Appendix A-1

Apr 4, 2013 Temporary Urgency Change Petition Package

SONOMA COUNTY WATER AGENCY

CF/42-0.19-9 SWRCB ORDER APPROVING
TEMPORARY URGENCY CHANGE IN PERMITS
12947A, 12949, 12950 & 16596 FOR 2013
(ID 4707)

April 24, 2013

Barbara Evoy, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Petition for Temporary Urgency Change—Permits 12947A, 12949, 12950, and 16596

Dear Ms. Evoy:

Enclosed is a Petition for Temporary Urgency Change to modify the minimum instream flow requirements for the Russian River as established by Decision 1610 for Permits 12947A, 12949, 12950 and 16596. Accompanying the petition are the following:

1) Attachment 1, *Description of Temporary Urgency Change Petition Request*
2) Attachment 2, *Instream Flow Analysis for 2013 Temporary Urgency Change Petition* (basis and supporting analysis)
3) *Environmental Information for Petitions*
4) Notice of Exemptions
5) California Department of Fish and Wildlife Review Fee Payment
6) State Water Resources Control Board Petition Fee Payment

The petition is being submitted due to severely low storage levels in Lake Mendocino. The Sonoma County Water Agency requests that the Division of Water Rights act expeditiously to approve the requested changes to minimum instream flows to conserve critical storage in Lake Mendocino.

404 Aviation Boulevard - Santa Rosa, CA 95403-9019 • (707) 526-5370 - Fax (707) 544-6123 - www.sonomacountywater.org/

I look forward to working with the State Water Resources Control Board and Division of Water Rights staff on this important conservation effort.

Sincerely,

Grant Davis
General Manager

c Katy Lee – State Water Resources Control Board
D. Butler, W. Hearn – National Marine Fisheries Service
E. Larson - CA Department of Fish & Game
P. Jeane, D. Seymour, T. Schram, J. Martini Lamb, J. Jasperse – Sonoma County Water Agency
S. Shupe, C. O'Donnell – Sonoma County Counsel
A. Lilly – Bartkiewicz, Kronick & Shanahan

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Please indicate County where your project is located here:

Sonoma

MAIL FORM AND ATTACHMENTS TO:
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DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
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PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 12919A Permit 12947A License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from May 1, 2013 to October 28, 2013 .

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ○ Yes ○ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ○ Yes ○ No

Will any legal user of the treated waste water discharged be affected? ○ Yes ○ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ○ Yes ◉ No

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Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Water Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 4-24-13 at Santa Rosa, CA .

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
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☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15736 Permit 12949 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

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Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

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Distribution of Storage

Present:

Proposed:

Temporary Urgency
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Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

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Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

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If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

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☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 15737 Permit 12950 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

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Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

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☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
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Application 19351 Permit 16596 License Statement

I (we) hereby petition for change(s) noted above and described as follows:

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Present:

Proposed:

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ATTACHMENT 1

DESCRIPTION OF TEMPORARY URGENCY CHANGE PETITION REQUEST

The Sonoma County Water Agency requests that the State Water Resources Control Board make the following temporary changes to the Decision 1610 (D-1610) instream flow requirements for the period of 180 days from May 1 through October 28: (a) for May 1 through June 30, the Decision 1610 requirements for *Dry* conditions will apply in the main stem Russian River (75 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 85 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean); (b) if, after July 1 storage in Lake Mendocino is above the Water Agency's calculated critical storage curve (presented in Attachment 2, *Instream Flow Analysis for 2013 Temporary Urgency Change Petition*), then, the Decision 1610 requirements for *Dry* water supply conditions will continue to apply; (c) if, after July 1 storage in Lake Mendocino drops below the critical storage curve for more than three consecutive days, then, from that date through October 28 the Decision 1610 requirements for *Critical* water supply conditions will apply in the Russian River (25 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 35 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean).

To improve its efforts in optimally managing flows in the Russian River, the Water Agency requests that under *Dry* water supply conditions the minimum instream flow requirements be implemented on a 5-day running average of average daily stream flow measurements with instantaneous flows on the Upper Russian River being no less than 65 cfs and on the Lower Russian River being no less than 70 cfs.

ATTACHMENT 2

April 2013

Sonoma County Water Agency

Instream Flow Analysis for 2013 Temporary Urgency Change Petition

1.0 BACKGROUND

The Sonoma County Water Agency (Water Agency) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of Decision 1610, which the State Water Resources Control Board (State Water Board) adopted on April 17, 1986. Decision 1610 specifies the minimum flow requirements for the Upper Russian River, Dry Creek and the Lower Russian River. These minimum flow requirements vary based on water supply conditions, which are also specified by Decision 1610. The Water Agency's operations are also subject to the Russian River Biological Opinion issued by the National Marine Fisheries Service on September 24, 2008.

1.1 Minimum Flow Requirements

Decision 1610 requires a minimum flow of 25 cubic feet per second (cfs) in the East Fork of the Russian River from Coyote Valley Dam to the confluence with the West Fork of the Russian River under all water supply conditions. From this point to Dry Creek, the Decision 1610 required minimum Russian River flows are 185 cfs from April through August and 150 cfs from September through March during *Normal* water supply conditions, 75 cfs during *Dry* conditions and 25 cfs during *Critical* conditions. Decision 1610 further specifies two variations of the *Normal* water supply condition, commonly known as *Dry Spring 1* and *Dry Spring 2*. These conditions provide for lower required minimum flows in the Upper Russian River during times when the combined storage in Lake Pillsbury (owned and operated by the Pacific Gas and Electric Company) and Lake Mendocino on May 31 is unusually low. *Dry Spring 1* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less than 150,000 acre-feet on May 31. Under *Dry Spring 1* conditions, the required minimum flow in the Upper Russian River between the confluence of the East Fork and West Fork and Healdsburg is 150 cfs from June through March, with a reduction to 75 cfs during October through December if Lake Mendocino storage is less than 30,000 acre-feet during those months. *Dry Spring 2* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less

than 130,000 acre-feet on May 31. Under *Dry Spring 2* conditions, the required minimum flows in the Upper Russian River are 75 cfs from June through December and 150 cfs from January through March.

From Dry Creek to the Pacific Ocean, the required minimum flows in the Lower Russian River are 125 cfs during *Normal* water supply conditions, 85 cfs during *Dry* conditions and 35 cfs during *Critical* conditions.

In Dry Creek below Warm Springs Dam, the required minimum flows are 75 cfs from January through April, 80 cfs from May through October and 105 cfs in November and December during *Normal* water supply conditions. During *Dry* and *Critical* conditions, these required minimum flows are 25 cfs from April through October and 75 cfs from November through March.

Figure 1 shows all of the required minimum instream flows specified in Decision 1610 by river reach, the gauging stations used to monitor compliance, and the definitions of the various water supply conditions.

1.2 Water Supply Conditions

There are three main water supply conditions that are defined in Decision 1610, which set the minimum instream flow requirements based on the hydrologic conditions for the Russian River system. These water supply conditions are determined based on criteria for the calculated cumulative inflow into Lake Pillsbury from October 1 to the first day of each month from January to June. Decision 1610 defines cumulative inflow for Lake Pillsbury as the algebraic sum of releases from Lake Pillsbury, change in storage and lake evaporation.

Dry water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 8,000 acre-feet as of January 1;
- 39,200 acre-feet as of February 1;
- 65,700 acre-feet as of March 1;
- 114,500 acre-feet as of April 1;
- 145,600 acre-feet as of May 1; and
- 160,000 acre-feet as of June 1.

Critical water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 4,000 acre-feet as of January 1;
- 20,000 acre-feet as of February 1;
- 45,000 acre-feet as of March 1;
- 50,000 acre-feet as of April 1;
- 70,000 acre-feet as of May 1; and
- 75,000 acre-feet as of June 1.

Normal water supply conditions exist whenever a *Dry* or *Critical* water supply condition is not present. As indicated above, Decision 1610 further specifies three variations of the *Normal* water supply condition based on the combined storage in Lake Pillsbury and Lake Mendocino on May 31. These three variations of the *Normal* water supply condition determine the required minimum instream flows for the Upper Russian River from the confluence of the East Fork and the West Fork to the Russian River's confluence with Dry Creek. This provision of Decision 1610 does not provide for any changes in the required minimum instream flows in Dry Creek or the Lower Russian River (the Russian River between its confluence with Dry Creek and the Pacific Ocean). A summary of the required minimum flows in the Russian River for *Normal*, *Normal — Dry Spring 1* and *Normal — Dry Spring 2* water supply conditions is provided here:

1. *Normal*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 acre-feet or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through August 31	185 cfs
From September 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2. *Normal-Dry Spring 1*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 acre-feet or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 acre-feet or 80 percent or the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet	75 cfs

3. *Normal-Dry Spring 2*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 acre-feet or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through December 31	75 cfs
From January 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2.0 PROJECTED WATER SUPPLY CONDITION

From October 1, 2012 to April 16, 2013, the cumulative inflow into Lake Pillsbury was 254,029 acre-feet. Consequently, the water supply condition is categorized as *Normal* for the remainder of the year. Based on these criteria, the Decision 1610 required minimum instream flows in the Upper Russian River (from the East Branch Russian River to the Russian River's confluence of Dry Creek) will be 185 cfs between April 1 and May 31. The required minimum in-stream flows starting June 1 will be determined based on the combined storage of Lake Pillsbury and Lake Mendocino on May 31. At this time, the projected combined storage amount is difficult to predict because it is heavily dependent on late spring precipitation. However, based on the current hydrologic trends, the Water Agency anticipates *Normal-Dry Spring 2* water supply conditions starting June 1. Consequently, the Decision 1610 required minimum instream flows in the Upper Russian River will likely be 75 cfs and on the Lower Russian River 125 cfs.

Lake Mendocino Storage

As of April 16, 2013 the water supply storage level in Lake Mendocino was 62,463 acre-feet (AF). This storage level is 62 percent of the available water conservation pool. This is roughly 9,500 AF higher than Lake Mendocino storage was in 2009 at this time. 2009 is the most recent year during which the Water Agency filed a temporary urgency change petition to change the minimum Russian River instream flow requirements in the Water Agency's water-right permits due to low storage levels in the reservoir. However, unlike 2009, the storage levels in the reservoir are rapidly declining this year. Since mid-February, reservoir storage levels have declined by approximately 10,000 acre-feet.

Figure 2 shows Lake Mendocino storage levels for the years 2009 to current. As shown in the figure, the rate of decline in 2013 from mid February to date is similar to higher rates of decline that normally occur in the late summer. The rate of decline and low storage levels are the result of the unusually low rainfall in the region this winter. Precipitation records for Ukiah indicate 4.75 inches of rainfall in the area since January 1st, which is just 22.8% of the average for this period based on records going back to 1952.

Analyses recently prepared by Water Agency engineering staff indicate that without significant storm events between now and June 1, the storage levels in Lake Mendocino will decline to below 20,000 AF by October 1 from releases to meet downstream water demands and the anticipated minimum instream flow requirements on the Russian River. Under the projected water supply condition of *Normal- Dry Spring 2*, Decision 1610 requirements specify minimum in-stream flows in the Upper Russian River of 185 cfs from April 1 through May 31 and 75 cfs from June 1 through December 31. The analysis used to calculate the projected storage was completed using the Water Agency's Russian River simulation model with the following assumptions: (1) Decision 1610 minimum instream flow requirements; (2) 1988 hydrology; (3) current Russian River system losses; and (4) Potter Valley Project operations based on the 2004 amended license issued by the Federal Energy Regulatory Commission. The 1988 hydrology was selected based on very similar distribution and quantity of precipitation compared to 2013. Figure 3 shows the cumulative precipitation near the City of Ukiah for 1988 and 2013. Figure 4 shows the Lake Mendocino storage levels that have occurred so far during 2013 and the storage levels that are projected to occur during the rest of 2013 if the Decision 1610 minimum instream flow requirements are not changed.

The extremely low projected storage level in Lake Mendocino could severely impact listed and threatened Russian River fish species, create serious water-supply impacts in Mendocino County and the Alexander Valley in Sonoma County, and harm Lake Mendocino and Russian River recreation.

Lake Sonoma Storage

As of April 16, 2013 the water supply storage level in Lake Sonoma was 234,256 acre-feet (AF). This storage level is 96 percent of the available water conservation pool. This storage level is near normal for this time of year. In addition, the much larger water supply pool of Lake Sonoma provides multiple years of carry over storage. Consequently, no changes to the minimum instream flow requirements in Dry Creek are being requested in this petition.

As discussed in Section 4.0 below, the Water Agency is requesting changes to the minimum instream flow requirements on the Lower Russian River, downstream of its confluence with Dry Creek to the Pacific Ocean. These changes are required because

the reduced minimum instream flows being requested on the Upper Russian River, necessary to preserve Lake Mendocino storage, will provide significantly less contribution to meet minimum instream flow requirements in the lower river. Consequently, increased releases from Lake Sonoma into Dry Creek would be necessary to maintain Decision 1610 minimum instream flow requirements (125 cfs) on the lower river. However, such increased releases into Dry Creek would result in the Water Agency violating the Incidental Take Statement contained in the Russian River Biological Opinion (See NMFS Biological Opinion for Water Supply, Flood Control Operations and Channel Maintenance conducted by U.S. Army Corps of Engineers, the Sonoma County Water Agency and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed, pp. 297-299 (Sept. 24, 2008)). The Incidental Take Statement restricts releases from Lake Sonoma into Dry Creek because they can result in flows that are too high for optimal habitat for juvenile salmonids.

Furthermore, NMFS concluded in the Biological Opinion that minimum instream flows lower than those required by Decision 1610 may result in flows into the estuary that improve opportunities to maintain a freshwater lagoon while preventing flooding of adjacent properties and requires the Water Agency to annually request lower minimum instream flows to avoid jeopardizing listed salmonids and their critical habitat. Consequently, lowering minimum instream flows on the Lower Russian River will be consistent with the objectives of the Biological Opinion.

3.0 CRITERIA FOR APPROVING TEMPORARY UNGENCY CHANGE TO PERMITS 12947A, 12949, 12950, 16596

As required by Water Code section 1435, subdivision (b), the Board must make the following findings before issuing a temporary change order:

1. The permittee or licensee has an urgent need to make the proposed change;
2. The proposed change may be made without injury to any other lawful user of water;
3. The proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. The proposed change is in the public interest.

3.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an urgent need to make a proposed change exists when the State Water Board concludes that the proposed temporary change is necessary to further the constitutional policy that the water resources of the State be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented.

In this case, an urgent need exists for the proposed flow changes on the Upper Russian River because the Water Agency predicts near depletion of water supply storage in Lake Mendocino by October 1, 2013 unless the requested temporary urgency change is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are at risk. Without the proposed changes, the Water Agency would need to release additional stored water from Lake Mendocino, which would result in the significant depletion of storage during the summer and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the fall, which would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protection and stable flows in the upper Russian River during the fall when spawning state and federally listed fish species are most sensitive to flow and water temperatures. Furthermore, if the upcoming Water Year 2014 is a dry year, carryover storage in Lake Mendocino from 2013 will be crucial for the continued recovery of the Russian River salmonid fishery and water supply reliability during 2014.

An urgent need exists for the proposed changes on the Lower Russian River because the Water Agency will violate the Incidental Take Statement contained in the Biological Opinion unless the requested temporary urgency change is approved. Furthermore, NMFS concluded in the Biological Opinion that minimum instream flows lower than those required by Decision 1610 may result in flows into the estuary that improve opportunities to maintain a freshwater lagoon while preventing flooding of adjacent properties.

The Water Agency predicts that without the proposed change, Lake Mendocino will be drawn down to storage levels that jeopardize the Water Agency's ability to release water to the Russian River. In this event, water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, the Water Agency's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre-feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre-feet. The Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre-feet during August 2013 unless the Temporary Urgency Change Petition is approved. For the reasons stated above, an urgent need for the proposed change exists.

3.2 No Injury to Any Other Lawful User of Water

If this petition is granted, the Water Agency still will be required to maintain specific minimum flows in the Russian River. Because these minimum flows will be present, all other legal users of water still will be able to divert and use the amounts of water that they may legally divert and use. Moreover, failure to implement the reduced instream flow could result in severe depletion of Lake Mendocino, which in turn could result in serious impacts to entitled users of water downstream of Lake Mendocino later in the year. Accordingly, granting this petition will not result in any injury to any other lawful user of water.

3.3 No Unreasonable Effect upon Fish, Wildlife, or Other Instream Beneficial Uses

Although flows in the main stem Russian River will be reduced upon approval of this petition, conservation of water in Lake Mendocino will allow enhanced management of flows in early fall for the benefit of salmon migration and spawning. It is possible that reduced flows in the Russian River may impair some instream beneficial uses, principally recreation uses. Although some recreation uses may be affected by these reduced flows, it is not unreasonable considering the potential grave impacts to fisheries, water supply and recreation in Lake Mendocino and loss of juvenile salmonid habitat in Dry Creek that could occur if the petition were not approved.

3.4 The Proposed Change is in the Public Interest

Approval of this petition will help conserve stored water in Lake Mendocino so that it can be released for listed Russian River salmonid fisheries present in the Russian River during the fall Chinook salmon migration season. In addition, approval of this petition will help preserve storage in Lake Mendocino as a precaution in case 2014 also is a dry water year. It is in the public interest to preserve water supplies for these beneficial uses when hydrologic circumstances cause severe reductions to water supplies.

4.0 REQUESTED TEMPORARY URGENCY CHANGE TO PERMITS 12947A, 12949, 12950, 16596

To address the water supply condition in Lake Mendocino and not violate the Incidental Take Statement contained in the Biological Opinion by making excessive releases into Dry Creek, the Water Agency is filing this TUCP, which requests that the State Board make the following temporary changes to the Decision 1610 instream flow requirements: (a) for May 1 through June 30, the Decision 1610 requirements for *Dry* conditions will apply in the main stem Russian River (75 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 85 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean); (b) if,

after July 1, storage in Lake Mendocino is above the Water Agency's calculated critical storage curve, then, the Decision 1610 requirements for *Dry* water supply conditions will continue to apply; (c) if, after July 1, storage in Lake Mendocino drops below the critical storage curve for more than three consecutive days, then, from that date through October 28 the Decision 1610 requirements for *Critical* water supply conditions will apply in the Russian River (25 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 35 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean). Table 1 summarizes the calculated daily values for the Water Agency's critical storage curve.

The critical storage curve used to determine whether to remain in *Dry* water supply conditions or adjust to *Critical* water supply conditions after July 1 was calculated using the Water Agency's Russian River simulation model with the following assumptions: (1) *Dry* water supply conditions from May 1 through June 30; (2) *Critical* water supply conditions from July 1 through October 28; (3) 1988 hydrology; (4) current Russian River system losses; and (5) Potter Valley Project operations based on the 2004 amended license issued by the Federal Energy Regulatory Commission. Figure 5 shows the calculated critical storage curve.

To improve its efforts in optimally managing flows in the Russian River, the Water Agency is also requesting in this year's TUCP that under *Dry* water supply conditions the minimum instream flow requirement be implemented on a 5-day running average of average daily stream flow measurements with the condition that instantaneous flows on the Upper Russian River be no less than 65 cfs and on the Lower Russian River be no less than 70 cfs. This implementation of minimum instream flow requirements will allow the Water Agency to manage stream flows with smaller operational buffers, thereby conserving water supply in Lake Mendocino. This will result in higher storage levels in the fall, which will be used for releases of stored water for the benefit of outgoing migration of Chinook salmon, and improved carry over storage for use in 2014. If after July 1 the water supply condition changes to *Critical*, minimum instream flow requirements will be implemented on an instantaneous flow basis.

The proposed changes in the Decision 1610 Russian River minimum instream flows that are requested by this petition will not result in unusual circumstances. The proposed changes to minimum instream flows are within the range of those that already occur during the *Dry* and *Critical* water supply conditions specified by Decision 1610. Due to low rainfall and other hydrologic factors, minimum instream flow requirements in the Russian River from June through October for the three-year period from 2007 through 2009 have been similar to the minimum flows in the requested changes.

Because the requested changes are not driven by low storage levels in Lake Sonoma, reductions in summertime diversions by the Water Agency at its Wohler/Mirabel facilities on the Lower Russian River are not necessary. Furthermore, in past years reductions in

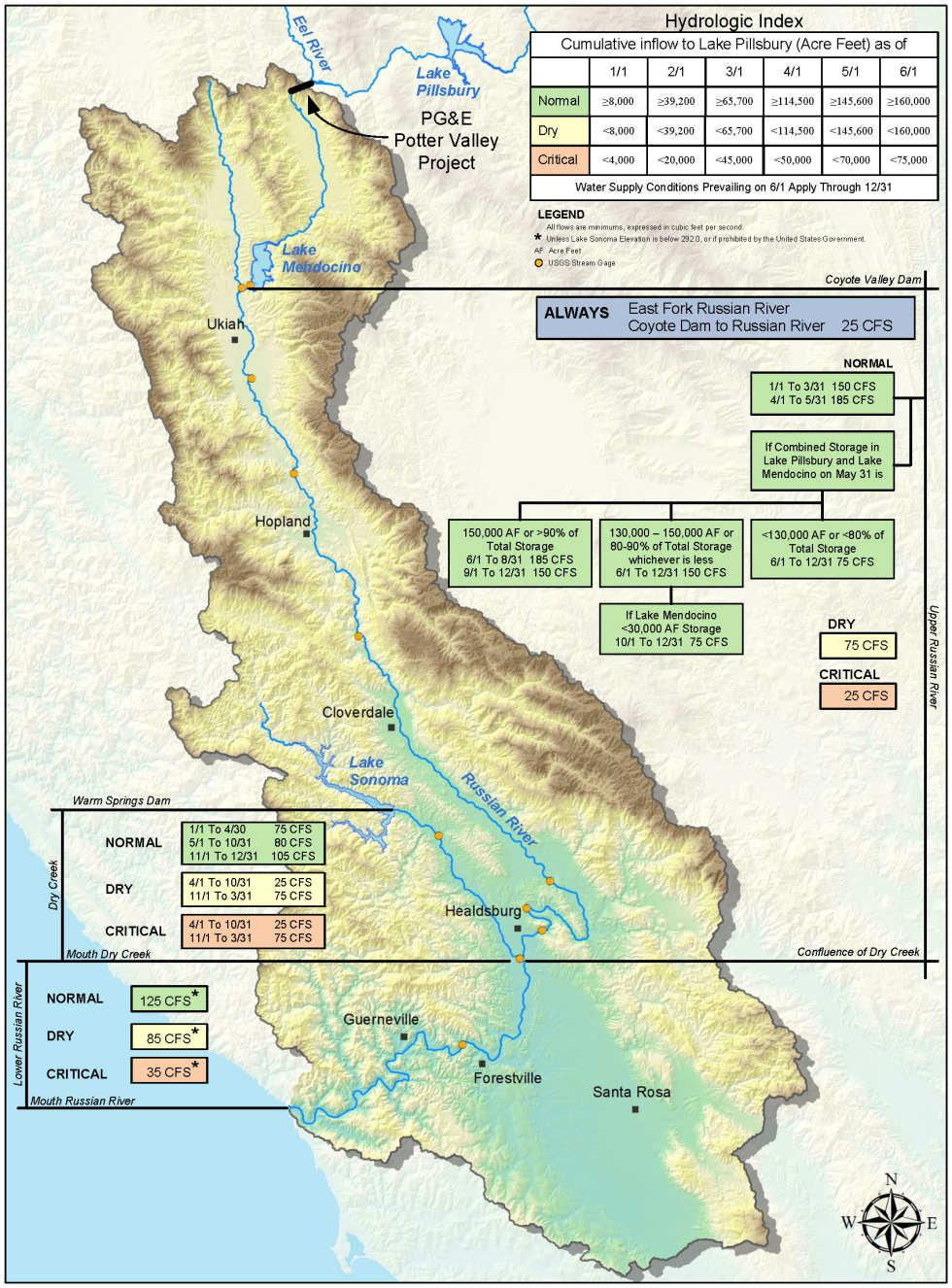
diversions by the Water Agency resulted in increased groundwater pumping by the cities and special districts that purchase wholesale water from the Water Agency. This response has the unintended consequence of stressing local groundwater resources even though adequate surface water is available from Lake Sonoma.

Also, the Water Agency and its water contractors continue to implement water use efficiency programs that align with the California Urban Water Conservation Council's Best Management Practices (BMPs) and comply with SB 7x-7. While these BMPs remain the baseline for the region, the adoption of the Sonoma Marin Saving Water Partnership in December 2010 memorialized the region's commitment to long term, year-round water use efficiency. This partnership removes one of the most significant barriers to implementing conservation programs, funding. Each of the Partners has committed to a sustained level of funding that is allocated specifically to conservation program implementation.

