage were assessed. A Grazing and Riparian Management and Monitoring Plan has been approved and is now being implemented.

In total, 20 Ranches have been assessed for compliance with Waiver conditions in the Scott, representing approximately 31% of the stream frontage in the watershed adjacent to agricultural activities as illustrated in Figure 1, with purple polygons highlighting properties assessed pursuant to the Waiver adopted in 2012 and orange polygons highlighting properties assessed pursuant to the Waiver adopted in 2018. Of these 20 ranches, 8 Grazing and Riparian Management Plans have been submitted and approved to address documented water quality concerns.

In addition to the identified assessment prioritization strategy, staff has also followed up on complaints brought to their attention, including the following.

- Riparian management at 4T Ranch in the vicinity of the Serpa Lane Road Bridge. Staff has met with the landowner and continues monitoring the situation.
- Riparian management adjacent to French Creek on either side of the Highway 3 bridge. Staff has met with this landowner and is working with them to develop a Grazing and Riparian Management Plan consistent with the Scott River Waiver. Based on an inspection Regional Water Board staff did not find significant evidence of ongoing degradation to the riparian zone from cattle.
- Riparian management adjacent to the Eller Lane bridge crossing over Patterson Creek/Big Slough. Staff has met with the landowner and has been working through various attempts at livestock control within the riparian zone. After the failure of an electric fence, the landowner has installed a barbed wire fence and is receiving support from the Scott River Watershed Council to conduct riparian plantings for bank stability.
- Riparian Management adjacent to both Soap Creek and Moffett Creek. Staff has been actively working with this landowner to develop alternatives to their current management practices, but a critical impact to water quality on this property is the current configuration of the barnyard. Staff continues to work with the

landowner to find a solution that reflects site and flow conditions and operational constraints.

- Riparian Management adjacent to an unnamed slough/tributary known colloquially as “Spring Ditch”, as well as Johnson Creek and Crystal Creek. Fencing has been installed as part of an approved Riparian Management and Monitoring Plan.

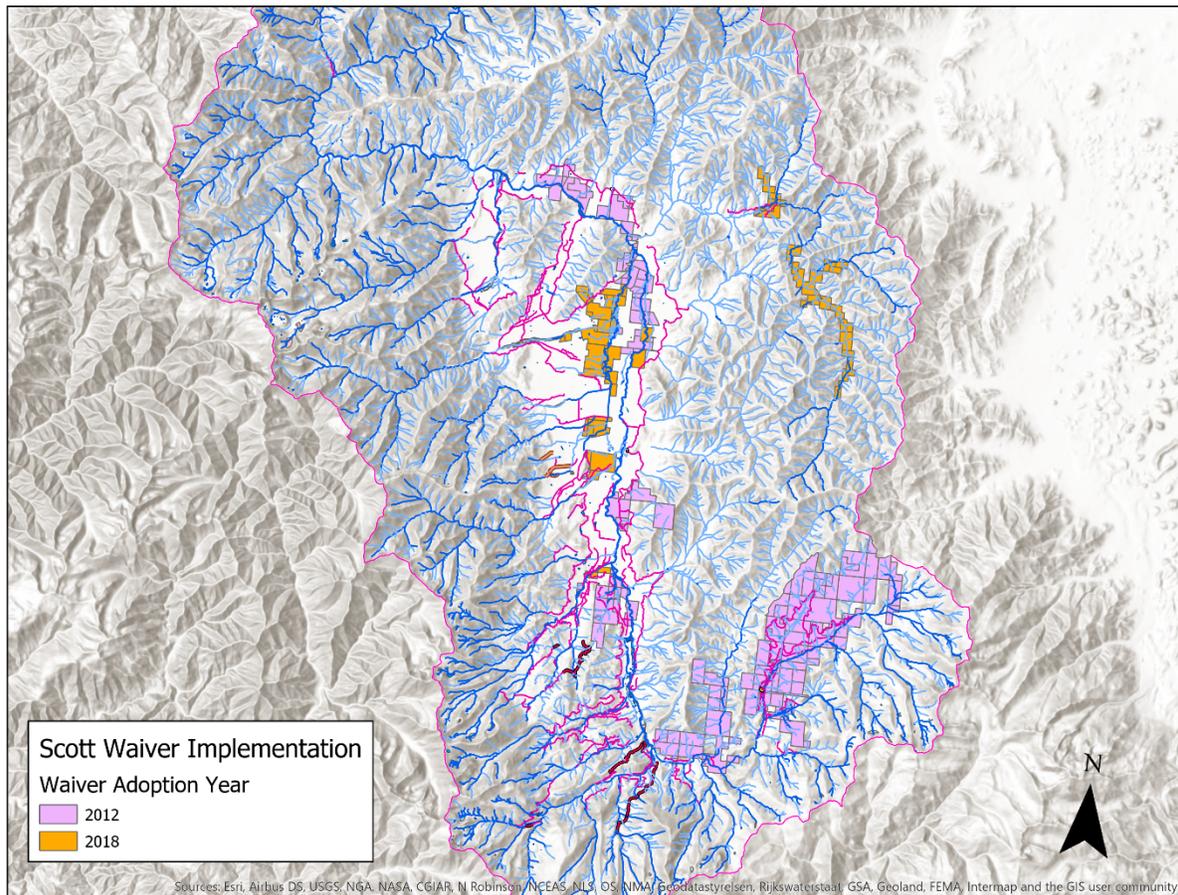


Figure 3 - Waiver Implementation by Order Year in the Scott River Watershed

Taking the results of implementation into account as summarized above, the Scott River Waiver and Shasta River Waiver have proven to be an effective regulatory tool for driving key changes in both watersheds. Despite slowdowns related to the COVID-19 pandemic lockdowns, where fieldwork was virtually impossible, and staff diversions to focus on emergency drought response described below, significant progress in the Scott and Shasta River Watersheds has been made through the implementation of the Waivers.

Critical Element Missing from the Waivers: Flow

Despite the effectiveness of the Scott River Waiver and Shasta River Waiver in addressing discharges of waste and riparian impacts from agricultural practices, neither waiver provides an approach to addressing flow needs. The Division of Water Rights has the strongest authority to do so. Both watersheds have critical issues related to instream flows that impact their respective TMDLs.

Scott TMDL and Flow Related Issues

The Scott River Temperature TMDL identifies groundwater inflows as a primary driver of stream temperatures in the Scott Valley, both through direct accretion to the stream channel and due to the effects of high groundwater elevation on supporting riparian vegetation and canopy-induced shade (Regional Water Board, 2005). Direct accretion of groundwater to the stream not only reduces temperature through the addition of cold water, but also increases stream volume and changes transit time. Higher groundwater surface elevations support riparian shade by enabling riparian plant roots greater access to water for transpiration. As groundwater levels are lowered due to extraction during the summer baseflow period, cold water accretions decrease in size and frequency and the establishment, abundance, and health of riparian vegetation can be negatively impacted. Instream flow is especially critical during the migration of returning fall-run Chinook Salmon, which during some water year types have difficulty accessing their spawning ground in the Scott due to low-flow passage barriers (CDFW, 2017). When passage is not possible, many Chinook spawn in the Scott River canyon, where their resulting redds are vulnerable to wash-out from high winter or spring flows during large precipitation events.