ATTACHMENT 2

Figures

State Water Resources Control Board Decision 1610



Russian River Basin
Streamflow Requirements

Figure 1 - Decision 1610 Minimum In-Stream Flow Requirements by Reach

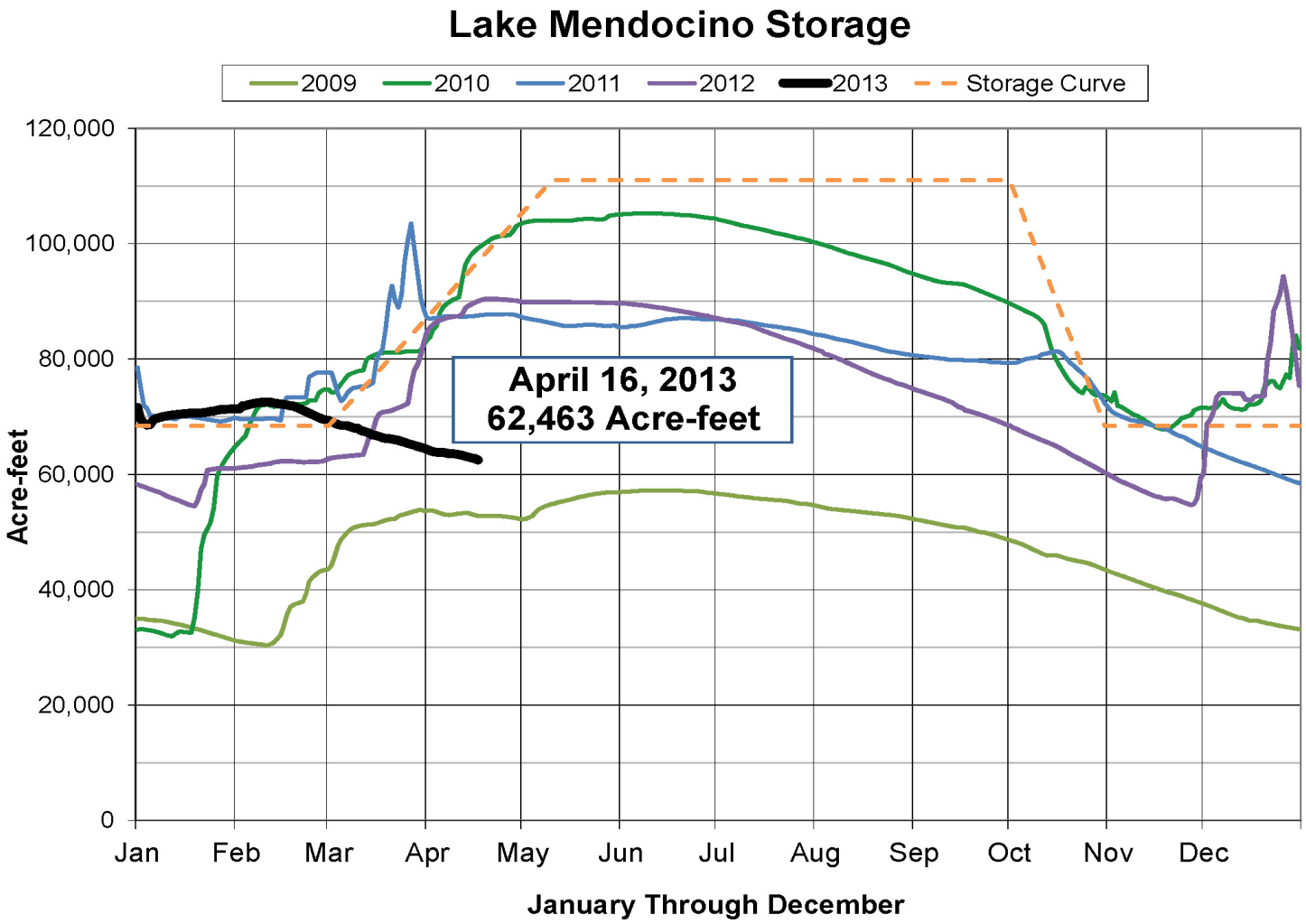


Figure 2 - Lake Mendocino Storage Levels for Years 2009 Through 2013

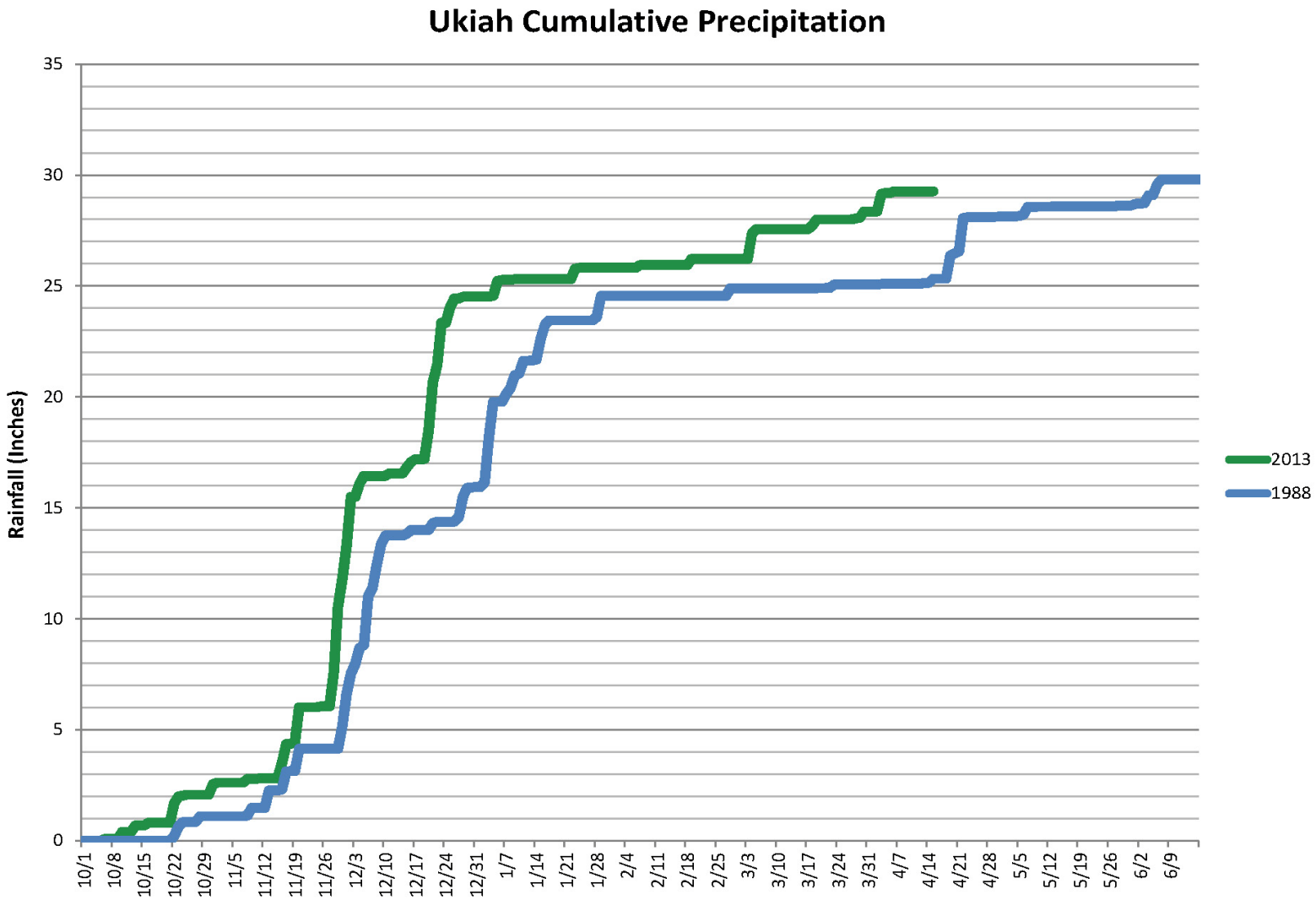


Figure 3 - Cumulative Precipitation Near the City of Ukiah for 1988 and 2013

Figure

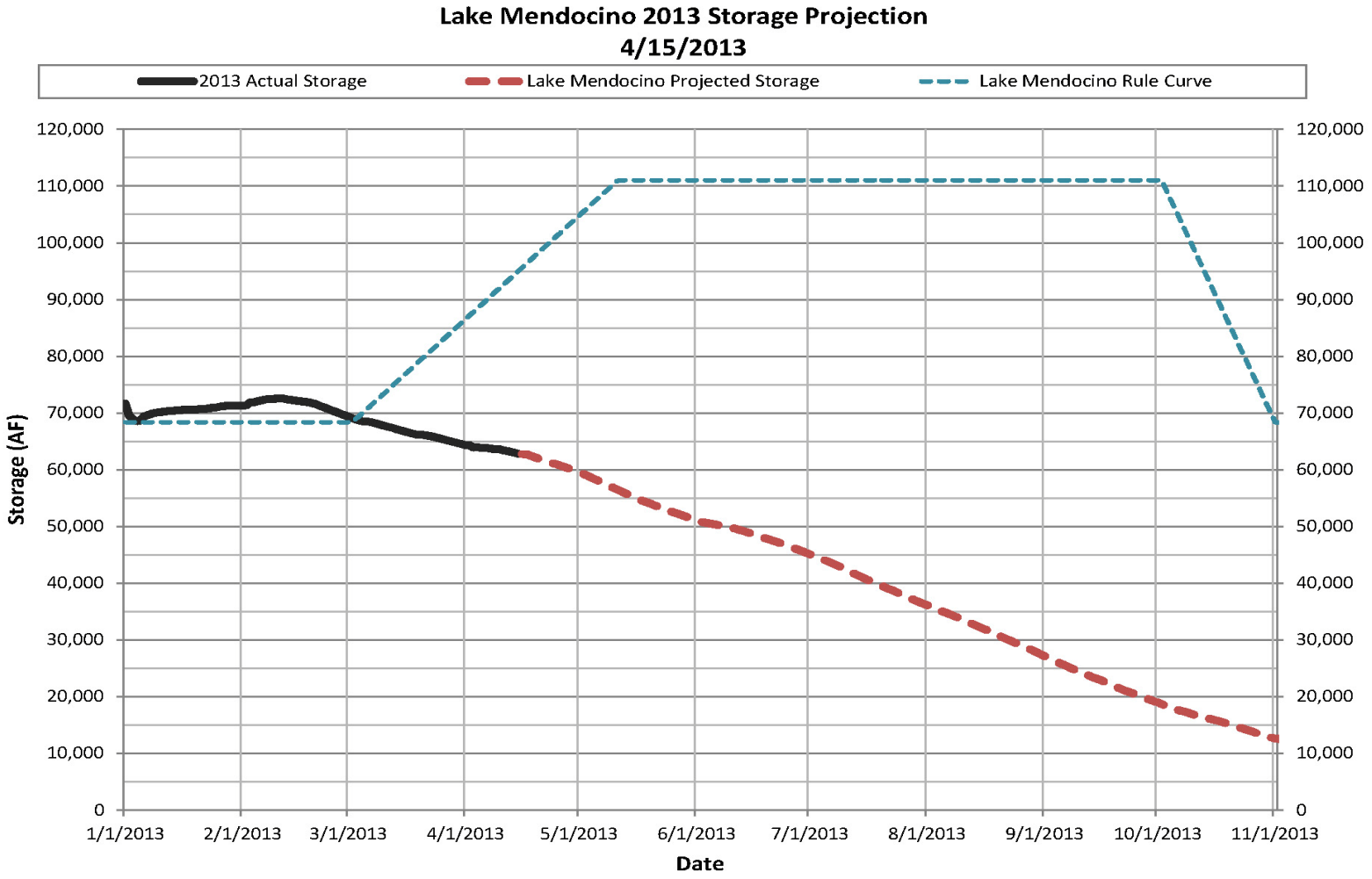


Figure 4 - Projected 2013 Storage Level for Lake Mendocino

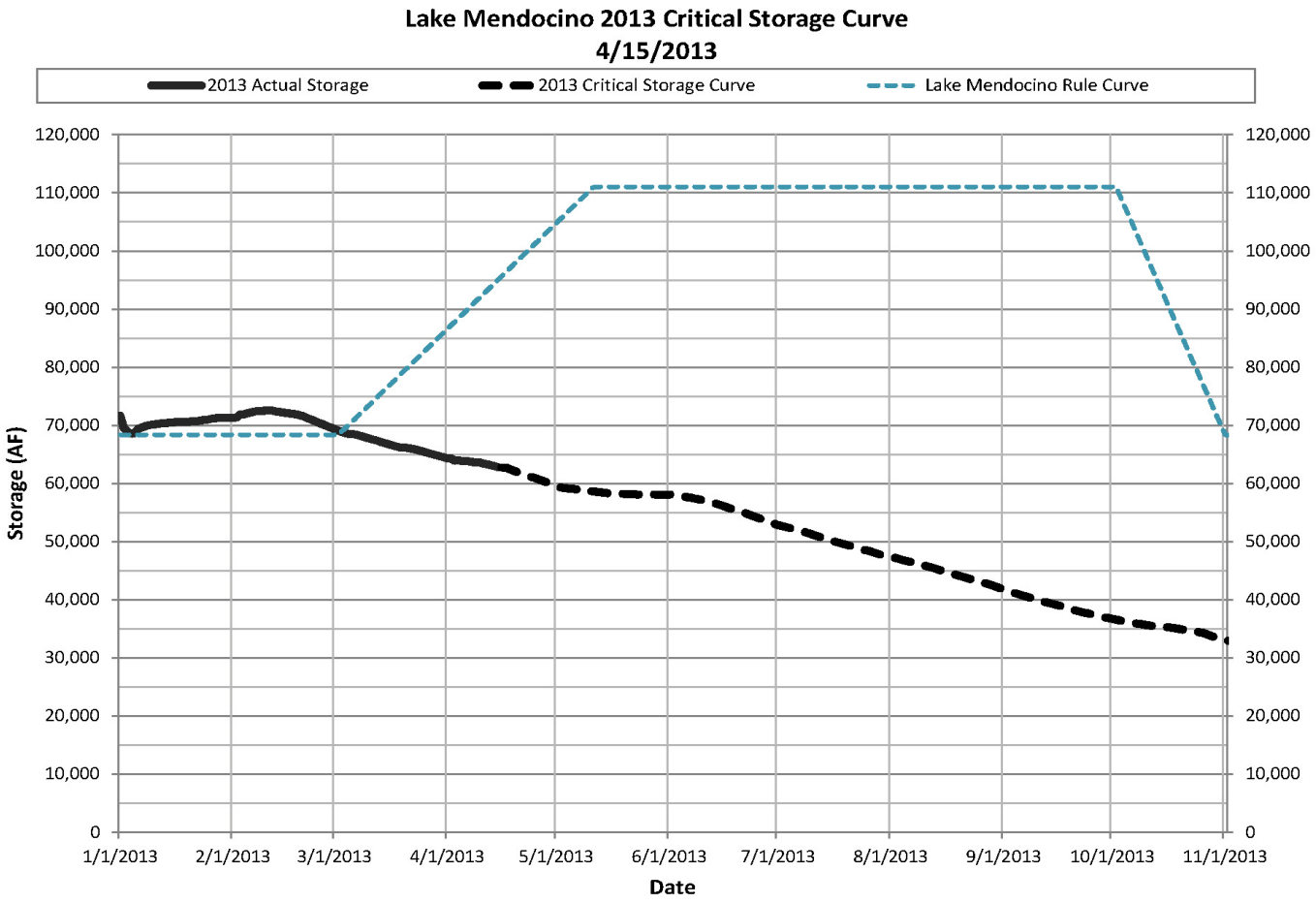


Figure 5 - Water Agency Calculated Critical Storage Curve for Lake Mendocino

Figure

Tables

Table 1 - Water Agency Critical Daily Storage Values

Day	July	Aug	Sept	Oct
1	52,682	47,239	41,595	36,572
2	52,542	47,055	41,395	36,445
3	52,390	46,877	41,177	36,312
4	52,226	46,715	40,975	36,187
5	52,069	46,568	40,796	36,097
6	51,906	46,413	40,609	35,964
7	51,714	46,257	40,416	35,891
8	51,522	46,095	40,225	35,816
9	51,314	45,934	40,022	35,699
10	51,111	45,764	39,849	35,591
11	50,888	45,583	39,673	35,494
12	50,683	45,390	39,511	35,392
13	50,493	45,197	39,358	35,365
14	50,285	45,021	39,214	35,315
15	50,085	44,844	39,070	35,270
16	49,936	44,669	38,887	35,230
17	49,765	44,476	38,725	35,146
18	49,585	44,288	38,506	35,026
19	49,424	44,104	38,324	34,909
20	49,254	43,914	38,129	34,821
21	49,079	43,725	37,970	34,719
22	48,901	43,533	37,813	34,605
23	48,715	43,366	37,683	34,501
24	48,539	43,201	37,549	34,407
25	48,373	43,019	37,408	34,275
26	48,182	42,830	37,269	34,039
27	47,997	42,646	37,109	33,806
28	47,792	42,445	36,973	33,573
29	47,642	42,213	36,830	
30	47,503	42,006	36,707	
31	47,380	41,802		

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

Coordination with Regional Water Quality Control Board

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ◉ No

Will a waste discharge permit be required for the project? ○ Yes ◉ No

If necessary, provide additional information below:

Consultations with RWQCB were held by Water Agency staff and Rebecca Fitzgerald (707-576-2650) on April 17, 2013.

Insert the attachment number here, if applicable:

Local Permits

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: Date of Contact:

Department: Phone Number:

County Zoning Designation:

Are any county permits required for your project? If yes, indicate type below. ○ Yes ◉ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

☐ Regional Water Quality Control Board ☐ Department of Fish and Game

☐ Dept of Water Resources, Division of Safety of Dams ☐ California Coastal Commission

☐ State Reclamation Board ☐ U.S. Army Corps of Engineers ☐ U.S. Forest Service

☐ Bureau of Land Management ☐ Federal Energy Regulatory Commission

☐ Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

Agency	Permit Type	Person(s) Contacted	Contact Date	Phone Number

If necessary, provide additional information below:

Consultations with NOAA National Marine Fisheries Service and CA Department of Fish & Wildlife were held with Water Agency staff on several occasions between April 2, 2013 and April 22, 2013. Contacts for the agencies are as follows:
1) NOAA NMFS -- Dr. William Hearn (707-575-6062)
2) CA DFW -- Eric Larson (707-944-5528)

Insert the attachment number here, if applicable: ☐

Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

n/a

Insert the attachment number here, if applicable: ☐

Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

☐ Along the stream channel immediately downstream from each point of diversion

☐ Along the stream channel immediately upstream from each point of diversion

☐ At the place where water subject to this water right will be used

Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

All Water Right Holders Must Sign This Form:

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 4-24-13 at Santa Rosa, CA .

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE:

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

NOTICE OF EXEMPTION

To: X Office of Planning & Research
1400 Tenth Street
Sacramento, CA 95814

X County Clerk
County of Sonoma
Santa Rosa, CA 95401

X County Clerk
County of Mendocino
Ukiah, CA 95482

CONFORMED COPY
Copy of Document Recorded on
04/23/2013 11:29:00 AM
as 2013-E0016
Mendocino County Clerk-Recorder

Project Title: Petition Requesting Approval of a Temporary Urgency Change in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma counties

Project Location-Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino, in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek, and in the Lower Russian River from its confluence with Dry Creek to the Pacific Ocean. Figure 1 shows the streamflow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: Sonoma County Water Agency (Water Agency) is filing a temporary urgency change petition requesting that the State Water Resources Control Board (SWRCB) make the following changes in the minimum instream flow requirements for the Russian River mainstem that are specified in SWRCB Decision 1610 and the Water Agency's water right permits: (a) for May 1 through June 30, the Decision 1610 requirements for *Dry* conditions will apply in the main stem Russian River. These requirements are 75 cubic feet per second (cfs) in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 85 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean; (b) if, after July 1 storage in Lake Mendocino is above the Water Agency's calculated critical storage curve, then, the Decision 1610 requirements for *Dry* water supply conditions will continue to apply; (c) if, after July 1 storage in Lake Mendocino drops below the critical storage curve for more than three consecutive days, then, from that date through October 28 the Decision 1610 requirements for *Critical* water supply conditions will apply in the Russian River. These requirements are 25 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 35 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean.

To improve its efforts in optimally managing flows in the Russian River, the Water Agency is also requesting that the minimum instream flow requirements be implemented on a 5-day running averages of average daily stream flow measurements with the condition that instantaneous flows on the Upper Russian River under Dry water supply conditions be no less than 65 cfs and on the Lower Russian River be no less than 70 cfs and that instantaneous flows under Critical water supply conditions on the Upper Russian River be no less than 15 cfs and on the Lower Russian River be no less than 25 cfs. This implementation of minimum instream flow requirements will allow the Water Agency to manage stream flows with a smaller operational buffer, thereby conserving water supply in Lake Mendocino. This will result in higher storage levels in the fall for increased releases for the migration and spawning of Chinook salmon and improving carry over storage for the following year.

An urgent need exists for the proposed flow changes on the Upper Russian River because the Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are threatened. Without the proposed

changes, the Water Agency would need to release additional stored water from Lake Mendocino to meet Decision 1610 minimum instream flow requirements, which would result in the significant depletion and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek), which would cause serious impacts to human health and welfare, and which would reduce the water supplies needed for fishery protection and stable flows in the Upper Russian River during the fall when spawning state and federally listed fish species are sensitive to flow levels and water temperatures. Furthermore, if the upcoming Water Year 2014 is a dry year, carryover storage in Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2014.

An urgent need exists for the proposed changes on the Lower Russian River because the Water Agency will violate the Incidental Take Statement contained in the National Marine Fisheries Service's Biological Opinion for Water Supply, Flood Control Operations and Channel Maintenance conducted by U.S. Army Corps of Engineers, the Sonoma County Water Agency and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed, at pages 297-299 (September 24, 2008) due to higher releases being required on Dry Creek to meet Decision 1610 minimum flow requirements in the Lower Russian River unless the requested temporary urgency change is approved. Furthermore, NMFS concluded in the Biological Opinion that minimum instream flows lower than those required by Decision 1610 may result in flows into the estuary that improve opportunities to maintain a freshwater lagoon while preventing flooding of adjacent properties and requires the Water Agency to annual request lower minimum instream flows to avoid jeopardizing listed salmonids and their critical habitat.

The Water Agency predicts that without the proposed change, Lake Mendocino will be drawn down to storage levels that would jeopardize the Water Agency's ability to release water to the Russian River. In this event, water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, the Water Agency's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre feet. The Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. For the reasons stated above, an urgent need for the proposed change exists.

Name of Public Agency Approving Project: State Water Resources Control Board - Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status: (check one)

	Ministerial (Sec. 21080(b)(1); 15268)	
	Declared Emergency (Sec. 21080(b)(3); 15269(a))	
X	Emergency Project (Sec.21080 (b)(4); 15269(b)(c)):	Section 21080(b)(4): Specific actions necessary to prevent or mitigate an emergency
X	Categorical Exemption. State type and section number:	State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment State CEQA Guidelines 15301(i): Existing Facilities
	Statutory Exemptions. State code number:	

Reasons why project is exempt: The proposed action is statutorily exempt under CEQA Statute 21080(b)(4) and categorically exempt from the California Environmental Quality Act (CEQA) under the State CEQA Guidelines Sections 15307, 15308, and 15301(i).

A. Actions to Prevent or Mitigate an Emergency
California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. The Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are threatened. Without the proposed change, the Water Agency would need to release additional stored water from Lake Mendocino to meet Decision 1610 minimum instream flow requirements, which would result in the significant depletion and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek), which would cause serious impacts to human health and welfare, and which would reduce water supplies needed for fishery protection and stable flows in the Upper Russian River for the fall migration and spawning of listed salmon species. Water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, the Water Agency's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre feet, which will otherwise occur in the absence of the SWRCB approving the requested changes. Furthermore, if the upcoming Water Year 2014 is a dry year, carryover storage in Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2014.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment
CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. The proposed change in Russian River instream flow requirements would conserve water in Lake Mendocino to benefit the migration and spawning of adult Chinook salmon in the fall.

C. Existing Facilities
CEQA Guidelines Section 15301(i) provides, generally, that the operation of existing facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination is categorically exempt from CEQA. The examples in subdivision (i) of Section 15301(i) specifically provide that the maintenance of streamflows to protect fish and wildlife resources is exempt. The Water Agency's request to change minimum instream flow requirements and make releases from Lake Mendocino from May to October 2013 under the same minimum instream flow requirements that normally apply during Dry or Critical hydrologic conditions for the purpose of conserving water storage in Lake Mendocino would not expand the Water Agency's use or increase the water diversions available to the Water Agency for consumptive purposes. The proposed change in Russian River minimum instream flow requirements would still be within the existing operational parameters for Lake Mendocino established by SWRCB Decision 1610. In addition, the proposal would maintain streamflows specifically to protect listed salmonid species.

Lead Agency Contact Person: Jessica Martini-Lamb Area Code/Telephone: 707-547-1903

Signature: Date: 04/23/2013 Title: General Manager

X Lead Agency ___ Applicant Date Received for filing at OPR: _____

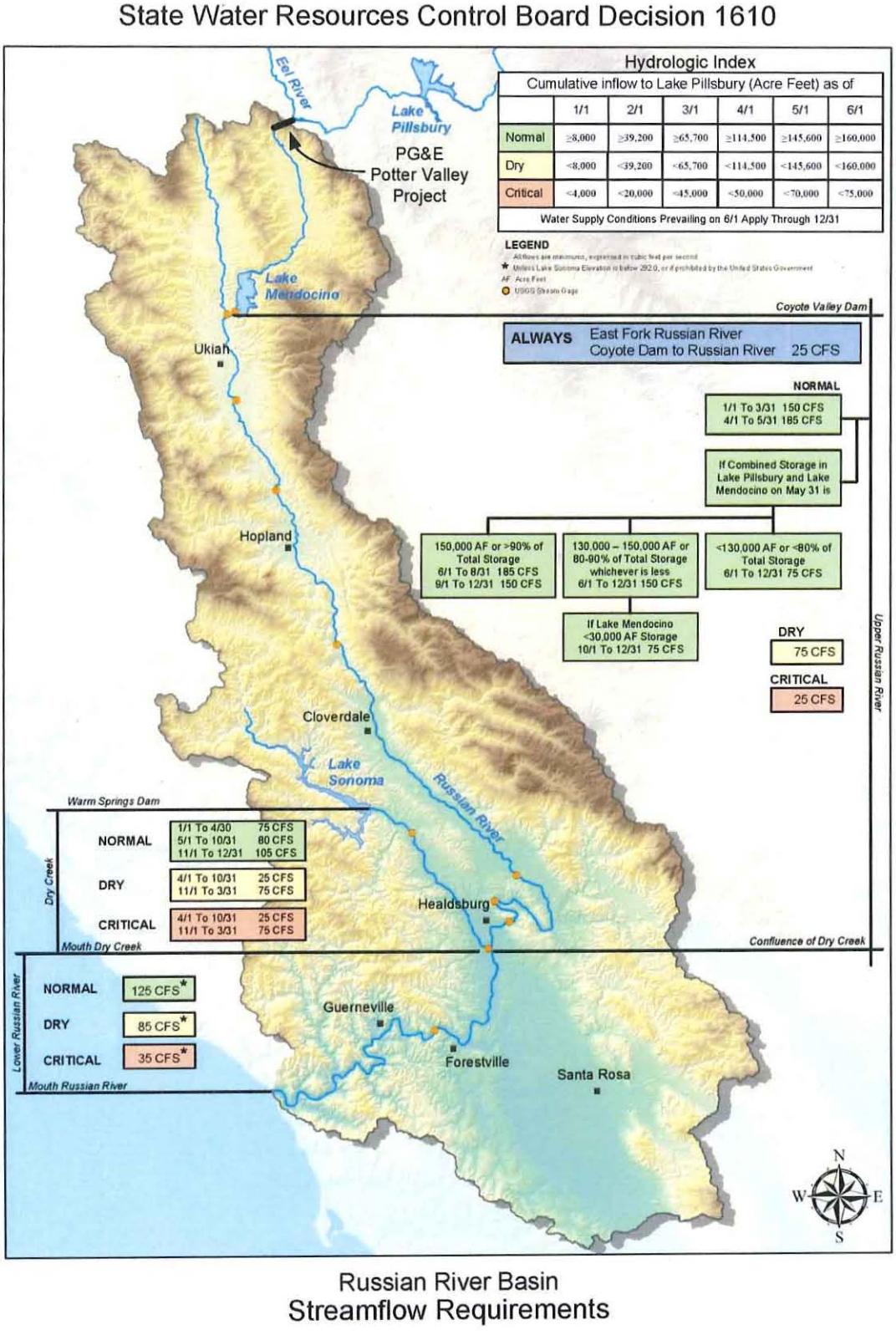


Figure 1. Project location for Petition Requesting Approval of a Temporary Urgency Change in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma counties.

This notice was posted on APR 2 3 2013
and will remain posted for a period of thirty days
through MAY 2 3 2013

NOTICE OF EXEMPTION

To: X Office of Planning & Research
1400 Tenth Street
Sacramento, CA 95814

X County Clerk
County of Sonoma
Santa Rosa, CA 95401

X County Clerk
County of Mendocino
Ukiah, CA 95482

13-0423-2

From: Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

WILLIAM F. ROUSSEAU, Co. Clerk
Julie Garfia
BY: _____
DEPUTY CLERK

Project Title: Petition Requesting Approval of a Temporary Urgency Change in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma counties

Project Location-Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino, in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek, and in the Lower Russian River from its confluence with Dry Creek to the Pacific Ocean. Figure 1 shows the streamflow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

80 813543

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: Sonoma County Water Agency (Water Agency) is filing a temporary urgency change petition requesting that the State Water Resources Control Board (SWRCB) make the following changes in the minimum instream flow requirements for the Russian River mainstem that are specified in SWRCB Decision 1610 and the Water Agency's water right permits: (a) for May 1 through June 30, the Decision 1610 requirements for *Dry* conditions will apply in the main stem Russian River. These requirements are 75 cubic feet per second (cfs) in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 85 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean; (b) if, after July 1 storage in Lake Mendocino is above the Water Agency's calculated critical storage curve, then, the Decision 1610 requirements for *Dry* water supply conditions will continue to apply; (c) if, after July 1 storage in Lake Mendocino drops below the critical storage curve for more than three consecutive days, then, from that date through October 28 the Decision 1610 requirements for *Critical* water supply conditions will apply in the Russian River. These requirements are 25 cfs in the Upper Russian River from its confluence with the East Fork to its confluence with Dry Creek and 35 cfs in the Lower Russian River downstream of its confluence with Dry Creek to the Pacific Ocean.

To improve its efforts in optimally managing flows in the Russian River, the Water Agency is also requesting that the minimum instream flow requirements be implemented on a 5-day running averages of average daily stream flow measurements with the condition that instantaneous flows on the Upper Russian River under Dry water supply conditions be no less than 65 cfs and on the Lower Russian River be no less than 70 cfs and that instantaneous flows under Critical water supply conditions on the Upper Russian River be no less than 15 cfs and on the Lower Russian River be no less than 25 cfs. This implementation of minimum instream flow requirements will allow the Water Agency to manage stream flows with a smaller operational buffer, thereby conserving water supply in Lake Mendocino. This will result in higher storage levels in the fall for increased releases for the migration and spawning of Chinook salmon and improving carry over storage for the following year.

An urgent need exists for the proposed flow changes on the Upper Russian River because the Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are threatened. Without the proposed

4913005

changes, the Water Agency would need to release additional stored water from Lake Mendocino to meet Decision 1610 minimum instream flow requirements, which would result in the significant depletion and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek), which would cause serious impacts to human health and welfare, and which would reduce the water supplies needed for fishery protection and stable flows in the Upper Russian River during the fall when spawning state and federally listed fish species are sensitive to flow levels and water temperatures. Furthermore, if the upcoming Water Year 2014 is a dry year, carryover storage in Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2014.

An urgent need exists for the proposed changes on the Lower Russian River because the Water Agency will violate the Incidental Take Statement contained in the National Marine Fisheries Service's Biological Opinion for Water Supply, Flood Control Operations and Channel Maintenance conducted by U.S. Army Corps of Engineers, the Sonoma County Water Agency and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed, at pages 297-299 (September 24, 2008) due to higher releases being required on Dry Creek to meet Decision 1610 minimum flow requirements in the Lower Russian River unless the requested temporary urgency change is approved. Furthermore, NMFS concluded in the Biological Opinion that minimum instream flows lower than those required by Decision 1610 may result in flows into the estuary that improve opportunities to maintain a freshwater lagoon while preventing flooding of adjacent properties and requires the Water Agency to annual request lower minimum instream flows to avoid jeopardizing listed salmonids and their critical habitat.

The Water Agency predicts that without the proposed change, Lake Mendocino will be drawn down to storage levels that would jeopardize the Water Agency's ability to release water to the Russian River. In this event, water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, the Water Agency's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre feet. The Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. For the reasons stated above, an urgent need for the proposed change exists.

Name of Public Agency Approving Project: State Water Resources Control Board - Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status: (check one)

	Ministerial (Sec. 21080(b)(1); 15268)	
	Declared Emergency (Sec. 21080(b)(3); 15269(a))	
X	Emergency Project (Sec.21080 (b)(4); 15269(b)(c)):	Section 21080(b)(4): Specific actions necessary to prevent or mitigate an emergency
X	Categorical Exemption. State type and section number:	State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment State CEQA Guidelines 15301(i): Existing Facilities
	Statutory Exemptions. State code number:	

Reasons why project is exempt: The proposed action is statutorily exempt under CEQA Statute 21080(b)(4) and categorically exempt from the California Environmental Quality Act (CEQA) under the State CEQA Guidelines Sections 15307, 15308, and 15301(i).

A. Actions to Prevent or Mitigate an Emergency

California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. The Water Agency's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the Temporary Urgency Change Petition is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are threatened. Without the proposed change, the Water Agency would need to release additional stored water from Lake Mendocino to meet Decision 1610 minimum instream flow requirements, which would result in the significant depletion and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek), which would cause serious impacts to human health and welfare, and which would reduce water supplies needed for fishery protection and stable flows in the Upper Russian River for the fall migration and spawning of listed salmon species. Water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, the Water Agency's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre feet, which will otherwise occur in the absence of the SWRCB approving the requested changes. Furthermore, if the upcoming Water Year 2014 is a dry year, carryover storage in Lake Mendocino will be crucial for the continued recovery of the Russian River salmonid fishery and for water supply reliability during 2014.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment

CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. The proposed change in Russian River instream flow requirements would conserve water in Lake Mendocino to benefit the migration and spawning of adult Chinook salmon in the fall.

C. Existing Facilities

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Lead Agency Contact Person: Jessica Martini-Lamb Area Code/Telephone: 707-547-1903

Signature: Date: 04/23/2013 Title: for General Manager

X Lead Agency ___ Applicant Date Received for filing at OPR: _____

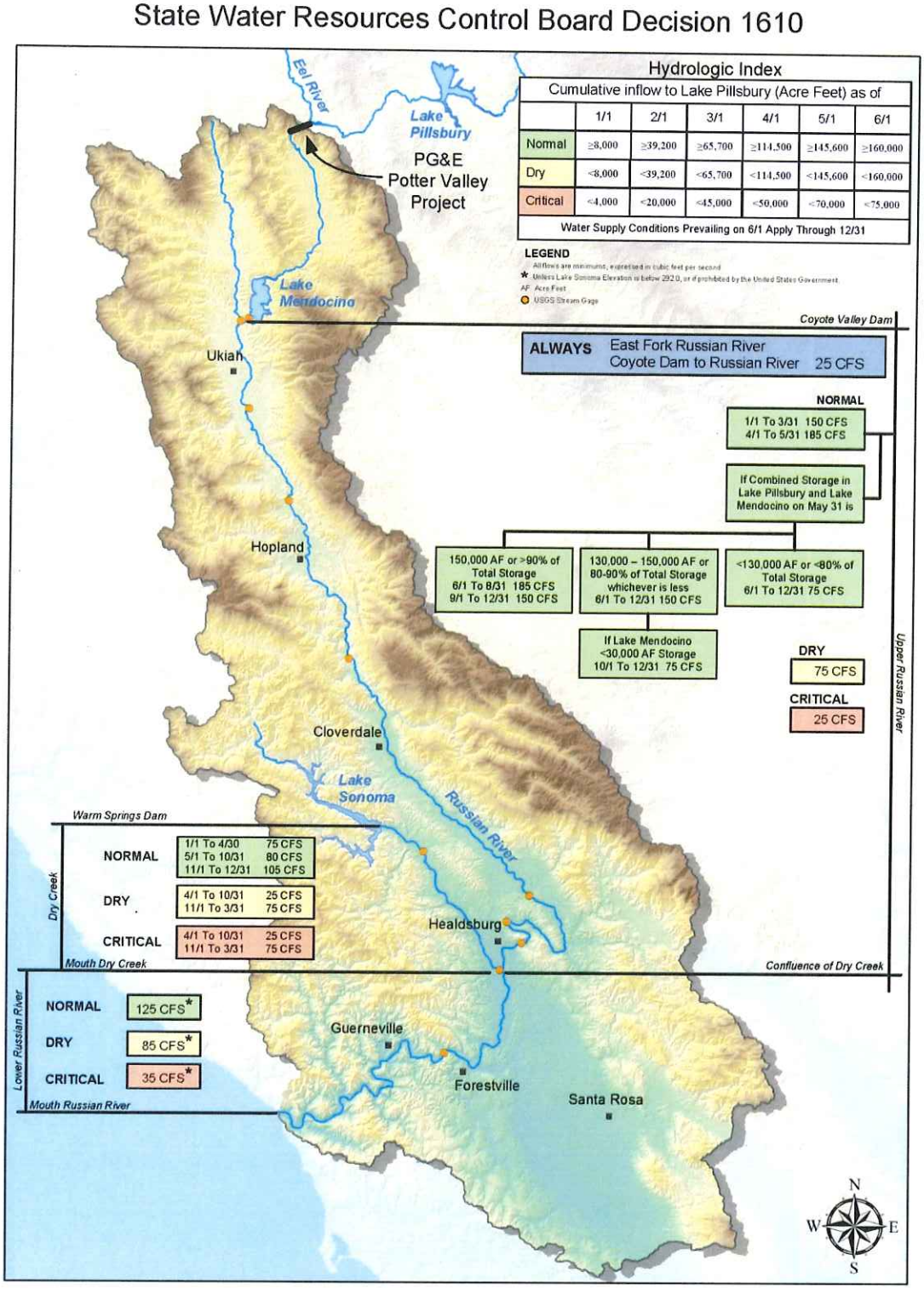


Figure 1. Project location for Petition Requesting Approval of a Temporary Urgency Change in Water Right Permits 12947A, 12949, 12950, and 16596 in Mendocino and Sonoma counties.

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

2013 ENVIRONMENTAL FILING FEE CASH RECEIPT

PRINT CLEAR

RECEIPT# 49130055

STATE CLEARING HOUSE # *(If applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY: SONOMA COUNTY WATER AGENCY

DATE: 04/23/2013

COUNTY/STATE AGENCY OF FILING: SONOMA

DOCUMENT NUMBER: 13-0423-2

PROJECT TITLE: PETITION REQUESTING APPROVAL OF A TEMPORARY URGENCY CHANGE IN WATER RIGHT PERMITS 12947A, 12949, 12950 & 16596 IN MENDOCINO & SONOMA COUNTIES

PROJECT APPLICANT NAME: SONOMA COUNTY WATER AGENCY

PHONE NUMBER: (707) 547-1903

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
404 AVIATION BLVD	SANTA ROSA	CA	95403

PROJECT APPLICANT *(Check appropriate box)*:

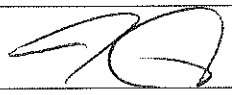
☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$2,995.25	$ 0.00
☐ Negative Declaration (ND)(MND)	$2,156.25	$ 0.00
☐ Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$ 0.00
☐ Projects Subject to Certified Regulatory Programs (CRP)	$1,018.50	$ 0.00
☒ County Administrative Fee	$50.00	$ Exempt 0.00
☐ Project that is exempt from fees		
☐ Notice of Exemption		
☐ CDFW No Effect Determination (Form Attached)		
☐ Other _____		$ _____

PAYMENT METHOD:

☐ Cash ☐ Credit ☐ Check ☐ Other _____ TOTAL RECEIVED $ 0.00

SIGNATURE: X 

TITLE: Deputy Clerk

ORIGINAL - PROJECT APPLICANT COPY - CDFW/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK FG 753.5a (Rev. 11/12)

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS WARRANT
REVOLVING FUND 10-052-000

WARRANT NO.
1334487

11-35
1210

DATE 03/22/2013
VOID AFTER SIX MONTHS

PAY THIS AMOUNT
****$23,136.80

PAY *Twenty three thousand one hundred thirty six and 80/100 Dollars*

To The Order Of
ST WATER RESOURCES CONTROL BOARD
ATTN: SWRCB ACCTG OFFICE
PO BOX 1888
SACRAMENTO CA 95812-1888

DAVID SUNDSTROM
AUTHORIZED SIGNATURE
AUDITOR-CONTROLLER

⑈0001334487⑈ ⑆121000358⑆ 00439⑈80050⑈

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS WARRANT
REVOLVING FUND 10-052-000

WARRANT NO.
1334488

11-35
1210

DATE 03/22/2013
VOID AFTER SIX MONTHS

PAY THIS AMOUNT
******$850.00

PAY *Eight hundred fifty and 00/100 Dollars*

To The Order Of
CA ST DEPT-FISH & GAME
P O BOX 944209
SACRAMENTO CA 94244-2090

DAVID SUNDSTROM
AUTHORIZED SIGNATURE
AUDITOR-CONTROLLER

⑈0001334488⑈ ⑆121000358⑆ 00439⑈80050⑈

Appendix A-2

May 1, 2013 State Water Resources Control Board Order

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

In the Matter of Permits 12947A, 12949, 12950, and 16596
(Applications 12919A, 15736, 15737, 19351)

Sonoma County Water Agency

ORDER APPROVING TEMPORARY URGENCY CHANGE

SOURCES: Dry Creek and Russian River

COUNTIES: Sonoma and Mendocino Counties

BY THE DEPUTY DIRECTOR FOR WATER RIGHTS:

1.0 SUBSTANCE OF TEMPORARY URGENCY CHANGE PETITION

On April 25, 2013, Sonoma County Water Agency (SCWA) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (State Water Board) requesting approval of a change to the subject permits pursuant to California Water Code section 1435. The TUCP requests the following temporary reductions to the Russian River instream flow requirements to address low storage conditions in Lake Mendocino:

(1) From May 1 through June 30, 2013, reduce instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) from 185 cubic feet per second (cfs) to 75 cfs, and reduce the requirements for the lower Russian River (downstream of its confluence with Dry Creek) from 125 cfs to 85 cfs; and

(2) From July 1 through October 28, 2013, reduce instream flow requirements for the upper Russian River from 185 cfs to 75 cfs, and reduce the requirements for the lower Russian River from 125 cfs to 85 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino remains above SCWA's calculated critical storage curve (Figure 5 in SCWA's Instream Flow Analysis for 2013 Temporary Urgency Change Petition and attached as Exhibit A); or

(3) From July 1 through October 28, 2013, further reduce instream flow requirements to 25 cfs for upper Russian River and 35 cfs for the lower Russian River, if during the period from July 1 through October 28 storage in Lake Mendocino drops below SCWA's calculated critical storage curve for more than three consecutive days.

The TUCP, in effect, requests that minimum flows for the Russian River be established based on State Water Board Decision 1610 (Decision 1610) *Dry* water supply criteria for the period from May 1 to October 28, 2013. In addition, the TUCP requests that minimum flows be based on *Critical* water supply criteria for the period from July 1 to October 28, 2013 in the event that storage in Lake Mendocino drops below SCWA's calculated critical storage curve for more than three consecutive days. This curve is shown in the attached Exhibit A.

The TUCP requests that compliance with minimum instream flow requirements as they pertain to *Dry* water supply conditions be measured based on a 5-day running average of average daily stream flow measurements, with the condition that instantaneous flows on the upper Russian River shall be no less than 65 cfs and on the lower Russian River shall be no less than 70 cfs. This measurement of compliance with minimum instream flow requirements will allow SCWA to manage stream flows with smaller operational buffers, thereby conserving water supply in Lake Mendocino. If after July 1 the water supply condition changes to *Critical*, the TUCP requests that compliance with minimum instream flow requirements be measured on an instantaneous basis.

No changes to the instream flow requirements for Dry Creek are requested.

The request is made to prevent severe depletion of storage in Lake Mendocino, which would gravely impact threatened or endangered Russian River fish species, create serious water supply impacts in Mendocino County and in Sonoma County's Alexander Valley, and harm Lake Mendocino and Russian River recreation.

2.0 BACKGROUND

SCWA's TUCP involves the following permits:

- Permit 12947A is for direct diversion of 92 cubic feet per second (cfs) from the East Fork Russian River and storage of 122,500 acre-feet per annum (afa) in Lake Mendocino from January 1 through December 31 of each year.

- Permit 12949 is for year-round direct diversion of 20 cfs from the Russian River at the Wohler and Mirabel Park Intakes near Forestville.

- Permit 12950 is for direct diversion of 60 cfs from the Russian River at the Wohler and Mirabel Park Intakes from April 1 through September 30 of each year.

- Permit 16596 is for year-round direct diversion of 180 cfs from the Russian River and storage of 245,000 afa in Lake Sonoma from October 1 of each year to May 1 of the succeeding year.

SCWA submitted with the TUCP a document prepared by its staff titled, "Instream Flow Analysis for 2013 Temporary Urgency Change Petition" (Analysis) dated April 2013. The Analysis indicates that since mid-February, Lake Mendocino storage levels have declined by approximately 10,000 acre-feet. This rapid decline in storage from mid February to date is similar to higher rates of decline that normally occur in the late summer. The rate of decline and low storage levels are the result of the unusually low rainfall in the region this winter. Precipitation records for Ukiah indicate 4.75 inches of rainfall in the area since January 1, which is just 22.8% of the average for this period based on records going back to 1952. Without the requested reductions in minimum instream flow requirements, the storage levels in Lake Mendocino are projected to decline to below 20,000 AF by October 1 due to releases to meet downstream water demands and the anticipated minimum instream flow requirements on the Russian River. The extremely low projected storage level in Lake Mendocino could severely impact listed and threatened Russian River fish species, create serious water-supply impacts in Mendocino County and the Alexander Valley in Sonoma County, and harm Lake Mendocino and Russian River recreation.

As of April 16, 2013, the water supply storage level in Lake Sonoma was 96 percent of the available conservation pool. Consequently, no changes to the instream flow requirements for Dry Creek are requested in the TUCP. However, SCWA is requesting changes to the minimum instream flow requirements on the lower Russian River, downstream of its confluence with Dry Creek to the Pacific Ocean. These changes are requested because the reduced minimum instream flows being requested on the upper Russian River will provide significantly less contribution to meet minimum instream flow requirements in the lower river. Consequently, increased releases from Lake Sonoma into Dry Creek

would be necessary to maintain Decision 1610 minimum instream flow requirements on the lower Russian River. However, such increased releases into Dry Creek would result in SCWA violating the Incidental Take Statement contained in the September 24, 2008, National Marine Fisheries Service (NMFS) Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, SCWA, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed (Biological Opinion). The Incidental Take Statement restricts releases from Lake Sonoma into Dry Creek because they can result in flows that are too high for optimal habitat for juvenile salmonids.

Following is the language contained in SCWA's permits regarding minimum instream flow requirements:

Term 20 of SCWA's Permit 12947A states:

For the protection of fish and wildlife, and for the maintenance of recreation in the Russian River, permittee shall pass through or release from storage at Lake Mendocino sufficient water to maintain:

(A) A continuous streamflow in the East Fork Russian River from Coyote Dam to its confluence with the Russian River of 25 cfs at all times.

(B) The following minimum flows in the Russian River between the East Fork Russian River and Dry Creek:

(1) During normal water supply conditions when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through August 31	185 cfs
From September 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

(2) During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 af or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet 75 cfs

(3) During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 af or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through December 31	75 cfs
From January 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

(4)	During dry water supply conditions	75 cfs
(5)	During critical water supply conditions	25 cfs

(C) The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean to the extent that such flows cannot be met by releases from storage at Lake Sonoma under Permit 16596 issued on Application 19351:

(1)	During normal water supply conditions	125 cfs
(2)	During dry water supply conditions	85 cfs
(3)	During critical water supply conditions	35 cfs

For the purposes of the requirements in this term, the following definitions shall apply:

(1) Dry water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year is less than:

8,000 acre-feet as of January 1
39,200 acre-feet as of February 1
65,700 acre-feet as of March 1
114,500 acre-feet as of April 1
145,600 acre-feet as of May 1
160,000 acre-feet as of June 1

(2) Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year is less than:

4,000 acre-feet as of January 1
20,000 acre-feet as of February 1
45,000 acre-feet as of March 1
50,000 acre-feet as of April 1
70,000 acre-feet as of May 1
75,000 acre-feet as of June 1

(3) Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

(4) The water supply condition designation for the months of July through December shall be the same as the designation for the previous June. Water supply conditions for January through June shall be predetermined monthly.

(5) Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.

(6) Estimated water supply storage space is the calculated reservoir volume below elevation 1,828.3 feet in Lake Pillsbury and below elevation 749.0 feet in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U. S. Geological Survey, U. S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.

Term 17 of both Permit 12949 and Permit 12950 requires SCWA to allow sufficient water to bypass the points of diversion at the Wohler and Mirabel Park Intakes on the Russian River to maintain the following minimum flows to the Pacific Ocean:

(1)	During normal water supply conditions	125 cfs
(2)	During dry water supply conditions	85 cfs
(3)	During critical water supply conditions	35 cfs

Term 13 of Permit 16596 sets forth the following minimum flows for Dry Creek and the Russian River:

(A) The following minimum flows in Dry Creek between Warm Springs Dam and its confluence with the Russian River:

(1) During normal water supply conditions:

75 cfs from January 1 through April 30
80 cfs from May 1 through October 31
105 cfs from November 1 through December 30

(2) During dry or critical water supply conditions:

25 cfs from April 1 through October 31
75 cfs from November 1 through March 31

(B) The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean, unless the water level in Lake Sonoma is below elevation 292.0 feet with reference to the National Geodetic Vertical Datum of 1929, or unless prohibited by the United States Government:

(1)	During normal water supply conditions	125 cfs
(2)	During dry water supply conditions	85 cfs
(3)	During critical water supply conditions	35 cfs

Note: Permits 12949, 12950, and 16596 use the same water-year classification definitions as those listed in Permit 12947A. The water year classifications (Normal, Dry or Critically Dry) were established in Decision 1610 and are based on cumulative inflow into Lake Pillsbury beginning October 1. Although Lake Mendocino storage is unusually low, cumulative inflow into Lake Pillsbury during this water year has been sufficiently high that, under Decision 1610, 2013 is currently classified as a *Normal* year and, based on current hydrologic trends, SCWA anticipates *Normal-Dry Spring 2* water supply conditions starting June 1.

3.0 COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT

SCWA has determined that the requested temporary urgency change is statutorily and categorically exempt under the California Environmental Quality Act (CEQA). SCWA found that the change is consistent with the statutory exemption criteria for an emergency project as well as the Class 1, 7, and 8 categorical exemption criteria. The State Water Board has reviewed the information submitted by SCWA and has made its own independent finding that the temporary urgency change is statutorily and categorically exempt under CEQA for the following reasons:

- As of April 16, 2013, the storage level in Lake Mendocino was 62 percent of the available water conservation pool and rapidly declining. Information provided by SCWA demonstrates that continued releases of water under *Normal-Dry Spring 2* year operating rules would prematurely drain the remaining storage. If storage in Lake Mendocino is depleted, water will not be available to support threatened and endangered species, agriculture, and domestic/municipal water service. Approval of the TUCP is therefore necessary to prevent and mitigate loss of or damage to the environment,

fishery resources, property, public health, and essential public services. Accordingly the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency (Pub. Resources Code, § 21080, subd. (b)(4), Cal. Code Regs., tit. 14, § 15269, subd. (c).)

- The proposed action consists of the operation of existing facilities involving negligible or no expansion of use beyond that existing, and accordingly is categorically exempt from CEQA under a Class 1 exemption. (Cal. Code Regs., tit. 14, § 15301.) The proposed action will be within the existing operational parameters established by Decision 1610. The proposed action does not request and will not expand the water supply available to SCWA for consumptive purposes.