The Scott River Temperature and Sediment TMDL Action Plan requested of Siskiyou County that they develop a groundwater study plan to investigate the connection between groundwater and surface water, the impacts of groundwater use on surface flow and beneficial uses, and the impacts of groundwater levels on the health of riparian vegetation in the Scott River watershed (Regional Water Board, 2018). This study plan was developed and implemented by the University of California at Davis (UC Davis) and eventually resulted in the creation of the Scott Valley Integrated Hydrologic Model. This model is actively being used by the Siskiyou County Groundwater Sustainability Agency (GSA) to inform their Groundwater Sustainability Plan (GSP) and is being actively developed and refined by UC Davis through continued funding by the State Water Resources Control Board (State Board) Division of Water Rights (Division of Water Rights) Instream Flow Unit to inform the implementation of their emergency drought regulations. Other efforts are underway to refine specific geographic areas of the model that may need more fine-grained information, including the Quartz Valley Indian Reservation. The United States Geologic Service (USGS) is collaborating on a refined approach to modelling the Quartz Valley area in coordination with the Scott River Watershed Council and UC Davis is working on refining the model in the area of the Callahan dredger tailings to better understand potential restoration actions. These efforts will continue to inform application of the Scott Valley Integrated Hydrologic Model forward as a critical tool to understanding the actions necessary to support summer

baseflow, riparian health, and groundwater accretions to the Scott River, and sufficient streamflow for migrating fall-run Chinook.

The Scott River Temperature TMDL also established that surface water diversions can impact instream temperatures, especially in tributary streams where the volume diverted is large relative to total flow. Many of these tributary streams also provide critically important over summering habitat for juvenile Southern Oregon Northern California Coastal Coho Salmon.

Shasta TMDL and Flow Related Issues

The Shasta River Temperature TMDL includes a flow recommendation for an additional 45 cubic feet per second (cfs) of cold water flowing out of the Big Springs Complex, for a total of approximately 112 cfs total flow from the Big Springs Complex (Regional Water Board, 2006). Flow increases modeled at the mouth of Big Springs Creek in the TMDL analysis showed significant benefit to instream temperatures in the Shasta River. However, more recent analysis indicates that increased groundwater extraction from Big Springs Irrigation District and other groundwater users has further impaired spring flow from the Big Springs Complex (Worth, 2022). This ongoing flow impairment presents significant challenges to reaching TMDL compliance and supporting conditions for beneficial uses. Attainment of the compliance scenario described in the TMDL will require coordination between water users, State Board Division of Water Rights, fisheries agencies, and the Regional Water Board, if it is to be achieved.

Additionally, chronic low flows in the summer months caused by irrigation diversion decrease scour of accumulated aquatic vegetation and periphyton, contributing to the dissolved oxygen impairment (Regional Water Board, 2006). Subsequent flow increases following the cessation of irrigation season around October 1 results in some level of scour, however full winter flushing flows rarely occur due to the placement of Dwinnell Dam on the mainstem Shasta River. Increasing cold-water flows into the Shasta River from the Big Springs Complex also could provide an additional temperature control on aquatic growth in some parts of the Shasta River, which may in turn support improvements in dissolved oxygen concentrations.

Flow Management through Emergency Drought Regulations

As noted in the Scott River Temperature TMDL, the Shasta River Temperature TMDL and the Shasta River Dissolved Oxygen TMDL, adequate flow is critical to meeting TMDL load allocations and targets. While the Regional Water Board has limited tools to mandate specific flow targets, the critically dry years of 2020, 2021, and 2022 resulted in the Division of Water Rights promulgating Emergency Regulations in both the Scott and Shasta River watersheds that included minimum flow targets to avoid adverse effects on salmonids. Upon request from the State Water Board, the Regional Water Board agreed to divert 50% of the Regional Water Board's Scott and Shasta Rivers Steward) to support the development and implementation of the Scott and Shasta River Emergency Regulations. This provided a unique opportunity for the Regional Water

Board's staff to strengthen connections with the Division and to integrate flow related water quality requirements of the TMDLs into the Division's Emergency Regulations.

Establishment of Emergency Instream Flow Targets

The following is a brief summary of actions taken by the State Water Board to implement minimum flow requirements in the Scott and Shasta Rivers; for additional details see https://www.waterboards.ca.gov/drought/scott_shasta_rivers/.