- The proposed action will assure the maintenance of a natural resource, i.e., the instream resources of the Russian River, by reserving water in Lake Mendocino to benefit adult Chinook salmon migrating upstream in the fall, and accordingly is categorically exempt from CEQA pursuant to a Class 7 exemption. A Class 7 exemption "consists of actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment." (Cal. Code Regs, tit. 14, § 15307.)

- A Class 8 exemption "consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment." (Cal. Code Regs., tit. 14, § 15308.) The proposed action will assure the maintenance of the environment, i.e., the instream environment of the Russian River, in the same way as stated for the Class 7 exemption.

4.0 PUBLIC NOTICE OF THE TEMPORARY URGENCY CHANGE PETITION

The State Water Board will issue and deliver to SCWA as soon as practicable, a notice of the temporary urgency change order pursuant to Water Code section 1438(a). Pursuant to Water Code section 1438(b)(1), SCWA is required to publish the notice in a newspaper having a general circulation, and that is published within the counties where the points of diversion lie. The State Water Board will post the notice of the temporary urgency change and the TUCP (and accompanying materials) on its website. The State Water Board also will distribute the notice through an electronic notification system. Pursuant to Water Code section 1438, the State Water Board may issue a temporary change order in advance of the required notice.

5.0 CRITERIA FOR APPROVING THE PROPOSED TEMPORARY URGENCY CHANGE

Water Code section 1435 provides that a permittee or licensee who has an urgent need to change the point of diversion, place of use, or purpose of use from that specified in the permit or license may petition for a conditional temporary change order. The State Water Board's regulations set forth the filing and other procedural requirements applicable to TUCPs. (Cal. Code Regs., tit. 23, §§ 805, 806.) The State Water Board's regulations also clarify that requests for changes to permits or licenses other than changes in point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id.*, § 791, subd. (e).)

Before approving a temporary urgency change, the State Water Board must make the following findings:

1. the permittee or licensee has an urgent need to make the proposed change;
2. the proposed change may be made without injury to any other lawful user of water;
3. the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. the proposed change is in the public interest.

(Wat. Code, § 1435, subd. (b)(1-4).)

5.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the board may in its judgment conclude that the proposed temporary change is necessary to further the constitutional policy that the water resources of the state be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented . . . ." However, the State Water Board shall not find the need urgent if it concludes that the petitioner has failed to exercise due diligence in petitioning for a change pursuant to other appropriate provisions of the Water Code.

In this case, an urgent need exists for the proposed flow changes on the upper Russian River because SCWA predicts near depletion of water supply storage in Lake Mendocino by October 1, 2013 unless the requested TUCP is approved. Water supplies sufficient to support survival of listed Russian River salmonid fisheries, agricultural and municipal use, and recreation are at risk. Without the proposed changes, SCWA would need to release additional stored water from Lake Mendocino, which would result in the significant depletion of storage during the summer and reduce water supplies needed for fishery protection and stable flows in the upper Russian River during the fall when spawning state and federally listed fish species are most sensitive to flow and water temperatures. An urgent need exists for the proposed changes on the lower Russian River because SCWA will violate the Incidental Take Statement contained in the Biological Opinion unless the requested temporary urgency change is approved.

The depletion of storage in Lake Mendocino that would occur if the TUCP is not approved also would result in the potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the fall, which would cause serious impacts to human health and welfare. SCWA predicts that without the proposed change, Lake Mendocino will be drawn down to storage levels that would jeopardize SCWA's ability to release water to the Russian River. In this event, water supplies for domestic and municipal uses of Russian River water would be severely impaired. Moreover, as discussed in Decision 1610, Section 10.2, with less than 30,000 acre feet of carry-over storage, Lake Mendocino's reliability as a storage facility is impaired. SCWA's permits include terms requiring a 50 percent reduction in deliveries to Redwood Valley County Water District when Lake Mendocino storage drops below 30,000 acre feet in order to preserve Lake Mendocino water supply reliability. The purpose of this order is, in part, to prevent Lake Mendocino storage from dropping below 30,000 acre feet. The SCWA's forecasts indicate that Lake Mendocino storage will drop below 30,000 acre feet during August 2013 unless the TUCP is approved. Furthermore, if the upcoming Water Year 2014 is a dry or critical year, carryover storage in Lake Mendocino from 2013 will be crucial for the continued recovery of the Russian River salmonid fishery and water supply reliability during 2014. For the reasons stated above, an urgent need for the proposed change exists.

5.2 No Injury to Any Other Lawful User of Water

Under this Order, SCWA will be required to maintain specific flows in the Russian River from its most upstream point of diversion to the river's confluence with the ocean. Therefore, because these minimum flows will be present, it is anticipated that all other lawful users of water will still be able to divert and use the amounts of water to which they are legally entitled during the period of reduced minimum flows specified in this Order. Moreover, failure to implement the reduced instream flow could result in severe depletion of Lake Mendocino, which in turn could result in serious impacts to entitled users of water downstream of Lake Mendocino later in the year. Accordingly, granting this TUCP will not result in any injury to any other lawful user of water. Pursuant to Water Code section 1439, the State Water Board shall supervise diversion and use of water under this temporary change order for the protection of all other lawful users of water and instream beneficial uses.

5.3 No Unreasonable Effect upon Fish, Wildlife, or Other Instream Beneficial Uses

Although flows in the main stem Russian River will be reduced upon approval of this TUCP, prevention of the depletion of storage in Lake Mendocino is crucial for fishery resources. Conservation of water in Lake

Mendocino will insure water is available to support Chinook salmon migration and spawning in early fall. Also, minimum instream flows lower than those required by Decision 1610 could encourage formation of a closed or perched lagoon at the mouth of the Russian River and therefore noticeably enhance the salmonid estuarine rearing habitat while preventing flooding of adjacent properties.

SCWA's TUCP under *Critical* water supply conditions seeks a minimum instream flow requirement in the lower Russian River of 35 cfs, from July 1 through October 28, 2013, if during that period Lake Mendocino drops below SCWA's calculated critical storage curve for more than three consecutive days. Previous TUCP orders required SCWA to implement temporary reductions of diversions from the Russian River to ensure beneficial use of water resources to the fullest extent possible and to prevent waste of water. SCWA identified that past reductions in diversions resulted in increased groundwater pumping by the cities and special districts that purchase wholesale water from SCWA. This response has the unintended consequence of stressing local groundwater resources even though adequate surface water is available from Lake Sonoma.

Notwithstanding the potential impact to groundwater resources, to minimize impacts to water quality, recreation, and other water users along the lower Russian River, to the extent feasible, this Order requires a minimum instream flow in the lower Russian River of 50 cfs instead of 35 cfs if *Critical* water supply conditions are required. This will be accomplished through a combination of SCWA reducing its diversions by as much as 25 percent and releasing additional water from Lake Sonoma. Compliance with the *Critical* water supply condition in the lower Russian River shall be measured based on a 5-day running average of average daily stream flow measurements, with the condition that instantaneous flows on the lower Russian River shall be no less than 35 cfs. In the event that SCWA can demonstrate that there is an urgent need for a further reduction in this minimum flow requirement to the originally requested 35 cfs, this Order may be amended to make such change.

It is possible that reduced flows in the Russian River may impair some instream beneficial uses, principally recreation uses. However, since 2004, Russian River flows have frequently been managed at decreased levels, both under Decision 1610 and under other temporary urgency change orders. Notwithstanding lower flows, Russian River recreation has continued. Accordingly, although recreation uses may be affected, considering the potential grave impacts to fisheries, water supply, and recreation in Lake Mendocino that could occur if the TUCP were not approved, any impact on recreation for this summer is reasonable under the circumstances.

SCWA has been required to collect water quality and fishery information and data during periods when reduced minimum flow requirements are in effect. These monitoring activities are summarized in annual reports intended to evaluate whether and to what extent the reduced flows caused any impacts to water quality and availability of aquatic habitat for salmonids. This information serves to inform the review and approval of the TUCP and the State Water Board's continuing supervision of the diversion and use of water under this temporary change order pursuant to Water Code section 1439. Under this order, similar monitoring and reporting criteria will be required.

SCWA also strives to make water available for reasonable beneficial use and to preserve instream values by continuing to work on water use efficiency. As part of this goal, SCWA continues to work with its Water Contractors to achieve SBx7-7's goal of reducing per capita water use 20 percent by the year 2020. Additionally, the majority of SCWA's Water Contractors require their dedicated irrigation customers be assigned a water budget designed to achieve a maximum applied water allowance of 60 percent ETo, which exceeds the State's Water Efficient Landscape Ordinance requirements.

5.4 The Proposed Change is in the Public Interest

Approval of this TUCP will help conserve stored water in Lake Mendocino so that it can be released for listed Russian River salmonid fisheries present in the Russian River during the fall Chinook salmon migration season. In addition, approval of this TUCP will help preserve storage in Lake Mendocino as a

precaution in case 2014 also is a dry water year. It is in the public interest to preserve water supplies for these beneficial uses when hydrologic circumstances cause severe reductions to water supplies. To further ensure preservation of water supplies in the public interest, this order includes requirements for conservation planning.

SCWA reported that requirements to meet specific conservation goals in Sonoma and Mendocino County that were imposed as conditions of approval of a TUCP filed by SCWA in 2009 were not effective outside of SCWA's service district, with the exception of water users who voluntarily cooperated. Therefore, there is a need to evaluate other long term solutions. As such, this order retains previous requirements to coordinate regarding conservation actions, and includes a new requirement to develop a water supply reliability evaluation and report, including recommendations for future water management practices to improve Lake Mendocino water supply reliability. Taking steps to improve the reliability of Lake Mendocino's water supplies will minimize potential future impacts to threatened and endangered fish species, water users, water quality, recreation, and other beneficial uses along the upper and lower Russian River in future years of water scarcity.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the evaluation required by Water Code section 1435.

I conclude that, based on the available evidence:

1. The permittee has an urgent need to make the proposed change;

2. The petitioned change will not operate to the injury of any other lawful user of water;

3. The petitioned change will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and,

4. The petitioned change, with the modifications described above, is in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT: the Petition filed by Sonoma County Water Agency (SCWA) for temporary urgency change in Permits 12947A, 12949, 12950, AND 16596 is approved, in part.

All existing terms and conditions of the subject permits remain in effect, except as temporarily amended by the following provisions:

1. From the date of this Order until October 28, 2013, minimum flows in the Russian River, as specified in Term 20 of Permit 12947A, Term 17 of Permits 12949 and 12950, and Term 13 of Permit 16596, shall be modified as follows:

   A. Minimum instream flow in the **upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek)** shall be as follows:

      (1) From May 1, 2013 through June 30, 2013, minimum instream flow shall remain at or above 75 cubic feet per second (cfs);

(2) From July 1 through October 28, 2013, minimum instream flow shall remain at or above 75 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino remains above SCWA's calculated critical storage curve (shown in attached Exhibit A);

(3) From July 1 through October 28, 2013, minimum instream flow shall remain at or above 25 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino drops below SCWA's calculated critical storage curve for more than three consecutive days;

(4) After a cumulative seasonal total of 200 adult Chinook salmon move upstream past the SCWA Mirabel inflatable dam, SCWA shall consult with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW) regarding the possibility of increasing instream flow at the USGS gages at both Hopland (No.11462500) and Healdsburg (No. 11464000) to a level not exceeding 125 cfs.

B. Minimum instream flow in the **lower Russian River (from its confluence with Dry Creek to the Pacific Ocean)** shall be as follows unless the water level in Lake Sonoma is below 292.0 feet with reference to the National Geodetic Vertical Datum of 1929, or unless prohibited by the United States Government:

(1) From May 1, 2013 through June 30, 2013, minimum instream flow shall remain at or above 85 cubic feet per second (cfs).

(2) From July 1 through October 28, 2013, minimum instream flow shall remain at or above 85 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino remains above SCWA's calculated critical storage curve;

(3) From July 1 through October 28, 2013, minimum instream flow shall remain at or above 50 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino drops below SCWA's critical storage curve for more than three consecutive days.

C. For purposes of compliance with this term, the minimum instream flow requirement between May 1, 2013 and June 30, 2013, and the minimum instream flow requirement in place when storage in Lake Mendocino is above SCWA's calculated critical storage curve *(Dry* water supply conditions*)* shall be measured based on a 5-day running average of average daily stream flow measurements, with the condition that instantaneous flows on the upper Russian River shall be no less than 65 cfs and on the lower Russian River shall be no less than 70 cfs. The minimum instream flow requirement in place when storage is below SCWA's calculated critical storage curve for more than three consecutive days (*Critical* water supply conditions) shall be measured based on an instantaneous basis in the upper Russian River and based on a 5-day running average of average daily stream flow measurements in the lower Russian River, with the condition that the instantaneous flows shall be no less than 35 cfs.

2. The Deputy Director for Water Rights (Deputy Director) reserves authority to approve the 35 cfs requirement that was sought initially under Critical water supply conditions in the lower Russian River upon a request from SCWA supported by an updated instream flow and hydrologic analysis demonstrating the urgent need for the requested change and supporting the findings that the change (1) will not result in injury to any lawful user, (2) will not unreasonably affect fish, wildlife, or other instream beneficial uses, and (3) will be in the public interest. If authorized by the Deputy Director, compliance with the 35 cfs minimum instream flow requirement shall be measured on an instantaneous flow basis.

3. To protect against stranding of fish when releases from Lake Mendocino are converted from *normal*-year to *Dry* water supply conditions, or from *Dry* water supply conditions to *Critical* water supply conditions, flow in the East Fork Russian River immediately below Coyote Dam shall not

be reduced by more than 25 cfs per hour. Ramping rates specified in this term may be revised at the direction of the NMFS and the CDFW.

4. SCWA shall monitor and record daily numbers of adult Chinook salmon moving upstream past the Mirabel inflatable dam beginning no later than September 1, 2013, and continuing through at least November 15, 2013.

5. If adult Chinook salmon can enter the Russian River estuary, SCWA shall monitor numbers of adult Chinook salmon in representative deep pools in the Lower Russian River downstream of the Mirabel inflatable dam on a weekly basis beginning September 15, 2013, and ending when 200 fish have passed Mirabel Dam, when sustained flows in the Russian River at Hacienda Bridge are greater than 125 cfs, or on November 15, 2013, whichever is earliest.

6. SCWA shall monitor numbers of adult Chinook salmon at known spawning sites and in representative deep pools in the Upper Russian River (Lake Mendocino to Healdsburg) on a weekly basis after the number of adult Chinook salmon counted at Mirabel Dam exceeds 200 fish. Weekly surveys shall continue until November 15, 2013, or when sustained flow at Healdsburg is above 185 cfs, whichever is earlier.

7. If after July 1 the water supply condition changes to *Critical* water supply conditions, then SCWA shall measure water depth and velocity to conduct an assessment of adult Chinook salmon passage at a total of 9 riffles; 3 each in the lower, middle, and upper reaches of the Russian River.

8. SCWA shall monitor juvenile salmonids and other native fishes by snorkel survey at six sites in the Upper main stem Russian River (upstream of Mirabel) between August 2013 and September 15, 2013, when suitable visibility conditions exist.

9. Consistent with the requirements of the Biological Opinion, SCWA shall monitor downstream movement of juvenile salmonids in Dry Creek and the main stem Russian River at Mirabel Dam and monitor and record juvenile salmonid population and life history data at the Russian River Estuary (when river conditions permit safe monitoring).

10. SCWA shall report to NMFS and CDFW every two weeks regarding the applicable fisheries monitoring activities specified in Terms 3 through 9 of this Order. If water supply conditions adjust to Critical water supply conditions after July 1, then SCWA will report on a weekly basis ending when sustained flows are above Decision 1610 flows or when this Order expires whichever is first. Consistent with the Biological Opinion, SCWA shall consult with NMFS and CDFW regarding any necessary adaptations to the monitoring program including revisions to Terms 3 through 9. Upon consultation with NMFS and CDFW, any necessary revisions to Terms 3 through 9 shall be made upon approval by the Deputy Director. Reporting of fisheries monitoring tasks described in Terms 3 through 9 shall be submitted to the Deputy Director by April 1, 2014 in accordance with NMFS and CDFW annual reporting requirements as more fully described in the Biological Opinion.

11. SCWA shall prepare a Water Quality Monitoring Plan (Monitoring Plan) for the Russian River in consultation with: (1) the North Coast Regional Water Quality Control Board; (2) the United States Geological Survey; (3) NMFS; and (4) the Division of Water Rights. The purpose of the Plan shall be to determine the water quality effects and effects to the availability of aquatic habitat for salmonids resulting from the temporary urgency change approved herein. At a minimum, the following water quality parameters in the Monitoring Plan shall be evaluated: water temperature, pH, dissolved oxygen, specific conductivity, bacteria, nutrients, and algae. Furthermore, the Monitoring Plan should build upon previous water quality studies that have been conducted in the Russian River and the estuary water quality monitoring required by the Biological Opinion and include a Quality Assurance Project Plan or description of an existing quality assurance protocol

to be followed. The Monitoring Plan may provide information to support the development of a CEQA document required for permanent changes to Decision 1610. The Plan shall be submitted to the Deputy Director for approval within 28 days of the date of this Order, and SCWA shall immediately implement the Monitoring Plan upon submittal.

12. SCWA shall summarize all data collected during the 2013 water quality monitoring program. The summary report shall include an evaluation of whether, and to what extent, the reduced flows authorized by the Order caused any impacts to water quality, including any water quality impacts affecting the availability of aquatic habitat for salmonids and recreation. The report shall be submitted to the Deputy Director by March 31, 2014.

13. This Order does not authorize any act that results in the taking of a candidate, threatened or endangered species, or any act that is now 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). If a "take" will result from any act authorized under this Order, the permittee shall obtain authorization for an incidental take permit prior to construction or operation of the project. Permittee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency change authorized under this Order.

14. The State Water Board reserves jurisdiction to supervise the temporary urgency change under this Order, and to coordinate or modify terms and conditions, for the protection of vested rights, fish, wildlife, instream beneficial uses and the public interest as future conditions may warrant.

15. The SCWA shall immediately notify the State Water Board if any significant change in storage conditions in Lake Mendocino occurs that warrants reconsideration of this Order.

16. SCWA shall provide a written update to the Deputy Director by March 31, 2014, regarding activities and programs being implemented by SCWA and its water contractors to assess and reduce water loss, promote increasing water use efficiency and conservation, and improve regional water supply reliability. The written update shall include a report regarding the actual maximum applied water allowance (MAWA) achieved by each of SCWA's contractors during May through November 2013.

17. SCWA shall work with the Russian River water users above the confluence with Dry Creek that are specified in this term to evaluate the long-term reliability of Lake Mendocino to meet water supply and environmental water demands and shall prepare a report of its findings. SCWA shall contact the specified Russian River water users listed below and request that they participate and support SCWA's evaluation by providing information regarding their current water demands, potential future land use changes and forecasts of water demands. For purposes of this Order, the specified Russian River water users are: Mendocino County, Sonoma County, Mendocino County Russian River Flood Control and Water Conservation District, Millview County Water District, Rogina Water Company, Willow County Water District, Redwood Valley County Water District, City of Ukiah, Hopland Public Utility District, City of Healdsburg, City of Cloverdale and Geyserville Water Works Public Utility District. SCWA may also contact other water users and seek their cooperation in its evaluation. The water supply reliability evaluation and report shall analyze the potential impacts to Lake Mendocino storage due to climate change, future potential land use practices and forecasted water demands to the extent existing information is available or provided by the entities. The evaluation and report shall also include recommendations for future water management practices to improve Lake Mendocino water supply reliability. SCWA shall provide a status report to the Deputy Director by December 31, 2013 identifying the entities that have been contacted and the responses of those entities to SCWA's request that they participate in the reliability evaluation. SCWA shall submit the final water supply reliability evaluation and report to the Deputy Director by December 31, 2014.

18. SCWA shall provide a written update to the Deputy Director regarding the progress of the Santa Rosa Plain Groundwater Management Planning Program by March 31, 2014. The update shall include a discussion of: (1) progress being made toward implementation of groundwater recharge in the Santa Rosa basin; and (2) efforts by SCWA and its water contractors to conjunctively manage surface water and groundwater resources within SCWA's service area. Such management should emphasize the conservation and replenishment of groundwater resources and utilization of available surface water supplies to the extent feasible.

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY:

Barbara Evoy, Deputy Director
Division of Water Rights

Dated: May 1, 2013

Attachment: Exhibit A

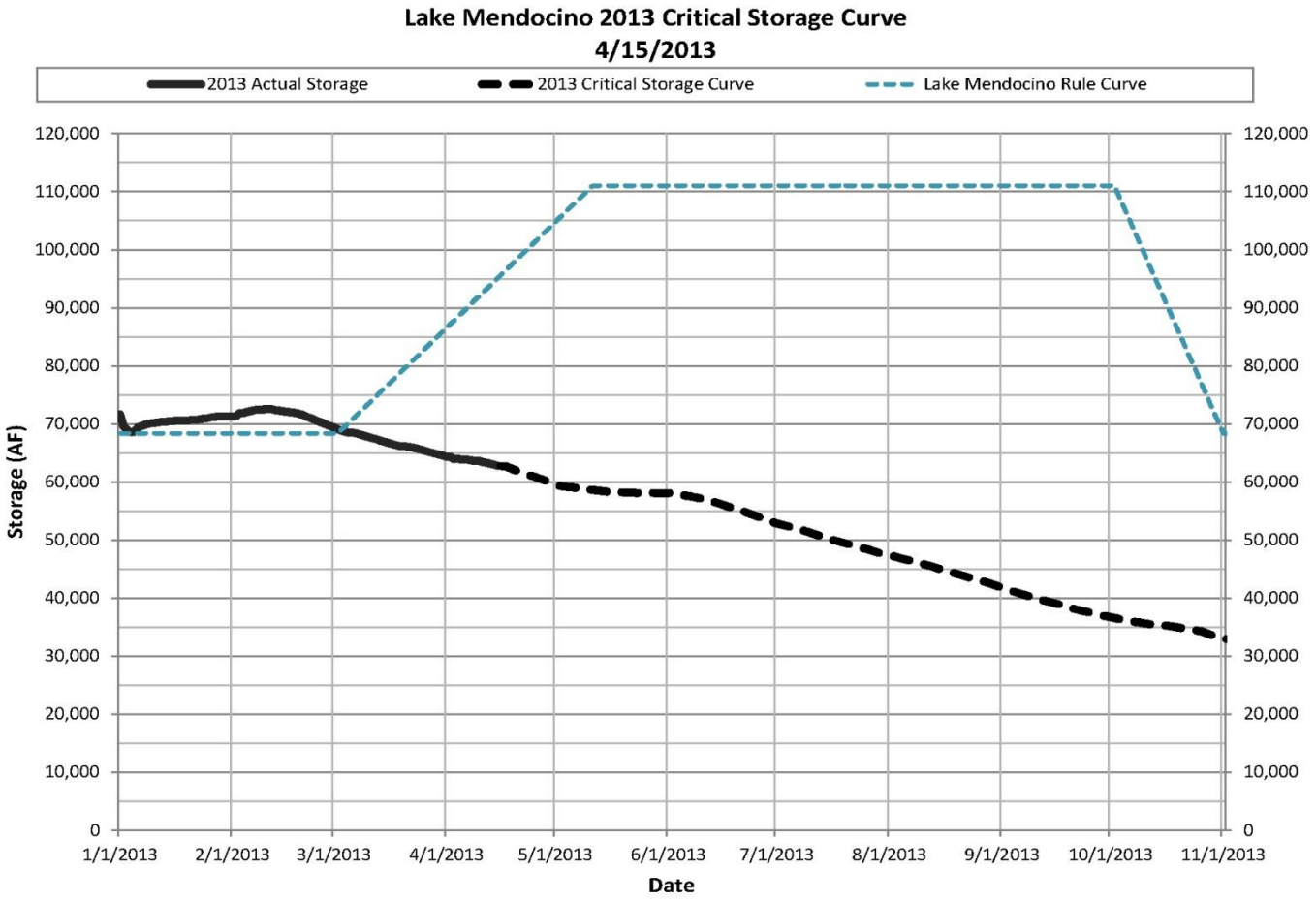


Exhibit A - SCWA Calculated Critical Storage Curve for Lake Mendocino

Appendix A-3

May 6, 2013Temporary Urgency Change Petition 12919a Public Notice

NOTICE OF A TEMPORARY URGENCY CHANGE PETITION BY SONOMA COUNTY WATER AGENCY REGARDING PERMITS 12947A, 12949, 12950, AND 16596 (APPLICATIONS 12919A, 15736, 15737, 19351)

COUNTY: MENDOCINO, SONOMA

STREAM SYSTEM: RUSSIAN RIVER
PACIFIC OCEAN

The Sonoma County Water Agency (SCWA) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division) on April 25, 2013, pursuant to California Water Code section 1435. On May 1, 2013, the Division approved the TUCP, with modifications, to temporarily reduce the minimum instream flow requirements for the Russian River as follows:

(1) For May 1 through June 30, 2013, reduce minimum instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) from 185 cubic feet per second (cfs) to 75 cfs, and reduce the requirements for the lower Russian River (downstream of its confluence with Dry Creek) from 125 cfs to 85 cfs; and

(2) From July 1 through October 28, 2013, reduce minimum instream flow requirements for the upper Russian River from 185 cfs to 75 cfs, and reduce the requirements for the lower Russian River from 125 cfs to 85 cfs, if, after July 1 storage in Lake Mendocino is above the calculated critical storage curve; or

(3) From July 1 through October 28, 2013, further reduce minimum instream flow requirements to 25 cfs for the upper Russian River and 50 cfs for the lower Russian River, if, after July 1 storage in Lake Mendocino drops below the critical storage curve for more than three consecutive days.