On May 3, 2021, CDFW transmitted a letter to the State Board expressing concern about threats to Chinook Salmon and Southern Oregon and Northern California Coastal Coho due to low flow conditions in the Scott River, with ideas on potential next steps and priority actions (CDFW, 2021). This letter included information on the inability of adult Chinook and Southern Oregon and Northern California Coastal Coho to migrate past Oro Fino Creek on the Scott Mainstem, resulting in significant delays in migration and almost complete cohort failure. The letter also included information on the status of both species in the Scott and concerns about ongoing recovery in the face of the multi-year drought.

On June 15, 2021, CDFW transmitted a letter to the State Board requesting the establishment of drought emergency minimum instream flows for the Scott and Shasta watersheds to support salmonids (CDFW, 2021). This letter included multiple attachments with technical and fisheries information for both watersheds, including studies supporting the instream flows targets requested in their letter.

On August 30, 2021 the State Board's emergency regulations for the Scott and Shasta went into effect, establishing the emergency minimum flows as identified by CDFW in their June 15, 2021 letter. The emergency regulations included multiple pathways for landowners or groups of landowners to develop Local Cooperative Solutions to avoid potential curtailments. This included specific solutions for landowners who have overlying groundwater rights in both watersheds to reduce their water use by a specific amount, recognizing the importance of groundwater in both watersheds to support surface flows. The emergency regulations also provided a provision directing staff to continue working collaboratively with CDFW to modify or adjust flows if new scientifically defensible information became available.

On June 3, 2022, CDFW transmitted a letter to the State Board requesting changes to the emergency minimum flows, specifically to add a ramp-down period from June to July to avoid potential stranding of juvenile salmonids (CDFW, 2022). This ramp-down period would reduce the June instream flow target from 125 cfs to 90 cfs during the last 7 calendar days of June to avoid stranding before the 50 cfs instream flow target went into effect in July.

On July 29, 2022, a revised version of the emergency regulations went into effect with minor edits to the August 30, 2021 regulation. These changes included modifications to the emergency drought instream flow requirements in both the Scott and the Shasta, as

well as an additional type of Local Cooperative Solutions for surface diversion that provide livestock water. The current emergency minimum instream flow targets are summarized in the tables below.

Emergency Minimum Flow in the Scott River Pursuant to the Emergency Drought Regulations, Effective July 29, 2022

Month	Jan	Feb	Mar	Apr	May	Jun 1-23	Jun 24-30	July	Aug	Sept	Oct	Nov	Dec
Flow	200	200	200	150	150	125	90	50	30	33	40	60	150

Emergency Minimum Flow in the Shasta River Pursuant to the Emergency Drought Regulations, Effective July 29, 2022

Month	Jan	Feb	Mar 1-24	Mar 25-31	April	May	June	July	Aug	Sept 1-15	Sept 16-30	Oct	Nov	Dec
Flow	125	125	125	105	70	50	50	50	50	50	75	105	125	125

Effect of Emergency Regulations on Shasta Flows

The Shasta River is a spring-fed system with relatively stable base flows throughout the summer, as compared to snow-melt dominated systems (Regional Water Board, 2006). This hydrologic condition means that when surface diversions and groundwater extraction are regulated according to a specific flow target, it is highly likely that the base flow will allow for that flow target to be met. Additionally, most surface diversions in the Shasta Watershed are watermastered by the Scott Valley and Shasta Valley Watermaster District (SVSVWD, 2018). This comprehensive approach to water mastering allows for increased coordination amongst nearly all water diverters to attempt to achieve the drought emergency flow targets. As a result, the Shasta River has generally met the drought emergency flow targets (see Figure 4 – Shasta River Hydrograph for Water Year 21/22). The notable drop in flows at the end of July 2022 resulted from a surface diverter willingly violating their curtailment order, demonstrating how significant surface diversions can impact flows in the Shasta River. Staff plans to complete and present an analysis of temperature and dissolved oxygen conditions to assess the impact of these regulations on water quality as part of the adoption hearing for the renewal of the 2018 Scott River and Shasta River Waivers.

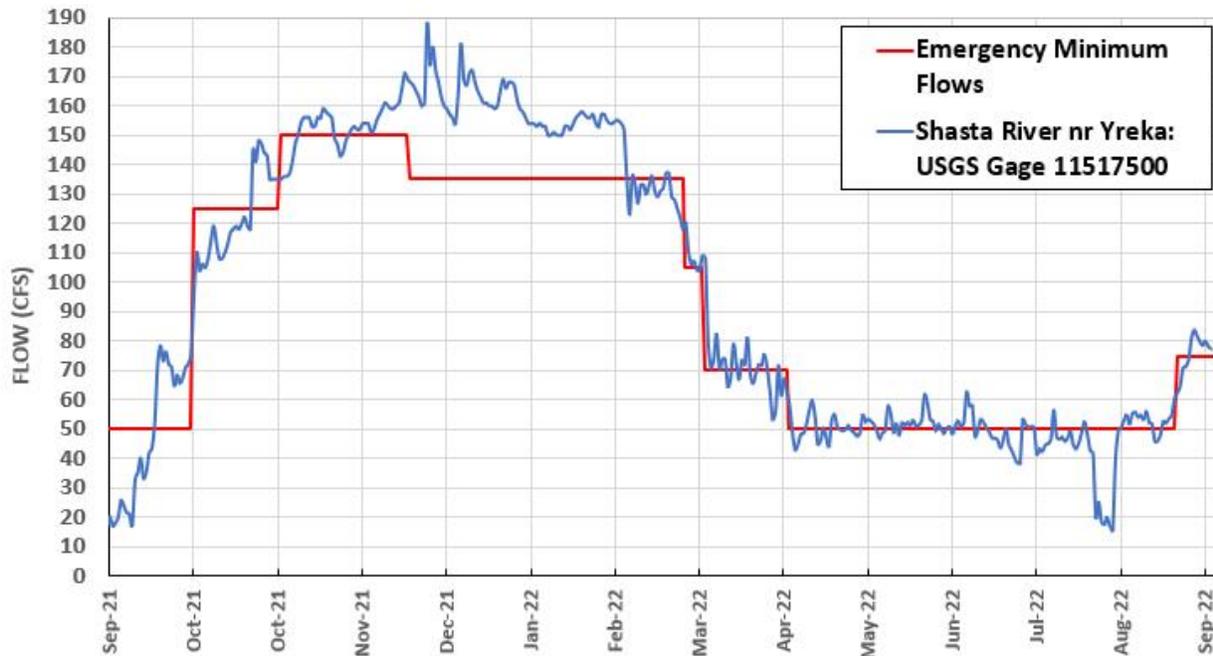


Figure 4 - Shasta River Emergency Minimum Flows as compared to the Hydrograph for Water Year 21/22

Effect of Emergency Regulations on Scott River Flows.

Unlike the Shasta River Watershed, the Scott River flows are fed predominantly by spring-time snowmelt and percolated precipitation that recharges a large alluvial bathtub-like aquifer (Regional Water Board, 2005). This aquifer supports summer baseflow conditions after winter snows have completely melted and winter rains have ceased. The Scott River TMDL Staff Report notes that, “in drier years, winter and spring flows are not sufficient to fully recharge the Scott Valley Aquifer, the water table falls below the elevation of the river bottom...and the river runs dry.” Additionally, groundwater extraction can add additional downward pressure on groundwater levels, which may exacerbate dry-season river disconnection. Groundwater level data collected by UC Davis indicates that in successive dry years, average depth to groundwater appears to steadily decrease (UCD, 2019). One reason for this could be continued groundwater extraction at levels not responsive to decreased watershed supply during dry years leading to a chronic interannual water deficit. Even on an intra-annual basis, groundwater extraction during dry years at levels comparable to groundwater extraction during wet or normal years would be likely to result in a lower groundwater table prior to the first major winter storms, potentially resulting in a later date of river reconnection. UC Davis is currently working with the State Water Board to investigate this phenomenon using the Scott Valley Integrated Hydrologic Model based on land use data collected pursuant to Local Cooperative Solutions implementation in the Scott Valley.