With the TUCP, SCWA submitted a document titled, “Instream Flow Analysis for 2013 Temporary Urgency Change Petition" (Analysis) dated April 2013. The Analysis provides: (1) a summary of minimum instream flows required under State Water Board Decision 1610; (2) an assessment of current water supply conditions of the Russian River System; (3) an assessment of projected water supply conditions of the Russian River System; (4) a summary of the criteria for approving a TUCP; and (5) a description of the requested changes. The Analysis indicates that this TUCP is necessary to prevent depletion of storage in Lake Mendocino.

As described in the Analysis, Lake Mendocino’s storage level is 62 percent and rapidly declining. Information provided by SCWA demonstrates that releases of water under existing instream flow requirements will substantially deplete storage in Lake Mendocino by October 1, 2013. If storage

in Lake Mendocino is depleted to extremely low storage levels, water will not be available for release in the fall to support threatened and endangered Russian River fish species, agriculture, domestic/municipal water service, and Lake Mendocino and Russian River recreation. The requested change is therefore necessary to prevent and mitigate damage to the environment, fishery resources, property, public health, and essential public services. Furthermore, if the upcoming Water Year 2014 is a *dry* or *critical* year, carryover storage in Lake Mendocino from 2013 will be crucial for the continued recovery of the Russian River salmonid fishery and water supply reliability during 2014.

This notice, SCWA's TUCP, the Temporary Order, SCWA's calculated critical storage curve, and related project information can be viewed at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/index.shtml.

Pursuant to California Water Code section 1438(d), any interested person may file an objection to the TUCP. The procedure for addressing an objection is described in Water Code section 1438. Objections filed in response to this notice should be submitted to the persons listed below and must be received by 4:30 p.m. on June 5, 2013.

Send objections to <u>both</u>:

Emily Wallace
Permitting Section
Division of Water Rights
State Water Resources Control Board
P O Box 2000
Sacramento, CA 95812

Grant Davis
General Manager
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-9019

For more information regarding this project, including procedures for filing objections, please contact Emily Wallace at (916) 341-5803 or EWallace@waterboards.ca.gov.

DATE OF NOTICE: MAY 06 2013

Appendix A-4

Provisions 12, 16 and 18 Reports

SONOMA COUNTY WATER AGENCY

CF/42-0.19-9.1 CORRESPONDENCE RELATED TO SWRCB ORDER APPROVING TEMPORARY URGENCY CHANGE IN PERMITS 12947A, 12949, 12950 & 16596 FOR 2013 (ID 4675)

March 31, 2014

Ms. Barbara Evoy
Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 9S812-2000

RE: Reporting Requirements for Provisions 12, 16 and 18 of the State Water Resources Control Board Order Dated May 1, 2013

Dear Ms. Evoy:

Enclosed please find the following reports prepared by the Sonoma County Water Agency:

- Provision 12 – Water Quality Monitoring Summary Report
- Provision 16 – Water Loss and Water Use Efficiency; and
- Provision 18 – Progress of Santa Rosa Plain Groundwater Management Planning Program.

These reports have been prepared to meet the requirements of Provisions 12, 16 and 18 of the State Water Resources Control Board's Order dated May 1, 2013. If you have any questions or comments regarding the plan, please do not hesitate to contact me directly (707 547-1925).

Sincerely,

/s/ Don Seymour

Don Seymour, P.E.
Water Agency Principal Engineer

c: Katherine Lee, Emily Hyland - State Water Resources Control Board, Division of Water Rights
Pamela Jeane, Jay Jasperse, Todd Schram - Water Agency
Alan Lilly, Bartkiewicz, Kronick & Shanahan

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State Water Resources Control Board
Order 5/1/2013

Provision 12 - Water Quality Monitoring Summary Report

March 31, 2014

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

Contents

1.0 Introduction

On April 25, 2013, the Sonoma County Water Agency (Water Agency) petitioned the State Water Resources Control Board (SWRCB) to temporarily reduce minimum instream flows in the Russian River as required by the National Marine Fisheries Service's (NMFS) *Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation District in the Russian River Watershed* (Biological Opinion, NMFS 2008).

In summary, the Water Agency requested that the SWRCB make the following temporary changes to the Decision 1610 (D1610) instream flow requirements:

(1) From May 1 through June 30, 2013, reduce instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) from 185 cubic feet per second (cfs) to 75 cfs, and reduce the requirements for the lower Russian River (downstream of its confluence with Dry Creek) from 125 cfs to 85 cfs; and
(2) From July 1 through October 28, 2013, reduce instream flow requirements for the upper Russian River from 185 cfs to 75 cfs, and reduce the requirements for the lower Russian River from 125 cfs to 85 cfs, if during the period from July 1 through October 28 storage in Lake Mendocino remains above the Water Agency's calculated critical storage curve; or
(3) From July 1 through October 28, 2013, further reduce instream flow requirements to 25 cfs for upper Russian River and 35 cfs for the lower Russian River, if during the period from July 1 through October 28 storage in Lake Mendocino drops below the Water Agency's calculated critical storage curve for more than three consecutive days.

The SWRCB issued an Order (Order) approving the Water Agency's Temporary Urgency Change Petition (TUCP) on May 1, 2013. The Order included several terms and conditions, including requirements for the preparation of a water quality monitoring plan (Term 11). The Water Agency submitted a plan in coordination with SWRCB Division of Water Rights (DWR), North Coast Regional Water Quality Control Board (NCRWQCB), NMFS, and United States Geological Survey (USGS) to meet the requirements of Term 11 on May 30, 2013. This report provides and summarizes all data collected during the 2013 water quality monitoring program as required by Term 12 of the Order.

2.0 2013 Russian River Flow Summary

As described in the Order, the Water Agency requested temporary changes to D1610 instream flow requirements including reductions from 185 cfs to 75 cfs in the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) and from 125 cfs to 85 cfs in the lower Russian River (downstream of its confluence with Dry Creek). The purpose of the 2013 Temporary Urgency Change (TUC) was to comply with the Biological Opinion which found that stream velocities under D1610 flows reduced the amount of available summer rearing habitat for steelhead in the upper mainstem of the Russian River.

Prior to and during the term of the TUC, sufficient inflow into Lake Pillsbury allowed for classifying 2013 as a Normal year under D1610. Storage in Lake Mendocino, while initially above conditions experienced in 2009, was well below 2012 conditions and by early July dropped below 2009 conditions (Figure 2-1).

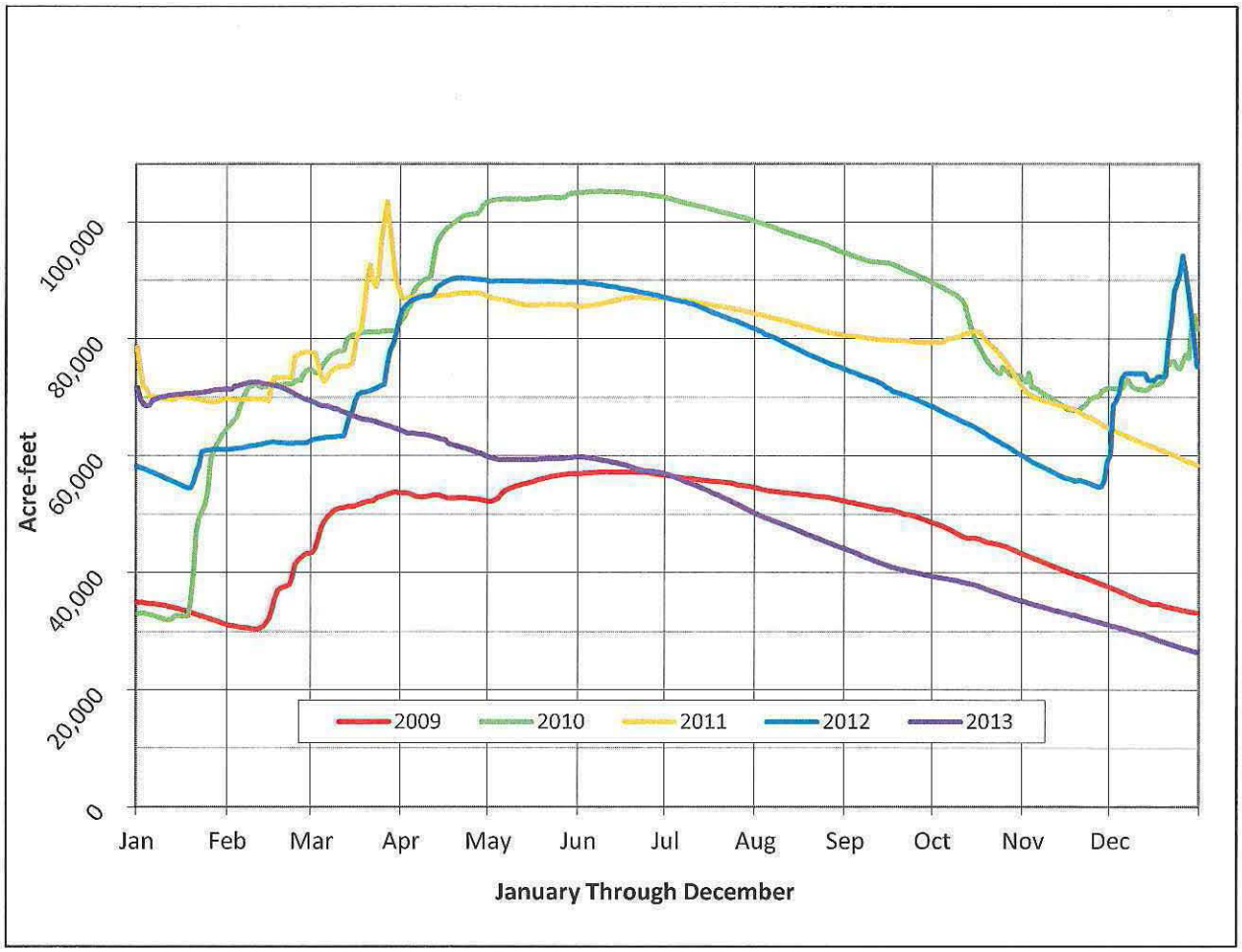

Figure 2-1. Lake Mendocino water storage levels, in acre-feet, from 2009 to 2013.

The reduced Coyote Valley Dam releases authorized by the Order allowed flows to drop below D1610 minimum flows in most sections of the Russian River. However, a moderate demand season allowed stable releases from Lake Mendocino. Figure 2-2 shows 2013 average daily flows.

In the section of the Russian River from Ukiah to the confluence of Dry Creek (upper Russian River) flows dropped well below D1610 minimum flow requirements and occasionally below the 75 cfs five-day running average TUC flow, but did not drop below the instantaneous flow of 65 cfs authorized by the Order. Flows in the upper Russian River above the Dry Creek confluence were below 185 cfs from May 2 to October 31 at Hopland, including two days with flows below 75 cfs. Flows at Digger's Bend dropped to less than 185 cfs shortly after May 6 and dropped below the five-day running average of 75 cfs for several days throughout the Order, but did not drop below the instantaneous minimum flow of 65 cfs (Figure 2-3).

Flows in the lower Russian River at Hacienda (downstream of the confluence with Dry Creek) dropped below D1610 minimum flow requirements from late May through October and occasionally dropped below the five-day running average of 85 cfs, but remained higher than the TUC instantaneous minimum flow of 70 cfs (Figure 2-4).

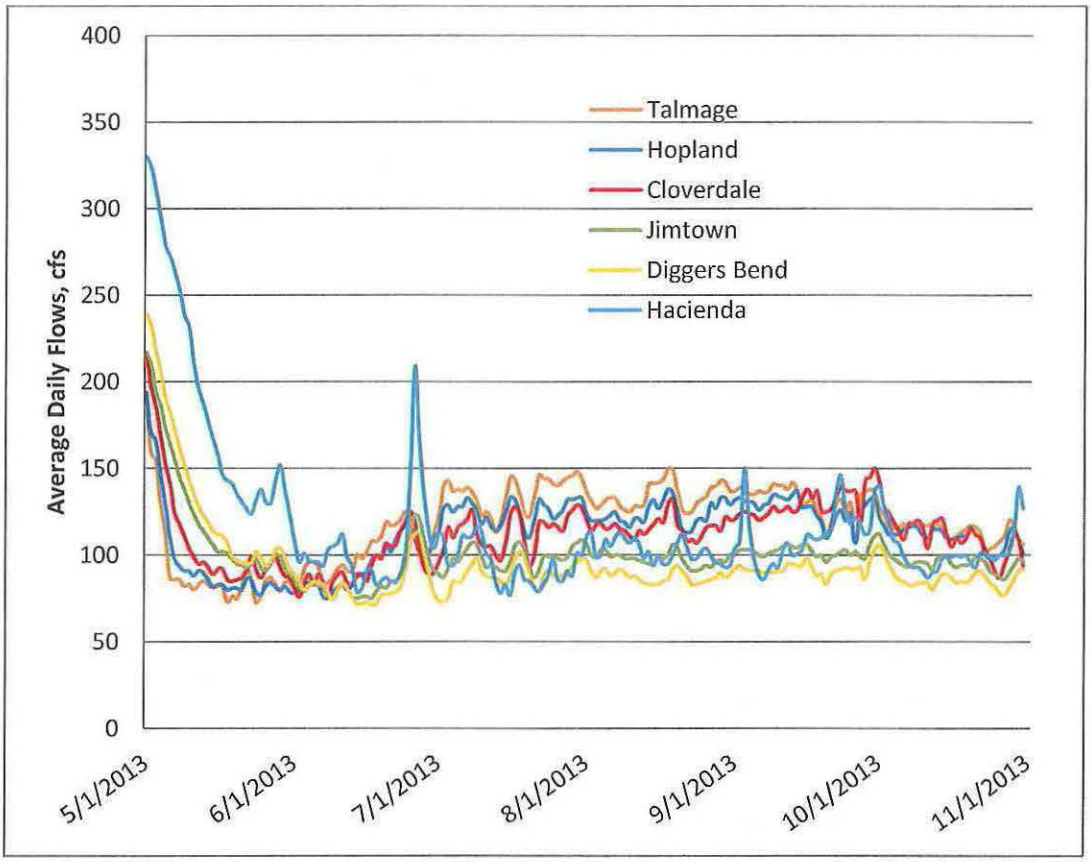

Figure 2-2. 2013 average daily flows in the Russian River as measured at U.S. Geological Survey (USGS) gages in cubic feet per second (cfs).

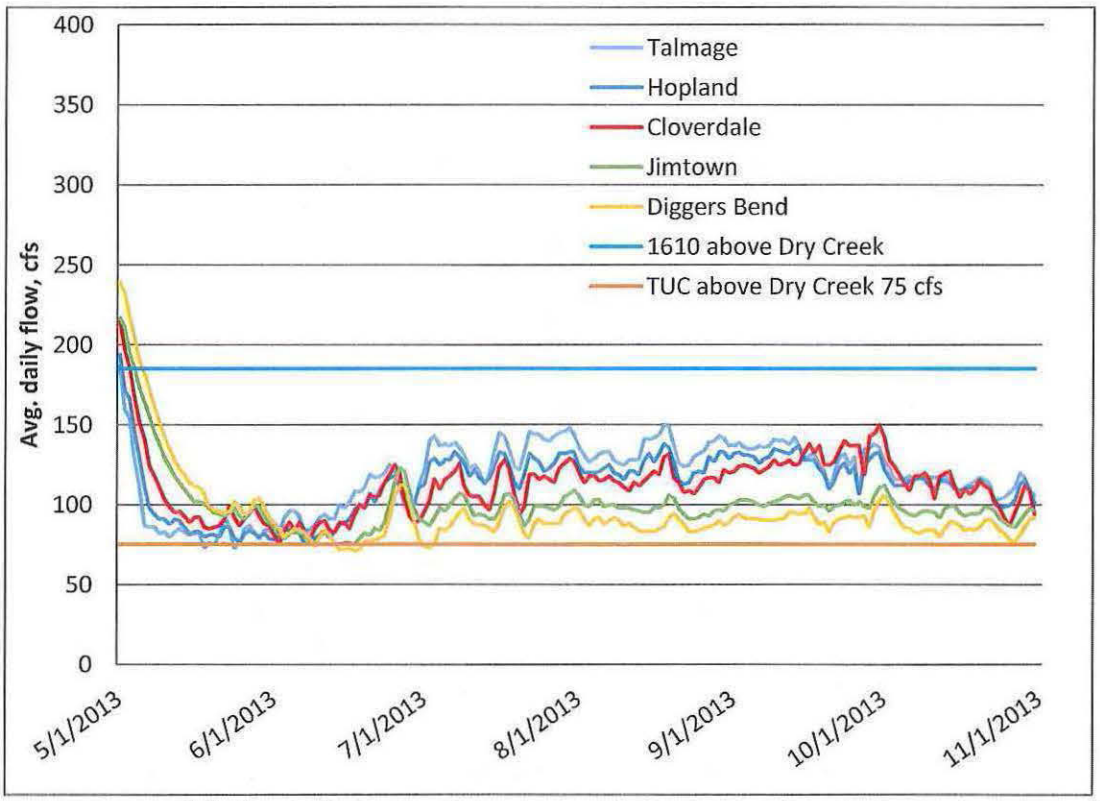

Figure 2-3. 2013 average daily flows in the Russian River as measured at USGS gages above the Dry Creek confluence in cubic feet per second.

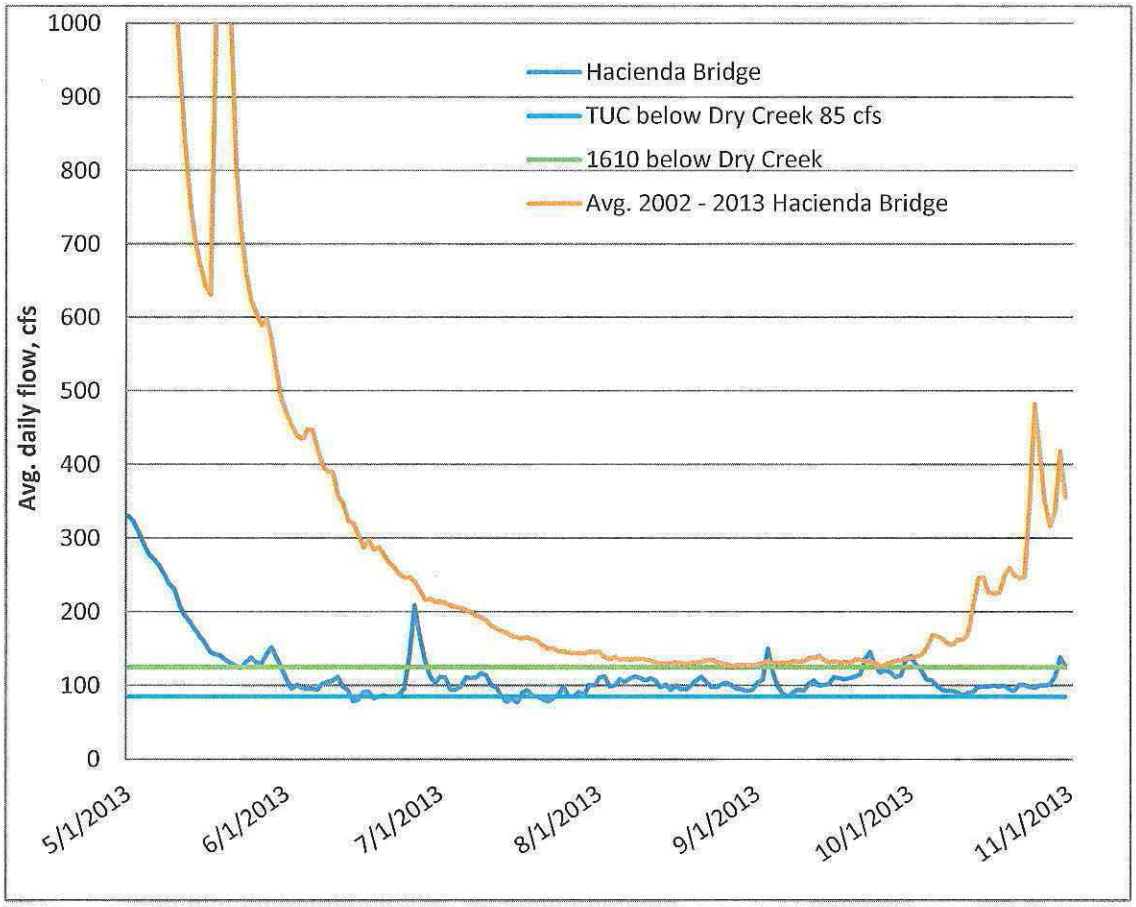

Figure 2-4. 2013 average daily flows in the Russian River as measured at USGS gages below the Dry Creek confluence in cubic feet per second.

3.0 Water Quality Monitoring

The collection of water quality data was conducted to supplement existing data to provide a more complete basis for analyzing spatial and temporal water quality trends due to Biological Opinion-stipulated changes in river flow and estuary management. The resulting data will help provide information to evaluate potential changes to water quality and availability of habitat for aquatic resources resulting from the proposed permanent changes to D1610 minimum instream flows that are mandated by the Biological Opinion. A complete evaluation of the water quality data is being conducted as part of the California Environmental Quality Act (CEQA) analysis associated with proposed permanent changes to D1610.

3.1 Mainstem Russian River Water Quality Monitoring

Several agencies conducted water quality monitoring in the mainstem of the Russian River during the term of the Order. From May 30 through September 4, the North Coast Regional Water Quality Control Board (NCRWQCB) conducted weekly bacteriological sampling at eight beaches with recreational activities involving the greatest body contact. From May 28 through September 3, the Sonoma County Department of Health Services (DHS), in cooperation with the NCRWQCB, also monitored bacterial levels in the water at eight beaches on the Russian River, including seven beaches that the NCRWQCB monitors. To support the analysis and evaluation of water quality data needed for the CEQA

requirements as noted above, the Water Agency conducted weekly bacteriological, nutrient and algal mainstem sampling at six sites along the Russian River from May 16 through October 31.

The California Department of Public Health (CDPH) developed the "Draft Guidance for Fresh Water Beaches," which describes bacteria levels that, if exceeded, may require posted warning signs in order to protect public health (CDPH 2011). The CDPH draft guideline for single sample maximum concentrations is: 10,000 most probable numbers (MPN) per 100 milliliters (ml) for total coliform, 235 MPN per 100 ml for *E. coli*, and 61 MPN per 100 ml for Enterococcus. In 2012, the United States Environmental Protection Agency (EPA) issued Clean Water Act (CWA) §304(a) Recreational Water Quality Criteria (RWQC) for States (EPA 2012). The RWQC recommends using two criteria for assessing water quality relating to fecal indicator bacteria: the geometric mean (GM) of the dataset, and changing the single sample maximum (SSM) to a Statistical Threshold Value (STV) representing the 75th percentile of an acceptable water-quality distribution. However, the EPA recommends using STV values as SSM values for potential recreational beach posting and those values are provided in this report for comparative purposes. Exceedances of the STV values are highlighted in Table 3-1. It must be emphasized that these are draft guidelines and criteria, not adopted standards, and are therefore both subject to change (if it is determined that the guidelines and/or criteria are not accurate indicators) and are not currently enforceable. In addition, these draft guidelines and criteria were established for and are only applicable to fresh water beaches. Currently, there are no numeric guidelines or criteria that have been developed for estuarine areas. Even so, the EPA recommended freshwater criteria for Nutrients, Chlorophyll a, and Turbidity in Rivers and Streams in Aggregate Ecoregion III (EPA 2000) are also used throughout for comparative purposes, with exceedances highlighted in Tables 3-2 to 3-4.

3.1.1 2013 Water Agency Mainstem Water Quality Sampling

Water samples were collected from the following six (6) surface-water sites in the mainstem of the Russian River and as shown on Figure 3-1: Hopland; Comminsky Station; Jimtown Bridge; Digger's Bend; Riverfront Park; and Hacienda.

All samples were analyzed for nutrients, chlorophyll *a*, standard bacterial indicators (total coliforms, *E. coli* and enterococci), total and dissolved organic carbon, turbidity, and total dissolved solids. Samples were not analyzed specifically for total coliforms, but concentrations are determined as part of the analytical process for determining *E. coli* concentrations and the results are included in the lab report. As such, it should be noted that the dilution rates that are utilized to accurately quantify *E. coli* concentrations for comparison to the draft guidelines do not allow for the quantification of total coliform concentrations at a high enough level to compare with the draft guidelines and are instead reported as greater than 2419.6 MPN (>2419.6). The decision to focus on *E. coli* and Enterococcus for the analysis of potential water quality impacts and not total coliform concentrations was done in coordination and consultation with NCRWQCB staff.

The Water Agency submitted samples to the Sonoma County DHS Public Health Division Lab in Santa Rosa for bacteria analysis. *E. coli* and total coliform were analyzed using the Colilert method and Enterococcus was analyzed using the Enterolert method. Table 3-1 and Figures 3-2 and 3-3 summarize the bacteria data collected during the term of the Order.

Based upon the recommended RWQC for fresh water beaches, Enterococcus exceedances varied throughout the term of the Order with several exceedances being observed at Hopland. A few exceedances were also observed in the latter half of the season at Comminsky Station and Digger's Bend. Jimtown had two exceedances and Hacienda had one. There were no exceedances of the RWQC for *E. coli* at any of the mainstem sites throughout the term of the Order. Nutrient results at Hopland and Comminsky Station predominantly exceeded the EPA criteria for Total Phosphorous and Total Nitrogen. Turbidity results at Hopland exceeded recommended EPA criteria throughout the duration of the Order and predominantly exceeded the criteria at Comminsky Station. Algal (chlorophyll *a*) results were also frequently exceeded at these two stations, though not as often as turbidity or Total Phosphorus. Jimtown Bridge experienced exceedances of the nutrient and algal criteria, but to a lesser degree than the two upstream stations and did not have any exceedances of the turbidity criteria. Digger's Bend had one exceedance for each of the nutrient criteria, and a few exceedances of the algal criteria, but did not exceed the turbidity criteria at all during the monitoring period. Riverfront Park had several exceedances of the Total Phosphorus criteria and one exceedance of the Total Nitrogen criteria, but did not have any exceedances of the turbidity or algal criteria. Finally, Hacienda had several exceedances of the Total Phosphorus criteria, two exceedances of the Total Nitrogen criteria, and a few exceedances each of the turbidity and algal criteria. See Tables 3-2 through 3-4.