The inclusion of a Local Cooperative Solution option in the Scott River Watershed that allowed for continued pumping at a rate that was 30% lower than a landowner’s 2020 rate was designed in an attempt to adapt groundwater extraction to drier conditions during the current multi-year drought. Currently all groundwater and surface water

diversion in the Scott are fully curtailed unless operating under an approved or pending Local Cooperative Solution. To date, a total of approximately 17,000 acres, or approximately 96% percent of groundwater irrigated acreage in the Scott Valley, are operating under an approved or pending Local Cooperative Solution. Despite these efforts, emergency minimum flows in the Scott were not met beginning in July 2022 (see Figure 5 - Scott River Hydrograph for Water Year 21/22). On average, flows have been approximately 20 cfs, or 68%, below the emergency minimum flows in the Scott throughout the late summer period of July through September 2022. (Note that the figure representing Shasta River Emergency Minimum Flows uses a different scale than that representing the Scott River Emergency Minimum Flows).

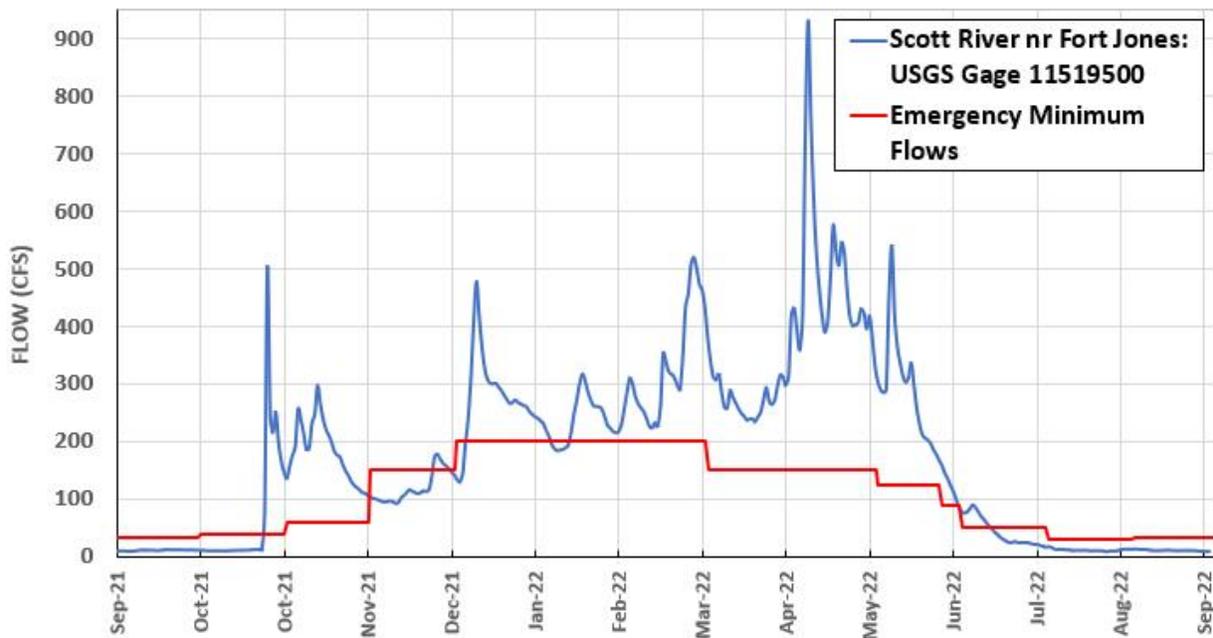


Figure 5 - Scott River Emergency Minimum Flows as compared to the Hydrograph for Water Year 21/22