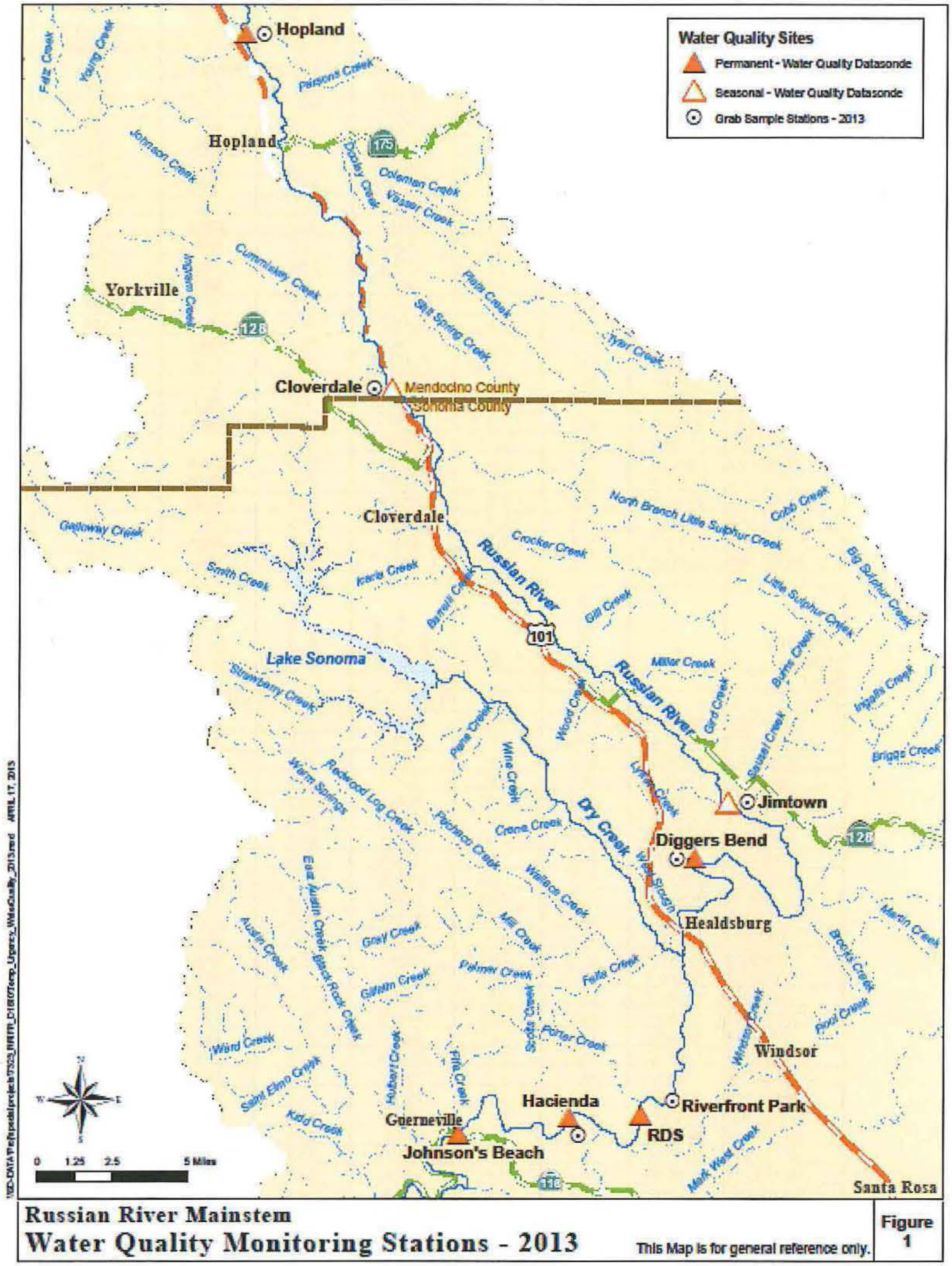

Figure 3-1. 2013 Russian River mainstem water quality monitoring stations sampled by the Sonoma County Water Agency.

Table 3-1. 2013 Mainstem Russian River bacteria concentrations for samples collected by the Sonoma County Water Agency.

Hopland	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11462500 RR Near Hopland**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	9:40:00	14.3	7.3	>2419.6	98.3	46.5	83
5/23/2013	9:20:00	12.4	7.3	>2419.6	104.6	45.7	86
5/30/2013	9:00:00	14.2	7.3	>2419.6	95.7	47.1	82
6/6/2013	9:40:00	15.1	7.4	>2419.6	83.0	**88.6**	83
6/13/2013	9:00:00	14.0	7.3	>2419.6	111.9	52.0	83
6/20/2013	9:00:00	13.6	7.3	>2419.6	75.4	**86**	107
6/27/2013	10:20:00	15.2	7.3	1986.3	67	39.5	103
7/3/2013	9:00:00	16.2	7.3	>2419.6	95.8	**128.1**	129
7/11/2013	8:50:00	14.9	7.5	1553.1	67	**79.4**	122
7/18/2013	9:20:00	15.1	7.4	2419.6	88.6	**77.6**	125
7/25/2013	9:10:00	16.2	7.4	1553.1	146.1	**69.7**	121
8/1/2013	9:20:00	15.3	7.5	1046.2	99.1	41.0	124
8/8/2013	9:20:00	16.1	7.4	>2419.6	60.9	50.4	120
8/15/2013	9:30:00	17.3	7.2	1986.3	93.2	**104.2**	132
8/22/2013	9:20:00	17.5	7.2	>2419.6	70.3	52.1	113
8/29/2013	9:00:00	18.2	7.3	>2419.6	90.9	51.2	133
9/5/2013	9:10:00	17.7	7.3	>2419.6	67	**72.3**	130
9/12/2013	9:00:00	18.7	7.4	>2419.6	71.7	**248.1**	132
9/19/2013	9:00:00	16.9	7.3	>2419.6	35.9		119
9/26/2013	9:00:00	17.1	7.6	>2419.6	68.9	**222.4**	107
10/3/2013	9:20:00	16.5	7.6	>2419.6	45.0	**172.2**	112
10/10/2013	10:30:00	14.3	7.6	2419.6	52.9	**63.1**	112
10/17/2013	9:40:00	14.4	7.7	1299.7	54.6	53.8	110
10/24/2013	9:30:00	14.2	7.7	290.9	52.1	**365.4**	100
10/31/2013	9:20:00	13.2	7.8	579.4	53.8	**68.3**	103

Comminsky Station	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11463000 RR Near Cloverdale (Comminsky)**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	10:10:00	17.1	7.7	1986.3	40.8	22.6	92
5/23/2013	9:50:00	14.9	7.7	1203.3	77.6	30.9	99
5/30/2013	9:20:00	16.6	7.9	1553.1	41.7	14.5	88
6/6/2013	10:10:00	18.5	7.8	1553.1	44.8	24.6	89
6/13/2013	9:30:00	17.0	7.9	1986.3	39.9	26.2	83
6/20/2013	9:30:00	16.3	7.6	>2419.6	43.9	43.3	106
6/27/2013	11:00:00	17.9	7.8	1119.7	26.2	10.9	104
7/3/2013	9:30:00	20.0	7.9	>2419.6	81.6	39.3	116
7/11/2013	9:30:00	17.8	7.8	2419.6	28.8	33.1	105
7/18/2013	9:50:00	17.8	7.8	1986.3	34.5	35.5	123
7/25/2013	9:50:00	18.4	7.8	1119.9	187.2	43.7	118
8/1/2013	9:50:00	17.1	7.8	>2419.6	69.7	35.5	120
8/8/2013	9:50:00	17.5	7.8	1986.3	50.4	**62.9**	115
8/15/2013	9:50:00	18.5	7.4			**67.6**	118
8/22/2013	10:00:00	18.4	7.5	1986.3	36.8	45.2	108
8/29/2013	9:30:00	18.8	7.5	1732.9	62.7	37.7	114
9/5/2013	9:40:00	17.9	7.6	1986.3	38.8	27.8	123
9/12/2013	9:30:00	18.5	7.7	2419.6	34.1	32.3	128
9/19/2013	9:30:00	16.4	7.7	1986.3	27.5	29.8	125
9/26/2013	9:30:00	16.4	7.8	1413.6	31.5	35.5	137
10/3/2013	9:50:00	15.5	8.0	1553.1	19.1	18.3	124
10/10/2013	11:10:00	13.7	7.6	461.1	20.9	17.1	116
10/17/2013	10:00:00	13.3	7.9	>2419.6	30.9	9.6	110
10/24/2013	10:00:00	14.1	7.9	150.0	38.4	**123.4**	98
10/31/2013	9:50:00	12.4	8.1	816.4	26.5	15.6	94

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-1 cont. 2013 Mainstem Russian River bacteria concentrations - samples collected by Sonoma County Water Agency.

Jimtown Bridge	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11463682 RR at Jimtown**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	10:50:00	18.5	7.4	>2419.6	9.8	3.1	102
5/23/2013	10:30:00	16.4	7.3	120.7	32.9	47.9	95
5/30/2013	10:00:00	18.0	7.5	737.0	224.7	18.5	93
6/6/2013	10:50:00	20.1	7.5	816.4	40.4	23.3	82
6/13/2013	10:00:00	18.0	7.5	1413.6	23.3	34.1	76
6/20/2013	10:10:00	18.4	7.6	1732.9	24.6	22.8	81
6/27/2013	11:50:00	22.0	7.6	770.1	51.2	46.2	121
7/3/2013	10:10:00	22.2	7.4	>2419.6	30.5	**83.9**	92
7/11/2013	10:00:00	20.2	7.7	1732.9	10.9	45.7	93
7/18/2013	10:30:00	20.5	7.6	870.4	5.2	50.4	107
7/25/2013	10:30:00	21.0	7.6	1413.6	10.8	19.9	99
8/1/2013	10:30:00	19.5	7.7	1732.9	10.9	14.8	106
8/8/2013	10:30:00	19.1	7.7	2419.6	10.9	23.1	100
8/15/2013	10:30:00	20.7	7.6	1986.3	6.3	31.1	95
8/22/2013	10:40:00	19.0	7.4	>2419.6	3.0	47.3	94
8/29/2013	10:00:00	20.4	7.4	>2419.6	13.4	48.0	97
9/5/2013	10:30:00	19.3	7.6	1986.3	21.3	26.9	102
9/12/2013	10:10:00	18.8	7.6	>2419.6	4.1	54.5	106
9/19/2013	10:20:00	18.1	7.7	1203.3	8.6	29.9	100
9/26/2013	10:20:00	16.9	7.8	1203.3	6.3	40.4	102
10/3/2013	10:30:00	16.3	7.9	866.4	9.1	28.8	101
10/10/2013	12:10:00	15.8	7.7	816.4	16	7.5	96
10/17/2013							93
10/24/2013	10:40:00	15.7	7.7	224.7	13.4	**1203.3**	91
10/31/2013	10:30:00	13.9	7.8	547.5	17.5	41.0	96

Digger's Bend	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11463980 RR at Digger's Bend**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	11:20:00	19.0	7.7	2419.6	3.1	8.4	112
5/23/2013	11:10:00	16.3	7.7	142.5	8.5	9.7	96
5/30/2013	10:50:00	19.1	7.9	1732.9	10.9	45.5	99
6/6/2013	11:30:00	19.8	7.8	1533.1	16.0	5.2	84
6/13/2013	10:30:00	19.1	7.9	1732.9	25.6	9.7	76
6/20/2013	10:50:00	19.2	7.8	2419.6	12.2	9.8	77
6/27/2013	12:30:00	22.0	7.8	1203.3	11	12.1	113
7/3/2013	10:40:00	23.5	7.8	>2419.6	12.2	5.2	75
7/11/2013	10:40:00	20.8	8.0	2419.6	14.6	34.1	88
7/18/2013	11:10:00	20.8	7.8	>2419.6	4.1	24.1	102
7/25/2013	11:10:00	21.5	7.9	1986.3	4.1	18.1	88
8/1/2013	11:10:00	19.9	7.9	1986.3	9.7	15.6	97
8/8/2013	11:00:00	19.2	7.9	>2419.6	9.7	36.9	92
8/15/2013							83
8/22/2013	11:10:00	19.7	7.8	>2419.6	6.3	**69.7**	88
8/29/2013	10:30:00	21.3	7.8	>2419.6	24.9	57.3	90
9/5/2013	11:00:00	20.3	7.7	2419.6	4.1	35.0	91
9/12/2013	10:40:00	19.1	7.8	2419.6	11.6	**90.8**	95
9/19/2013	11:00:00	18.2	7.5	1553.1	9.8	28.8	89
9/26/2013	10:50:00	17.3	8.0	980.4	8.5	31.5	92
10/3/2013	11:00:00	16.7	8.1	816.4	12.2	41.0	95
10/10/2013	12:50:00	15.3	7.7	547.5	3.1	2.0	84
10/17/2013	11:00:00	15.0	8.1	387.3	11	11.9	84
10/24/2013	11:20:00	15.3	8.1	151.5	12.1	**387.3**	84
10/31/2013	10:50:00	13.4	8.1	435.2	18.7	42.0	92

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-1 cont. 2013 Mainstem Russian River bacteria concentrations - samples collected by Sonoma County Water Agency.

Riverfront Park	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11465390 RR near Windsor (Riverfront Park)**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	12:00:00	17.7	7.5	1299.7	4.1	9.6	220
5/23/2013	11:50:00	15.4	7.5	613.1	18.9	8.5	196
5/30/2013	12:00:00	17.3	7.7	980.4	19.9	13.4	200
6/6/2013	12:10:00	18.0	7.7	980.4	21.6	12.2	159
6/13/2013	11:15:00	17.3	7.8	517.2	32.7	13.5	148
6/20/2013	11:40:00	16.9	7.7	>2419.6	51.2	47.1	187
6/27/2013	13:20:00	19.9	7.7	1119.9	23.7	19.9	222
7/3/2013	11:30:00	19.9	7.4	1732.9	21.6	31.1	180
7/11/2013	11:10:00	17.8	7.6	1299.7	29.5	20.3	191
7/18/2013	12:00:00	18.5	7.6	920.8	12.0	17.3	176
7/25/2013	12:00:00	18.5	7.6	920.8	38.9	19.9	180
8/1/2013	12:00:00	17.2	7.6	920.8	14.5	7.3	204
8/8/2013	11:50:00	16.7	7.5	866.4	32.3	9.7	203
8/15/2013	11:50:00	18.0	7.5	980.4	52.1	12.2	188
8/22/2013	12:00:00	17.1	7.3	1986.3	8.5	6.3	193
8/29/2013	11:30:00	18.2	7.8	>2419.6	24.9	12.2	195
9/5/2013	11:50:00	17.2	7.4	2419.6	20.3	12.2	201
9/12/2013	11:30:00	16.0	7.4	>2419.6	38.6	33.1	203
9/19/2013	11:50:00	15.8	7.3	547.5	5.2	2.0	195
9/26/2013	11:40:00	15.1	7.9	1203.3	27.5	18.7	204
10/3/2013	11:50:00	14.9	7.9	517.2	51.2	24.1	199
10/10/2013	13:50:00	13.5	7.8	461.1	8.4	6.3	176
10/17/2013	11:40:00	13.3	8.0	613.1	70.9	7.5	175
10/24/2013	12:00:00	14.0	7.8	121.1	13.4	42.5	186
10/31/2013	11:30:00	12.0	7.9	357.8	32.3	20.1	202

Hacienda	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)**
MDL*				20	20	2	Flow Rate***
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/16/2013	12:40:00	19.6	7.8	1413.6	2.0	3.1	158
5/23/2013	12:30:00	17.7	7.6	816.4	214.3	2.0	124
5/30/2013	12:30:00	20.2	7.8	648.8	6.3	5.2	138
6/6/2013	12:40:00	20.1	7.8	866.4	45.0	12.1	96
6/13/2013	11:50:00	19.6	7.9	866.7	17.1	13.4	94
6/20/2013	12:10:00	19.8	7.3	1553.1	29.5	6.3	87
6/27/2013	13:50:00	21.3	7.5	2419.6	159.7	95.9	167
7/3/2013	12:00:00	23.5	7.5	1732.9	18.7	8.6	95
7/11/2013	11:50:00	20.6	7.8	1119.9	7.3	14.6	101
7/18/2013	12:30:00	20.2	7.8	980.4	1.0	8.5	94
7/25/2013	12:40:00	21.2	7.8	980.4	18.3	57.3	98
8/1/2013	12:40:00	19.3	7.8	727	8.6	14.6	111
8/8/2013	12:20:00	18.0	7.7	488.4	8.6	12.2	113
8/15/2013	12:20:00	20.5	7.4	980.4	3.1	3.1	94
8/22/2013	12:40:00	19.1	7.5	1553.1	2.0	4.1	105
8/29/2013	13:30:00	21.3	7.5	1046.2	6.3	2.0	95
9/5/2013	12:40:00	19.7	7.5	1413.6	7.5	4.1	99
9/12/2013	12:00:00	17.9	7.6	1553.1	14.2	11.0	107
9/19/2013	12:20:00	17.6	7.4	1203.3	19.5	28.5	110
9/26/2013	12:20:00	17.3	7.9	613.1	8.5	6.3	122
10/3/2013	12:40:00	16.7	7.9	648.8	21.6	9.7	121
10/10/2013	14:30:00	15.0	7.5	307.6	8.5	1.0	91
10/17/2013	12:10:00	14.4	7.9	461.1	17.5	4.1	100
10/24/2013	12:20:00	14.7	7.8	172.5	10.8	14.6	99
10/31/2013	12:10:00	13.0	7.9	190.4	21.3	7.2	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.
** United States Geological Survey (USGS) Continuous-Record Gaging Station
*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)
(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml
E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

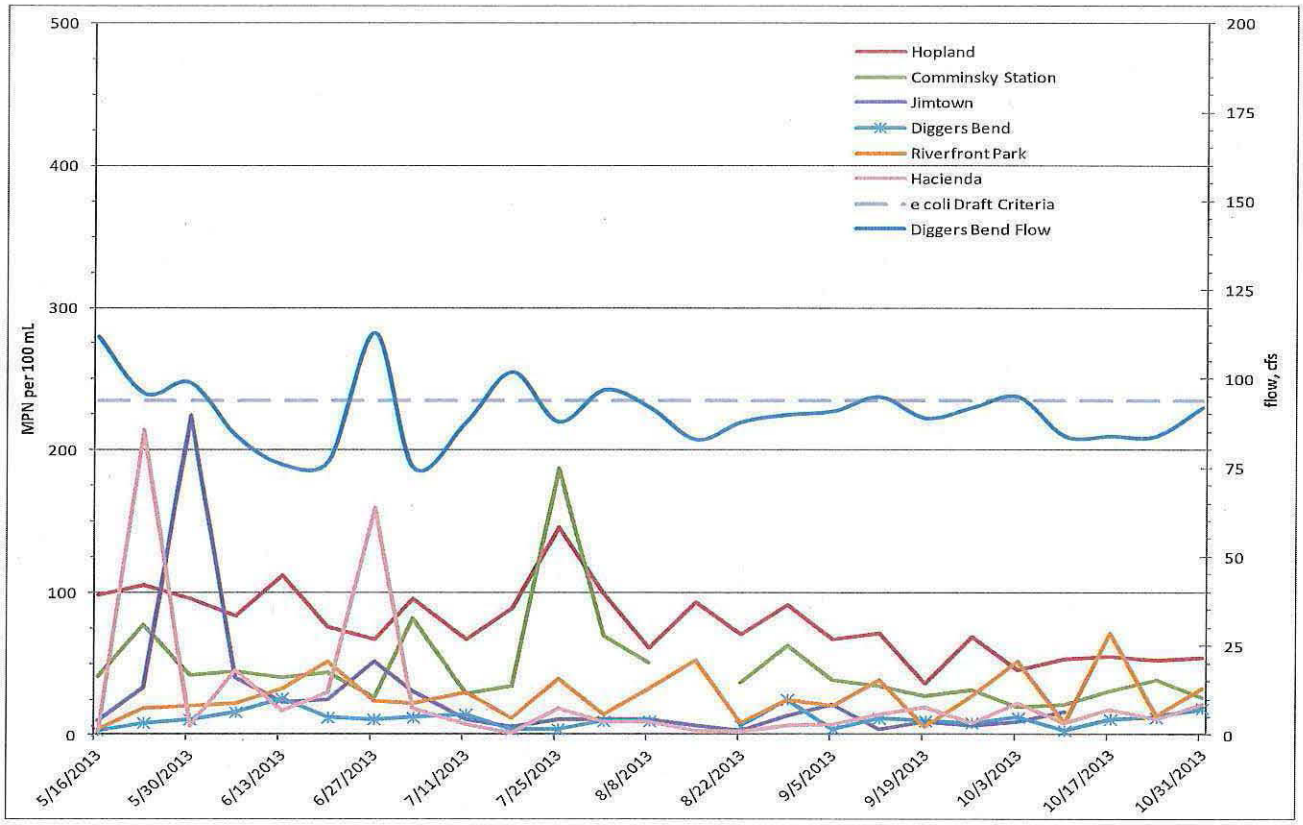

Figure 3-2. E. coli results for samples collected by the Sonoma County Water Agency on the Russian River from Hopland to Hacienda Bridge in 2013.

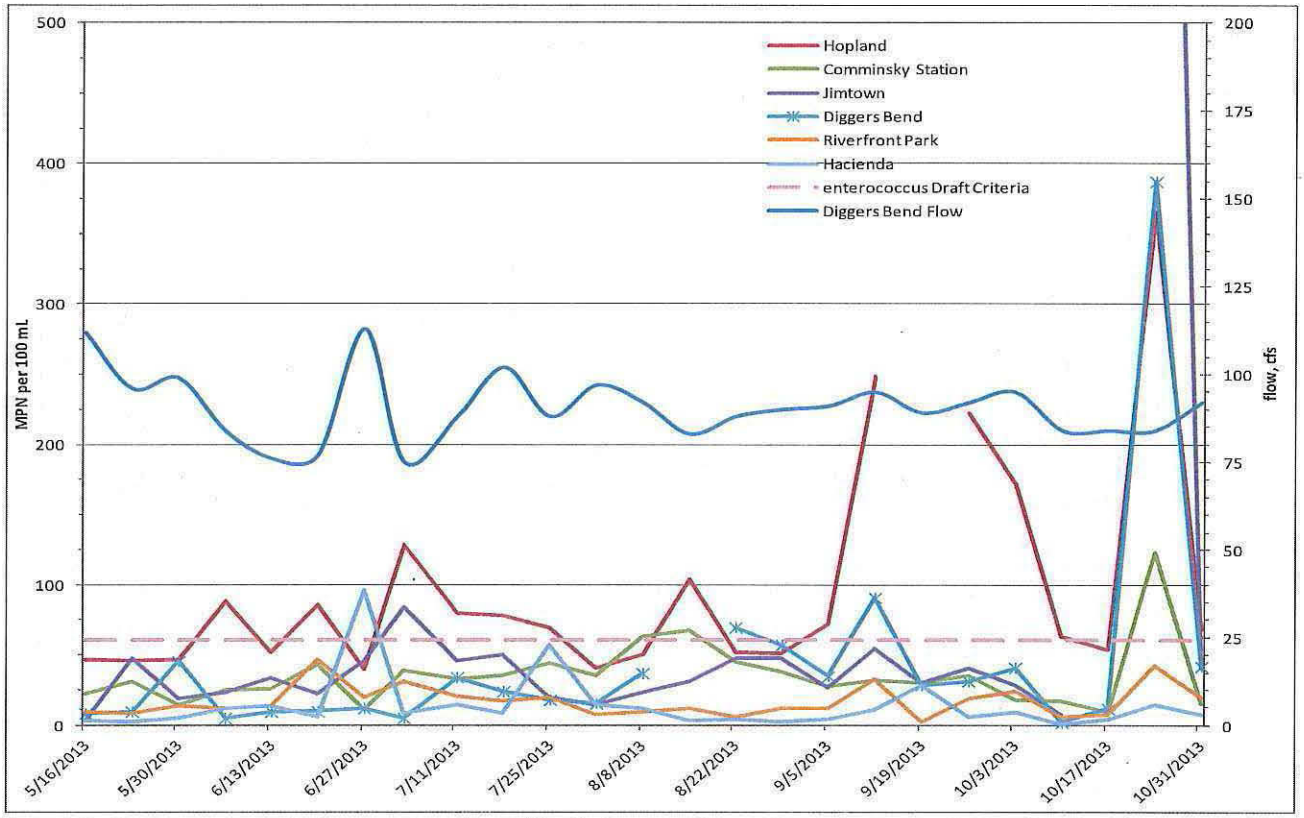

Figure 3-3. Enterococcus results for samples collected by the Sonoma County Water Agency on the Russian River from Hopland to Hacienda Bridge in 2013.

Table 3-2. 2013 nutrient results for grab samples collected by the Sonoma County Water Agency at Hopland and Comminsky Station. Highlighted values exceed EPA criteria.

Hopland	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11462500 RR Near Hopland***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	9:40	14.3	7.3	ND	0.14	0.00068	0.43	ND	0.28	**0.71**	**0.055**	0.21	1.81	2.56	120	**5.7**	**0.0023**	83
5/23/2013	9:20	12.4	7.3	ND	0.14	0.00058	0.36	ND	0.24	**0.60**	**0.042**	0.081	1.90	2.58	120	**5.3**	**0.0026**	86
5/30/2013	9:00	14.2	7.3	ND	0.14	0.00067	0.35	ND	ND	**0.53**	**0.043**	0.084	1.80	2.33	140	**5.8**	**0.0033**	82
6/6/2013	9:40	15.1	7.4	ND	ND	ND	0.32	ND	0.24	**0.56**	**0.052**	0.13	2.12	2.56	120	**6.8**	**0.0028**	83
6/13/2013	9:00	14.0	7.3	ND	0.10	0.00051	0.34	ND	0.24	**0.58**	**0.077**	0.19	1.99	2.67	140	**6.1**	0.00058	83
6/20/2013	9:00	13.6	7.3	ND	0.10	0.00053	0.27	ND	0.21	**0.48**	**0.062**	0.15	2.02	2.77	120	**7.3**	**0.0025**	107
6/27/2013	10:20	15.2	7.3	ND	ND	ND	0.28	ND	0.24	**0.52**	**0.063**	0.16	1.98	2.62	120	**6.9**	**0.0022**	103
7/3/2013	9:00	16.2	7.3	0.24	ND	ND	0.23	ND	0.32	**0.54**	**0.054**	0.14	2.15	2.80	110	**7.7**	**0.0032**	129
7/11/2013	8:50	14.9	7.5	0.21	ND	ND	0.17	ND	0.28	**0.45**	**0.052**	0.14	2.06	2.87	120	**8.0**	**0.0061**	122
7/18/2013	9:20	15.1	7.4	0.28	ND	ND	0.20	ND	0.35	**0.55**	**0.051**	0.12	2.09	3.07	120	**11**	**0.0033**	125
7/25/2013	9:10	16.2	7.4	0.21	0.10	ND	0.16	ND	0.32	**0.47**	**0.047**	0.10	2.05	2.71	110	**8.3**	**0.0044**	121
8/1/2013	9:20	15.3	7.5	ND	0.10	ND	0.14	ND	0.24	**0.39**	**0.050**	0.10	2.28	2.66	110	**10**	**0.0037**	124
8/8/2013	9:20	16.1	7.4	ND	ND	ND	0.13	ND	0.21	0.34	**0.060**	0.14	1.95	2.65	120	**7.0**	**0.0045**	120
8/15/2013	9:30	17.3	7.2	0.24	ND	ND	0.15	ND	0.28	**0.43**	**0.084**	0.24	2.22	3.00	120	**8.9**	**0.0053**	132
8/22/2013	9:20	17.5	7.2	ND	ND	ND	0.15	ND	0.21	0.36	**0.085**	0.21	2.35	2.88	150	**6.6**	**0.0034**	113
8/29/2013	9:00	18.2	7.3	0.21	ND	ND	0.14	ND	0.21	0.35	**0.099**	0.23	2.13	3.03	120	**9.7**	**0.0046**	133
9/5/2013	9:10	17.7	7.3	ND	0.14	ND	0.16	ND	0.21	0.37	**0.11**	0.27	2.24	2.67	120	**7.8**	**0.0035**	130
9/12/2013	9:00	18.7	7.4	ND	0.14	ND	0.16	ND	0.24	**0.40**	**0.11**	0.28	2.32	2.91	120	**7.4**	**0.0027**	132
9/19/2013	9:00	16.9	7.3	ND	0.10	ND	0.21	ND	0.24	**0.46**	**0.11**	0.29	2.16	2.80	120	**3.1**	0.00042	119
9/26/2013	9:00	17.1	7.6	0.28	ND	ND	0.20	ND	0.35	**0.55**	**0.090**	0.19	2.19	2.95	150	**13**	**0.0027**	107
10/3/2013	9:20	16.5	7.6	ND	0.10	ND	ND	ND	0.21	0.21	**0.080**	0.30	2.23	2.97	130	**12**	**0.0032**	112
10/10/2013	10:30	14.3	7.6	0.28	0.10	ND	0.20	ND	0.38	**0.58**	**0.071**	0.17	2.20	2.86	130	**15**	**0.0030**	112
10/17/2013	9:40	14.4	7.7	0.46	0.10	0.0013	0.18	ND	0.35	**0.53**	**0.064**	0.14	2.14	2.62	120	**7.5**	**0.0033**	110
10/24/2013	9:30	14.2	7.7	ND	0.21	0.0023	0.15	ND	0.24	**0.39**	**0.051**	0.13	2.38	2.71	130	**8.5**	**0.0028**	100
10/31/2013	9:20	13.2	7.8	ND	0.10	0.0013	0.20	ND	0.24	**0.45**	**0.052**	0.13	2.25	2.82	140	**7.7**	0.0015	103

Comminsky Station	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11463000 RR Near Cloverdale (Comminsky)***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	10:10	17.1	7.7	ND	0.21	0.0032	0.56	ND	0.24	**0.80**	**0.064**	0.14	1.60	2.10	140	**5.0**	0.0016	92
5/23/2013	9:50	14.9	7.7	ND	0.14	0.0018	0.33	ND	0.21	**0.54**	**0.037**	0.060	1.65	2.12	140	**3.2**	**0.0022**	99
5/30/2013	9:20	16.6	7.9	ND	0.14	0.0033	0.28	ND	0.21	**0.49**	**0.030**	0.053	1.63	2.08	150	**2.8**	**0.0040**	88
6/6/2013	10:10	18.5	7.8	ND	0.18	0.0039	0.24	ND	0.28	**0.52**	**0.041**	0.071	1.76	2.10	130	**3.5**	**0.0057**	89
6/13/2013	9:30	17.0	7.9	ND	0.10	0.0023	0.28	ND	0.24	**0.53**	**0.050**	0.10	1.75	2.29	140	**3.7**	0.0011	83
6/20/2013	9:30	16.3	7.6	ND	0.14	0.0017	0.21	ND	ND	**0.39**	**0.098**	0.095	1.73	2.34	130	**4.5**	**0.0060**	106
6/27/2013	11:00	17.9	7.8	ND	0.10	ND	0.19	ND	ND	0.36	**0.039**	0.089	2.16	2.33	130	**3.6**	**0.0042**	104
7/3/2013	9:30	20.0	7.9	ND	0.18	ND	0.12	ND	0.32	**0.43**	**0.039**	0.084	1.99	2.55	120	**5.4**	**0.0093**	116
7/11/2013	9:30	17.8	7.8	ND	0.14	ND	ND	ND	0.28	0.28	**0.040**	0.069	1.91	2.64	130	**4.8**	**0.0066**	105
7/18/2013	9:50	17.8	7.8	ND	0.18	ND	0.12	ND	0.32	**0.44**	**0.038**	0.089	2.20	2.84	120	**4.3**	**0.0076**	123
7/25/2013	9:50	18.4	7.8	ND	0.10	ND	0.11	ND	0.3	**0.39**	**0.034**	0.075	2.20	2.59	120	**7.0**	**0.0049**	118
8/1/2013	9:50	17.1	7.8	0.24	ND	ND	0.11	ND	0.28	**0.39**	**0.036**	0.070	2.22	2.43	110	**6.6**	**0.0029**	120
8/8/2013	9:50	17.5	7.8	ND	ND	ND	0.11	ND	ND	0.14	**0.039**	0.090	1.91	2.48	110	**4.4**	**0.0019**	115
8/15/2013	9:50	18.5	7.4	ND	0.10	ND	0.11	ND	0.21	0.32	**0.060**	0.13	2.19	2.81	120	**3.7**	**0.0020**	118
8/22/2013	10:00	18.4	7.5	ND	0.10	ND	0.12	ND	0.21	0.33	**0.057**	0.14	2.07	2.66	130	**2.4**	0.0014	108
8/29/2013	9:30	18.8	7.5	ND	ND	ND	0.12	ND	0.21	0.33	**0.060**	0.12	2.11	2.79	120	1.8	**0.0022**	114
9/5/2013	9:40	17.9	7.6	ND	0.10	ND	0.13	ND	ND	0.16	**0.071**	0.18	1.86	2.57	120	2.1	0.0016	123
9/12/2013	9:30	18.5	7.7	ND	ND	ND	0.12	ND	ND	0.29	**0.073**	0.21	2.41	2.62	130	1.9	0.0017	128
9/19/2013	9:30	16.4	7.7	ND	ND	ND	0.15	ND	ND	0.25	**0.076**	0.20	2.07	2.62	120	1.7	0.00014	125
9/26/2013	9:30	16.4	7.8	ND	ND	ND	0.16	ND	0.21	0.37	**0.054**	0.15	2.30	2.62	150	2.0	0.0011	137
10/3/2013	9:50	15.5	8.0	ND	0.10	ND	ND	ND	ND	0.18	**0.050**	0.13	2.45	2.63	120	**3.0**	0.0015	124
10/10/2013	11:10	13.7	7.6	0.24	ND	ND	0.14	ND	0.32	**0.45**	**0.045**	0.10	2.08	2.55	140	**3.4**	0.00067	116
10/17/2013	10:00	13.3	7.9	ND	0.14	0.0025	0.14	ND	0.24	**0.38**	**0.039**	0.097	2.27	2.70	120	2.3	**0.0018**	110
10/24/2013	10:00	14.1	7.9	ND	0.24	0.0046	0.11	ND	0.24	0.35	**0.035**	0.082	2.47	2.42	150	1.8	0.0012	98
10/31/2013	9:50	12.4	8.1	ND	0.14	0.0034	0.15	ND	0.21	0.36	**0.033**	0.078	2.10	2.74	130	1.3	0.00031	94

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-3. 2013 nutrient results for grab samples collected by the Sonoma County Water Agency at Jimtown and Digger's Bend. Highlighted values exceed the EPA criteria.

Jimtown Bridge	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11463682 RR at Jimtown***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	10:50	18.5	7.4	ND	0.18	0.0016	0.26	ND	ND	0.36	ND	0.025	1.00	1.35	170	0.82	0.0013	102
5/23/2013	10:30	16.4	7.3	ND	0.10	0.00059	0.24	ND	ND	**0.42**	ND	ND	0.962	1.28	180	0.93	0.0011	95
5/30/2013	10:00	18.0	7.5	ND	0.14	0.0013	0.23	ND	ND	**0.40**	ND	0.025	1.05	1.30	190	0.79	0.0014	93
6/6/2013	10:50	20.1	7.5	ND	0.18	0.0021	0.21	ND	ND	0.35	**0.022**	0.036	0.860	1.08	180	0.90	**0.0019**	82
6/13/2013	10:00	18.0	7.5	ND	0.14	0.0048	0.21	ND	ND	0.35	ND	0.028	0.842	1.26	200	0.46	0.00094	76
6/20/2013	10:10	18.4	7.6	ND	0.10	0.0013	0.19	ND	ND	0.33	ND	0.064	0.902	1.34	170	0.75	0.0016	81
6/27/2013	11:50	22.0	7.6	ND	0.14	ND	0.14	ND	ND	0.32	ND	0.026	1.16	1.65	150	0.90	**0.0019**	121
7/3/2013	10:10	22.2	7.4	ND	0.14	ND	0.15	ND	ND	0.29	ND	0.035	1.08	1.36	160	0.96	**0.0022**	92
7/11/2013	10:00	20.2	7.7	ND	0.14	ND	0.12	ND	ND	0.30	ND	0.025	0.746	1.62	170	0.49	**0.0029**	93
7/18/2013	10:30	20.5	7.6	ND	0.18	ND	0.15	ND	0.21	0.36	0.021	0.026	1.26	1.82	160	0.48	**0.0030**	107
7/25/2013	10:30	21.0	7.6	ND	0.14	ND	0.15	ND	0.24	**0.39**	ND	0.024	1.32	1.68	160	0.63	**0.0025**	99
8/1/2013	10:30	19.5	7.7	0.21	ND	ND	0.14	ND	0.21	0.35	**0.022**	0.027	1.29	1.52	130	0.55	0.0017	106
8/8/2013	10:30	19.1	7.7	ND	ND	ND	0.14	ND	ND	0.32	ND	0.031	1.30	1.67	150	0.81	**0.0036**	100
8/15/2013	10:30	20.7	7.6	0.21	ND	ND	0.14	ND	0.21	0.35	ND	0.025	1.38	1.97	160	0.71	**0.0031**	95
8/22/2013	10:40	19.0	7.4	0.21	ND	ND	0.13	ND	0.21	0.34	ND	0.026	1.30	1.84	160	0.67	**0.0034**	94
8/29/2013	10:00	20.4	7.4	ND	ND	ND	0.13	ND	ND	0.31	ND	ND	1.34	2.07	150	0.83	**0.0043**	97
9/5/2013	10:30	19.3	7.6	ND	ND	ND	0.11	ND	ND	0.11	0.021	0.038	1.48	1.85	150	0.64	**0.0025**	102
9/12/2013	10:10	18.8	7.6	ND	ND	ND	0.11	ND	ND	0.25	**0.025**	0.052	1.38	1.93	160	1.0	**0.0021**	106
9/19/2013	10:20	18.1	7.7	ND	0.14	ND	0.12	ND	ND	0.19	**0.025**	0.060	1.30	1.91	150	0.51	0.00042	100
9/26/2013	10:20	16.9	7.8	ND	ND	ND	0.13	ND	ND	0.27	**0.024**	0.061	1.37	1.73	160	0.41	0.00040	102
10/3/2013	10:30	16.3	7.9	ND	ND	ND	0.10	ND	ND	0.24	**0.024**	0.042	1.39	1.69	150	0.49	0.00098	101
10/10/2013	12:10	15.8	7.7	ND	0.14	ND	0.13	ND	0.28	**0.41**	**0.024**	0.039	1.43	1.72	170	0.38	0.00040	96
10/17/2013																		93
10/24/2013	10:40	15.7	7.7	ND	0.21	0.0028	0.12	ND	0.24	0.37	ND	0.040	1.31	1.55	160	0.27	0.00040	91
10/31/2013	10:30	13.9	7.8	ND	ND	0.00096	0.15	ND	ND	0.29	ND	0.039	1.38	1.39	170	0.29	ND	96

Digger's Bend	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11463980 RR at Digger's Bend***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	11:20	19.0	7.7	ND	0.21	0.0037	0.20	ND	ND	**0.38**	ND	0.021	0.991	1.45	170	1.7	0.0013	112
5/23/2013	11:10	16.3	7.7	ND	0.14	0.0020	0.19	ND	ND	0.33	ND	ND	1.01	1.25	180	1.0	0.00056	96
5/30/2013	10:50	19.1	7.9	ND	0.14	0.0036	0.18	ND	ND	0.36	ND	0.021	1.11	1.27	180	1.1	**0.0018**	99
6/6/2013	11:30	19.8	7.8	ND	0.14	0.0033	0.14	ND	ND	0.28	ND	0.032	0.991	1.08	170	0.79	0.0015	84
6/13/2013	10:30	19.1	7.9	ND	0.18	0.0018	0.13	ND	ND	0.27	ND	0.040	1.07	1.25	190	0.55	0.00094	76
6/20/2013	10:50	19.2	7.8	ND	ND	ND	0.11	ND	ND	0.25	ND	0.029	0.972	1.27	160	0.67	ND	77
6/27/2013	12:30	22.0	7.8	ND	0.10	ND	ND	ND	ND	0.18	ND	0.022	1.29	1.61	160	0.70	**0.0039**	113
7/3/2013	10:40	23.5	7.8	ND	0.14	ND	ND	ND	ND	0.14	ND	0.031	1.09	1.24	170	1.1	0.00087	75
7/11/2013	10:40	20.8	8.0	ND	ND	ND	ND	ND	ND	0.14	ND	0.041	1.20	1.70	170	0.54	0.00038	88
7/18/2013	11:10	20.8	7.8	ND	0.21	0.0051	ND	ND	ND	0.18	ND	0.038	1.27	1.87	160	0.74	0.0010	102
7/25/2013	11:10	21.5	7.9	ND	ND	ND	ND	ND	0.21	0.21	ND	0.028	1.39	1.80	160	0.80	0.00052	88
8/1/2013	11:10	19.9	7.9	0.21	ND	ND	ND	ND	ND	0.18	ND	0.035	1.35	1.58	160	0.75	ND	97
8/8/2013	11:00	19.2	7.9	ND	ND	ND	ND	ND	ND	0.18	0.020	0.035	1.45	1.75	170	0.99	0.00013	92
8/15/2013																		83
8/22/2013	11:10	19.7	7.8	ND	ND	ND	ND	ND	ND	0.18	**0.026**	0.026	1.69	2.06	180	0.82	0.00026	88
8/29/2013	10:30	21.3	7.8	ND	0.14	ND	ND	ND	ND	0.18	ND	ND	1.42	2.14	160	0.93	0.00064	90
9/5/2013	11:00	20.3	7.7	ND	ND	ND	0.10	ND	ND	0.10	ND	0.022	1.56	1.68	150	0.97	ND	91
9/12/2013	10:40	19.1	7.8	ND	ND	ND	ND	ND	ND	0.14	ND	0.052	1.51	2.14	160	1.0	ND	95
9/19/2013	11:00	18.2	7.5	ND	ND	ND	0.10	ND	ND	0.17	ND	0.033	1.37	1.84	150	0.65	0.00014	89
9/26/2013	10:50	17.3	8.0	ND	ND	ND	ND	ND	ND	0.10	0.020	0.037	1.29	1.67	150	0.52	0.00013	92
10/3/2013	11:00	16.7	8.1	ND	ND	ND	0.10	ND	ND	0.28	0.021	0.034	1.31	1.93	160	0.57	0.00014	95
10/10/2013	12:50	15.3	7.7	ND	0.18	ND	ND	ND	0.35	0.35	ND	0.031	1.40	1.61	180	0.42	ND	84
10/17/2013	11:00	15.0	8.1	ND	0.10	0.0035	ND	ND	ND	0.18	ND	0.022	1.22	1.59	150	0.24	0.00027	84
10/24/2013	11:20	15.3	8.1	ND	0.21	0.0061	ND	ND	ND	0.18	ND	0.028	1.29	1.45	160	0.38	**0.0027**	84
10/31/2013	10:50	13.4	8.1	2.0	ND	0.0020	ND	ND	0.21	0.21	ND	0.031	1.30	1.68	180	0.35	0.00031	92

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-4. 2013 nutrient results for grab samples collected by the Sonoma County Water Agency at Riverfront Park and Hacienda. Highlighted values exceed the EPA criteria.

Riverfront Park	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11465390 RR near Windsor (Riverfront Park)***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	12:00	17.7	7.5	ND	0.25	0.0026	0.16	ND	ND	0.30	0.02	0.028	1.17	1.64	150	1.8	0.0012	220
5/23/2013	11:50	15.4	7.5	ND	0.10	0.00086	0.16	ND	ND	0.33	ND	ND	1.16	1.59	150	1.5	0.00083	196
5/30/2013	12:00	17.3	7.7	ND	0.1	0.0017	0.14	ND	ND	0.28	**0.024**	0.033	1.20	1.55	140	1.5	0.0011	200
6/6/2013	12:10	18	7.7	ND	0.1	0.0017	0.13	ND	ND	0.24	**0.023**	0.044	1.140	1.42	140	1.9	0.0013	159
6/13/2013	11:15	17.3	7.8	ND	0.1	0.0053	0.13	ND	ND	0.27	**0.025**	0.036	1.140	1.53	160	1.2	0.00047	148
6/20/2013	11:40	16.9	7.7	ND	0.10	0.0015	0.12	ND	ND	0.19	**0.025**	0.033	1.28	1.62	120	1.2	ND	187
6/27/2013	13:20	19.9	7.7	ND	0.1	ND	ND	ND	ND	0.18	**0.022**	0.034	1.25	1.71	130	1.1	0.0015	222
7/3/2013	11:30	19.9	7.4	ND	0.1	ND	ND	ND	ND	0.18	ND	0.067	1.30	1.63	130	1.8	0.00050	180
7/11/2013	11:10	17.8	7.6	ND	0.18	ND	ND	ND	ND	0.14	ND	0.041	1.28	1.76	150	2.0	0.00064	191
7/18/2013	12:00	18.5	7.6	ND	0.21	0.00	0.11	ND	0.21	0.32	ND	0.034	1.13	1.64	75	1.4	0.0007	176
7/25/2013	12:00	18.5	7.6	ND	0.10	ND	ND	ND	0.28	0.28	ND	0.035	1.28	1.67	140	1.5	0.00039	180
8/1/2013	12:00	17.2	7.6	ND	ND	ND	0.12	ND	ND	0.29	**0.026**	0.039	1.29	1.6	120	1.3	0.00065	204
8/8/2013	11:50	16.7	7.5	ND	0.1	ND	ND	ND	ND	0.18	0.021	0.039	1.30	1.69	120	1.3	0.00052	203
8/15/2013	11:50	18	7.5	ND	ND	ND	0.14	ND	0.21	0.35	ND	0.045	1.47	1.98	140	1.5	0.00053	188
8/22/2013	12:00	17.1	7.3	ND	0.21	0.0014	ND	ND	ND	0.18	ND	0.026	1.42	1.90	140	1.6	0.00039	193
8/29/2013	11:30	18.2	7.8	ND	0.1	ND	0.11	ND	ND	0.28	ND	0.034	1.38	1.99	130	1.1	0.00025	195
9/5/2013	11:50	17.2	7.4	ND	0.1	ND	0.12	ND	ND	0.12	**0.026**	0.038	1.62	1.88	130	1.6	0.0008	201
9/12/2013	11:30	16	7.4	ND	0.14	ND	0.12	ND	ND	0.22	**0.023**	0.048	1.47	1.85	130	**2.4**	0.00013	203
9/19/2013	11:50	15.8	7.3	ND	ND	ND	0.13	ND	ND	0.27	ND	0.045	1.40	1.87	120	1.6	ND	195
9/26/2013	11:40	15.1	7.9	ND	0.1	ND	ND	ND	ND	0.18	0.021	0.041	1.37	1.81	140	1.5	0.00080	204
10/3/2013	11:50	14.9	7.9	ND	ND	ND	ND	ND	ND	0.18	ND	0.026	1.33	1.87	140	1.1	0.00056	199
10/10/2013	13:50	13.5	7.8	ND	0.14	ND	0.11	ND	0.32	**0.42**	0.02	0.035	1.37	1.69	130	0.93	0.00013	176
10/17/2013	11:40	13	8	ND	ND	ND	ND	ND	ND	0.14	ND	0.038	1.35	1.67	120	0.48	0.00082	175
10/24/2013	12:00	14	7.8	ND	0.24	0.0037	0.093	ND	0.21	0.30	ND	0.040	1.39	1.64	130	0.66	0.00067	186
10/31/2013	11:30	12	7.9	ND	0.14	0.0023	ND	ND	ND	0.18	ND	0.035	1.37	1.75	140	0.72	0.00031	202

Hacienda	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050	Flow Rate****
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	(cfs)
5/16/2013	12:40	19.6	7.8	ND	0.18	0.0042	0.14	ND	0.28	**0.42**	**0.042**	0.071	1.50	1.99	160	2.1	0.00058	158
5/23/2013	12:30	17.7	7.6	ND	0.21	0.0025	0.14	ND	ND	0.31	**0.039**	0.077	1.45	1.83	160	2.0	0.00069	124
5/30/2013	12:30	20.2	7.8	ND	0.1	0.0022	0.14	ND	ND	0.28	**0.047**	0.100	1.42	1.80	160	2.3	0.00076	138
6/6/2013	12:40	20.1	7.8	ND	0.14	0.0033	0.12	ND	ND	0.12	**0.054**	0.14	1.7	1.93	150	2.2	0.0012	96
6/13/2013	11:50	19.6	7.9	ND	0.18	0.088	0.11	ND	0.21	0.32	**0.059**	0.130	1.71	2.09	180	1.7	0.0011	94
6/20/2013	12:10	19.8	7.3	ND	0.1	0.002	0.11	ND	ND	0.28	**0.037**	0.092	1.46	1.79	130	**2.6**	0.00065	87
6/27/2013	13:50	21.3	7.5	ND	0.14	ND	0.17	ND	0.28	**0.44**	**0.096**	0.25	2.76	3.63	130	**3.4**	**0.0018**	167
7/3/2013	12:00	23.5	7.5	ND	0.14	ND	ND	ND	0.21	0.21	**0.11**	0.34	2.34	2.89	150	**2.5**	**0.0021**	95
7/11/2013	11:50	20.6	7.8	ND	0.10	ND	ND	ND	ND	0.14	**0.047**	0.11	1.55	2.04	150	2.1	0.0010	101
7/18/2013	12:30	20.2	7.8	ND	0.14	ND	0.11	ND	ND	0.29	**0.032**	0.077	1.34	1.77	150	1.6	0.0007	94
7/25/2013	12:40	21.2	7.8	ND	ND	ND	ND	ND	ND	0.18	**0.024**	0.067	1.44	1.76	140	1.7	0.00039	98
8/1/2013	12:40	19.3	7.8	ND	ND	ND	0.1	ND	ND	0.28	**0.044**	0.058	1.38	1.67	140	1.6	**0.0018**	111
8/8/2013	12:20	18	7.7	ND	ND	ND	ND	ND	0.21	0.21	**0.025**	0.059	1.26	1.62	120	1.7	0.00026	113
8/15/2013	12:20	20.5	7.4	ND	ND	ND	ND	ND	0.21	0.21	0.021	0.058	1.56	1.97	150	1.4	0.00040	94
8/22/2013	12:40	19.1	7.5	ND	ND	ND	ND	ND	ND	0.18	ND	0.038	1.46	1.94	140	1.6	0.00065	105
8/29/2013	13:30	21.3	7.5	ND	ND	ND	ND	ND	ND	0.07	**0.022**	ND	1.47	1.96	140	1.3	0.00051	95
9/5/2013	12:40	19.7	7.5	ND	ND	ND	ND	ND	ND	ND	0.021	0.042	1.67	1.86	140	1.3	ND	99
9/12/2013	12:00	17.9	7.6	ND	ND	ND	ND	ND	ND	0.1	ND	0.036	1.40	1.79	140	1.5	0.00027	107
9/19/2013	12:20	17.6	7.4	ND	0.10	ND	ND	ND	ND	0.18	0.020	0.045	1.45	1.89	140	1.2	ND	110
9/26/2013	12:20	17.3	7.9	ND	0.1	ND	0.1	ND	ND	0.28	**0.026**	0.045	1.55	1.87	130	1.6	0.00027	122
10/3/2013	12:40	16.7	7.9	ND	ND	ND	ND	ND	ND	0.18	0.021	0.042	1.54	1.84	130	1.4	0.00042	121
10/10/2013	14:30	15	7.5	ND	0.24	0.002	ND	ND	0.32	0.32	0.02	0.035	1.34	1.71	140	0.71	0.00013	91
10/17/2013	12:10	14.4	7.9	ND	0.14	0.0026	ND	ND	0.21	0.21	ND	0.03	1.33	1.61	120	0.6	0.00014	100
10/24/2013	12:20	14.7	7.8	ND	0.28	0.0044	ND	ND	0.32	0.32	ND	0.082	1.43	1.59	140	0.8	0.00027	99
10/31/2013	12:10	13	7.9	ND	ND	0.0011	ND	ND	ND	0.18	0.02	0.035	1.42	1.73	140	0.65	0.00031	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

3.1.2 2013 Seasonal Bacterial Sampling (Beach Sampling)

The NCRWQCB, in collaboration with the Sonoma County DHS, conducts seasonal bacteriological sampling at Russian River beaches to monitor levels of pathogens. Results are used by the Sonoma County DHS to determine whether or not bacteria levels fall within the State guidelines. In 2013, the NCRWQCB also collected pathogen samples as part of the development of a Total Maximum Daily Load (TMDL) for Russian River pathogens.