Watershed Stewardship

Staff's actions within the Scott and Shasta since the adoption of the 2018 Waivers – including regulatory compliance work, non-regulatory grant and contract management, coordination across resource agencies, ongoing data collection and analysis, and specific engagement on drought response – represent a full expression of the Regional Water Board's Watershed Stewardship approach. This holistic approach necessarily recognizes that a single permit cannot fully implement a TMDL. To that end, staff's work with the Division of Water Rights on the emergency regulations was recognized as a critical element of Watershed Stewardship and an important step in making progress towards TMDL compliance. Staff's time was diverted to the effort, initially at 50% and currently at 40%. Staff's involvement in the emergency drought response work was necessary to help focus the Division of Water Rights on areas where water rights, instream flows, fisheries, and water quality intersect. This work has supported the collection of crucial data to analyze the impact of drought response efforts on water

quality and assess pathways to develop functional flows in both watersheds that support TMDL compliance and beneficial use protection.

Finding 18

Though Staff's involvement in emergency drought response was necessary and helped the Division successfully develop and implement the drought emergency minimum flows, this work was conducted at the expense of diverting staff's full attention from work on the Scott and Shasta River Waivers. In particular, staff has been unable to complete the full-scale data analysis and program retrospective initially envisioned s to address Finding 18 of both Waivers. Finding 18 of the Shasta Waiver states:

“Following the expiration or replacement of this 2018 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 approaches implemented in other parts of the state. The future order is anticipated to follow the same general approach as this 2018 Order, requiring the Dischargers to proactively implement land stewardship practices and activities that minimize, control, and prevent discharges of fine sediment, nutrients, 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, oxygen consuming materials, and elevated solar radiation loads to the Shasta River and tributaries. Higher tiers with increased monitoring and reporting requirements would likely 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.”

Finding 18 in the Scott Waiver States:

Following the expiration or replacement of this 2018 Order, the Regional Water Board intends to address water quality concerns associated with agriculture in the Scott River watershed through a permitting program (i.e. order) more consistent with approaches implemented in other parts of the state. The future order is anticipated to follow the same general approach as this 2018 Order, requiring Dischargers to proactively implement land stewardship practices and activities that minimize, control, and prevent discharges of sediment and solar radiation loads to the Scott 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 sediment and solar radiation loads to the Scott River and tributaries. Higher tiers with increased monitoring and reporting requirements would likely apply to those properties that have not developed plans or taken actions to comply with the conditions of this 2018 Order. Any future order would be subject to noticing and public comment before consideration of adoption by the Regional Water Board.

Staff still recommend the approach outlined in Finding 18. However, given the diversion of staff's time to work on the emergency flow requirements, staff were unable to complete the work necessary to revise the current Waivers consistent with Finding 18 prior to the Waivers' expiration on April 19, 2023. Therefore, a short-term renewal of the Waivers is necessary. The Regional Water Board intends to revise the Waivers in the shortest time practicable.

In the meantime, staff believes the Scott and Shasta River Waivers in their current form continue to provide a valuable regulatory tool to drive practices on the ground towards actions that support TMDL compliance and beneficial use protection. The ability to leverage the Waivers has resulted in the actions described in section 1.2, which drive improvements in water quality. Staff still intends to complete the work necessary to support Finding 18 and believes a short-term renewal of up to 5 years is appropriate to continue water quality compliance work while also understanding what shifts in regulatory structure may be necessary to fulfill the intent of Finding 18.

Staff Recommendation

Staff recommends the Regional Water Board adopt Order No. R1-2023-0005 Short-Term Renewal of Order Nos. R1-2018-0018 and R1-2018-0019 Scott River and Shasta River TMDL Conditional Waivers of Waste Discharge Requirements, which serves as a renewal of the 2018 Waivers for a period of up to 5 years. Regional Water Board staff intend to revise the Waivers in the shortest time practicable. Staff will continue to implement the 2018 Waivers and will conduct the necessary analysis to satisfy Finding 18 and following public review and comment will propose revised Waivers or Waste Discharge Requirements for the Scott and Shasta Rivers by or before April 6, 2028.

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