The 2013 Sonoma County DHS seasonal beach sampling locations consisted of: Cloverdale River Park; Camp Rose Beach; Healdsburg Veterans Memorial Beach; Steelhead Beach; Forestville Access Beach; Sunset Beach; Johnson's Beach; and Monte Rio Beach. Bacteriological samples were collected weekly beginning in late May and continuing until September 3. The samples were analyzed using the Colilert quantitray MPN method for total coliform and *E. coli*. Results from the sampling program are reported by the NCRWQCB and the Sonoma County DHS at their respective websites and on the Sonoma County DHS Beach Sampling Hotline. The 2013 seasonal results are shown in Table 3-5 and Figures 3-4 and 3-5.

The NCRWQCB TMDL river sampling locations consisted of: Cloverdale River Park; Alexander Valley; Camp Rose Beach; Healdsburg Veterans Memorial Beach; Steelhead Beach; Forestville Access Beach; Johnson's Beach; and Monte Rio Beach. Samples were collected approximately weekly from late May through early September. The 2013 seasonal results are shown in Table 3-6 and Figures 3-6 and 3-7. The analysis resulting from the 2013 sampling programs and prior years are being evaluated as part of the CEQA requirements associated with proposed permanent changes to D1610.

Table 3-5. Russian River Seasonal Beach Results collected by the NCRWQCB for Sonoma County DHS in 2013. Highlighted values indicate those values exceeding the California Department of Public Health Draft Guidance for Fresh Water Beaches.

	Cloverdale River Park		Camp Rose Beach		Healdsburg Veterans		Steelhead Beach		Forestville Access		Sunset Beach		Johnson's Beach		Monte Rio Beach	
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC
5/28/2013	1793	85	1450	20	798	10	12997	20	934	10	1162	52	1137	52	1607	20
5/29/2013							663	20								
6/4/2013	3,448	52	3,076	20	2,143	75	1,576	20	1,119	10	1,989	<10	1,968	31	1,723	10
6/11/2013	3,255	20	2,098	<10	1,374	74	1,789	30	2,143	41	2,603	41	1,739	31	2,851	209
6/18/2013	2,613	10	4,884	41	1,607	41	1,723	10	2,046	63	1,650	10	3,448	75	2,613	86
6/25/2013	2,448	504	4,106	75	14,136	959	2,481	85	2,014	63	4,611	52	14136	305	>24196	609
6/27/2013	2,913	52			3,654	241							2,613	97	3,873	355
7/2/2013	5,475	52	5,475	20	24,196	40	4,106	10	5,475	31	1,726	<10	2,382	52	4,106	132
7/3/2013					24,196	31										
7/5/2013					3,873	74										
7/9/2013	4,106	52	3,076	41	6,488	74	2,014	10	1,529	10	1,607	20	4,106	31	1,956	41
7/16/2013	6,867	31	2,909	20	2,143	41	1,130	31	1,439	<10	1,376	10	2,254	10	932	<10
7/23/2013	3,448	<10	2,909	<10	1,401	20	884	<10	865	10	93	10	2,909	<10	933	41
7/30/2013	3,076	41	3,448	20	2,755	<10			1,314	10	1,076	10	2,359	20	528	<10
7/31/2013							602	31								
8/6/2013	1,850	20	3,448	<10	1,664	31	960	10	1,076	<10	1,043	20	2,014	10	727	20
8/13/2013	2,282	20	3,654	20	1,553	20	934	<10	959	<10	833	<10	2,282	20	563	<10
8/20/2013	5,172	20	5,457	20	2,143	20	1,467	10	1,106	20	1,201	10	2,247	31	1,274	10
8/27/2013	5,475	10	3,255	<10	1,956	20	1,046	10	1,515	<10	959	10	1,785	10	1,439	<10
9/3/2013	7,270	20	5,475	<10	2,382	<10	1,565	10	1,607	20	1,050	10	1,515	<10	1,187	52

CDPH Draft Guidance for Fresh Water Beaches - Single Sample Values:
Beach posting is recommended when indicator organisms exceed any of the following levels:
Total coliforms: 10,000 per 100 ml
E. coli: 235 per 100 ml
Enterococcus: 61 per 100 ml

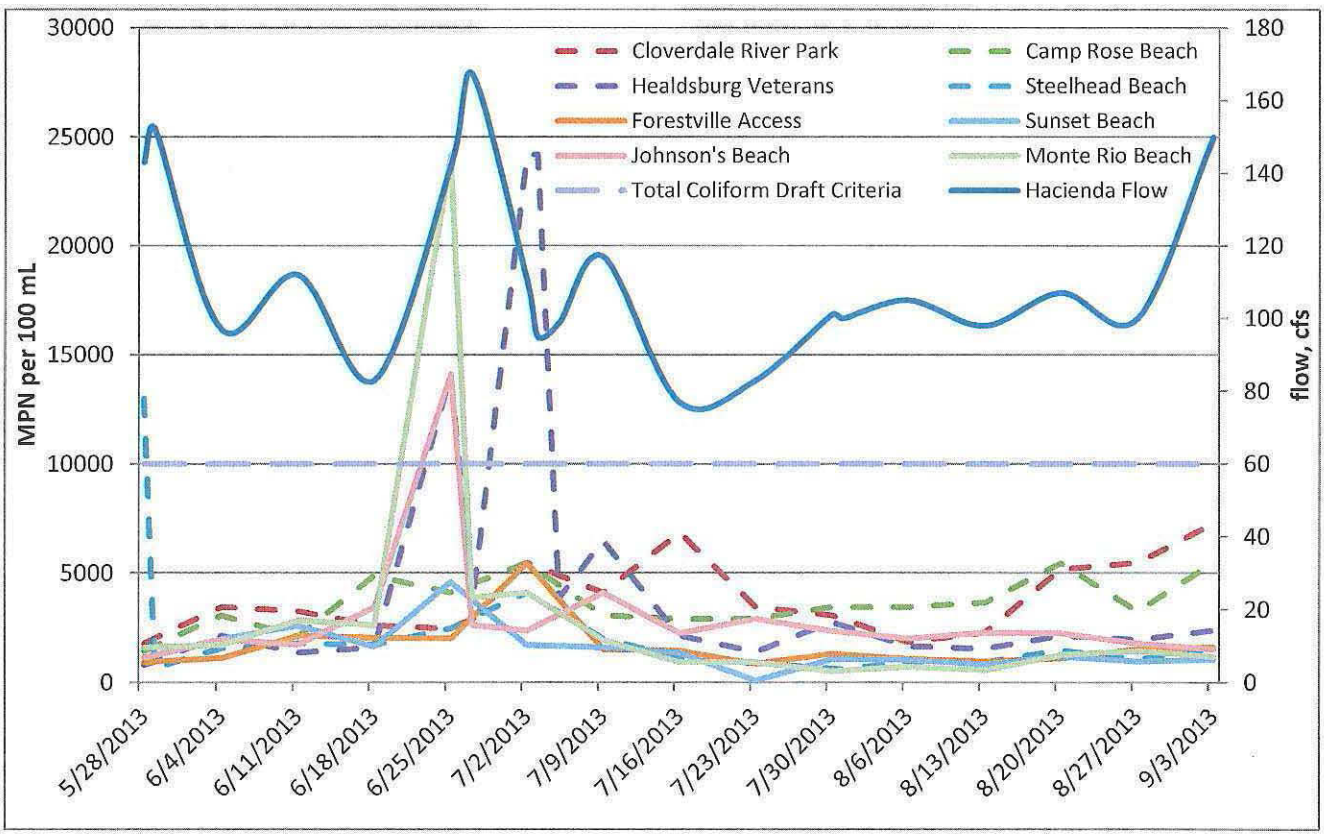

Figure 3-4. Russian River Beach Bacteria Sample Results for Total Coliform in 2013.

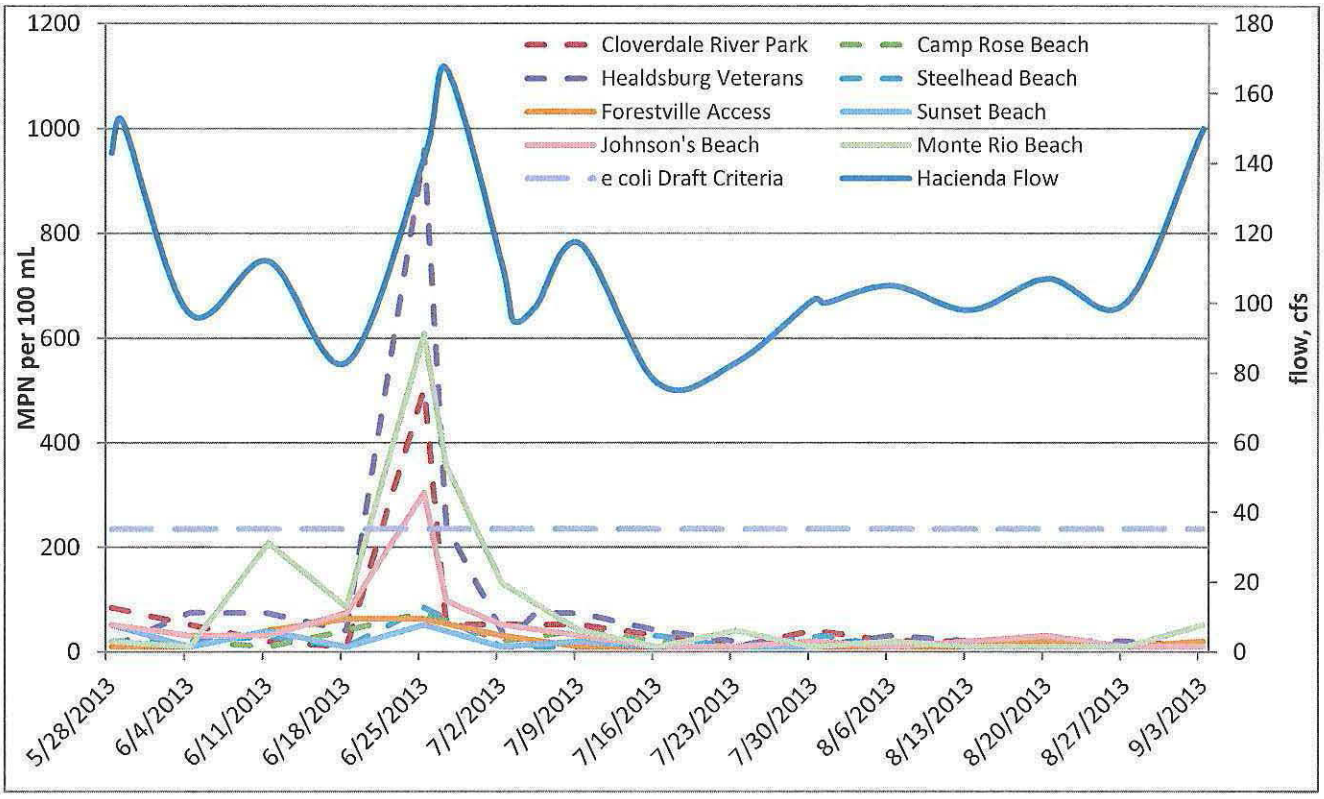

Figure 3-5. Russian River Beach Pathogen Sample Results for E. coli in 2013.

Table 3-6. Russian River TMDL Seasonal Results collected by the NCRWQCB for E coli and Enterococcus in 2013. Highlighted values indicate those values exceeding the California Department of Public Health Draft Guidance for Fresh Water Beaches.

	Cloverdale River Park		Alexander Valley		Camp Rose		Healdsburg		Steelhead Beach		Forestville		Johnson's Beach		Monte Rio Beach	
	EC	ENT	EC	ENT	EC	ENT	EC	ENT	EC	ENT	EC	ENT	EC	ENT	EC	ENT
5/30/2013	86	28	31	16	10	7	74	21	<10	15	41	35	10	46	63	122
6/5/2013	10	52	20	34	10	18	41	71	40	8	20	6	31	18	41	10
6/12/2013	10	31	30	12	52	11	20	20	<10	13	10	5	20	20	10	10
6/26/2013	52	411	86	291	52	1300	122	326	2014	>2420	1296	>2420	441	687	2098	>2420
7/2/2013	41	64	20	63	30	45	10	29	10	105	10	36	41	62	63	317
7/10/2013	20	308	<10	236	10	187	85	140	<10	47	10	13	<10	55	10	>2420
7/17/2013	41	135	41	158	<10	107	74	73	20	19	<10	12	<10	13	<10	139
7/24/2013	<10	16	<10	<1	<10	9	20	5	<10	4	<10	11	<10	17	10	2
8/1/2013	41	47	<10	31	20	86	52	19	10	10	10	23	31	4	10	13
8/7/2013	63	48	10	72	<10	91	<10	12	10	11	<10	30	10	36	63	2
8/14/2013	10	108	<10	19	10	70	10	21					20	12	10	12
8/21/2013	20	74	20	70	<10	46	10	15	10	41	10	8	<10	12	<10	4
8/28/2013	10	59	10	52	31	19	20	20	20	4	20	13	10	8	<10	3
9/4/2013	41	30	20	23	10	44	10	20	63	7	98	16	41	21	10	26

CDPH Draft Guidance for Fresh Water Beaches - Single Sample Values:
Beach posting is recommended when indicator organisms exceed any of the following levels:
Total coliforms: 10,000 per 100 ml
E. coli: 235 per 100 ml
Enterococcus: 61 per 100 ml

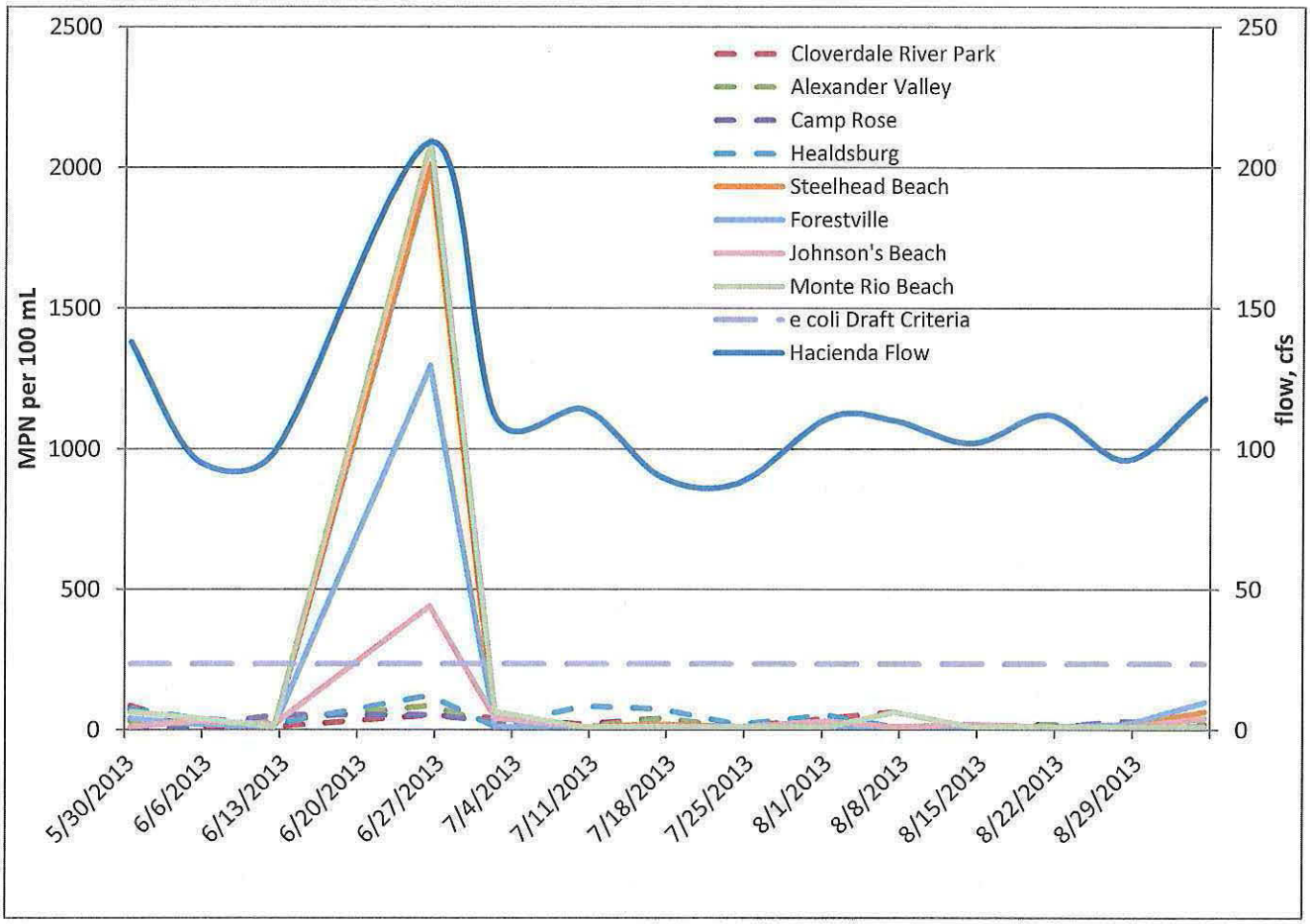

Figure 3-6. Russian River TMDL Seasonal Results collected by the NCRWQCB for E. coli in 2013.

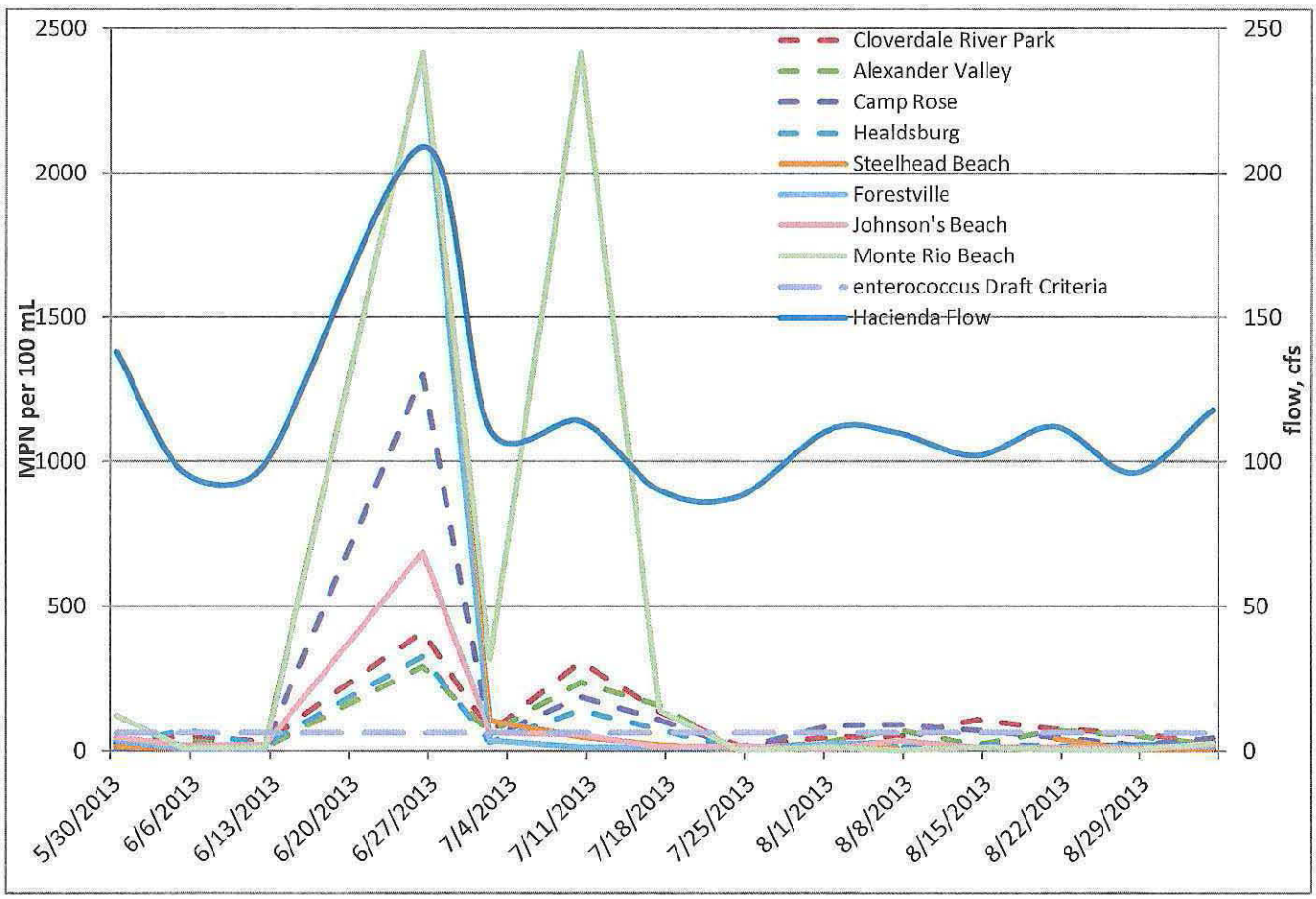

Figure 3-7. Russian River TMDL Seasonal Results collected by the NCRWQCB for Enterococcus in 2013.

3.2 Russian River Estuary Water Quality Monitoring

Flows in the lower Russian River at Hacienda (downstream of the confluence with Dry Creek) were affected by drought conditions in 2013 and dropped below D1610 minimum flow requirements from late May through October and occasionally dropped below the five-day running average of 85 cfs, but remained higher than TUC instantaneous minimum flow of 70 cfs. Long-term water quality monitoring and grab sampling was conducted in the lower, middle, and upper reaches of the Russian River Estuary and the upper extent of inundation and backwatering during lagoon formation, between the mouth of the river at Jenner and Monte Rio, including in two tributaries. Grab sampling was conducted weekly in the mainstem of the lower river for the term of the Order. Water Agency staff also continued to collect long-term monitoring data to: establish baseline information on water quality in the Estuary and assess the availability of aquatic habitat in the Estuary; gain a better understanding of the longitudinal and vertical water quality profile during the ebb and flow of the tide; and track changes to the water quality profile that may occur during periods of low flow conditions, barrier beach closure, lagoon outlet channel implementation, and reopening.

Saline water is denser than freshwater and a salinity "wedge" forms as freshwater outflow passes over the denser tidal inflow. During the lagoon management period (May 15 to October 15), the lower and middle reaches of the Estuary up to Sheephouse Creek are predominantly saline environments with a thin freshwater layer that flows over the denser saltwater. The upper reach of the Estuary transitions to

a predominantly freshwater environment, which is periodically underlain by a denser, saltwater layer that migrates upstream to Duncans Mills during low flow conditions and barrier beach closure. Additionally, river flows, tides, topography, and wind action affect the amount of mixing of the water column at various longitudinal and vertical positions within the Estuary.

The Water Agency submits an annual report to the National Marine Fisheries Service and California Department of Fish and Wildlife documenting the status updates of the Water Agency's efforts in implementing the Biological Opinion. The water quality monitoring data for 2013 is currently being compiled and will be discussed in the "Russian River Biological Opinion Status and Data Report Year 2013-14" due to be released in June 2014. The annual report will be available on the Water Agency's website: http://www.scwa.ca.gov/bo-annual-report/. As with the other datasets, this data will be evaluated as part of the CEQA requirements associated with proposed permanent changes to minimum flows under D1610. The grab sample sites are shown in Figure 3-8, and the results are summarized in Figures 3-9 and 3-10 and Tables 3-7 through 3-16.

Highlighted values indicate those values exceeding California Department of Public Health Draft Guidance for Fresh Water Beaches for Indicator Bacteria (CDPH 2011), EPA Recreational Water Quality Criteria (EPA 2012), and EPA recommended criteria for Nutrients, Chlorophyll a, and Turbidity in Rivers and Streams in Aggregate Ecoregion III (EPA 2000). However, it must be emphasized that the draft CDPH guidelines and EPA criteria are not adopted standards, and are therefore both subject to change (if it is determined that the guidelines or criteria are not accurate indicators) and are not currently enforceable. In addition, these draft guidelines and criteria were established for and are only applicable to fresh water beaches and freshwater portions of the estuary. Currently, there are no numeric guidelines or criteria that have been established specifically for estuaries.

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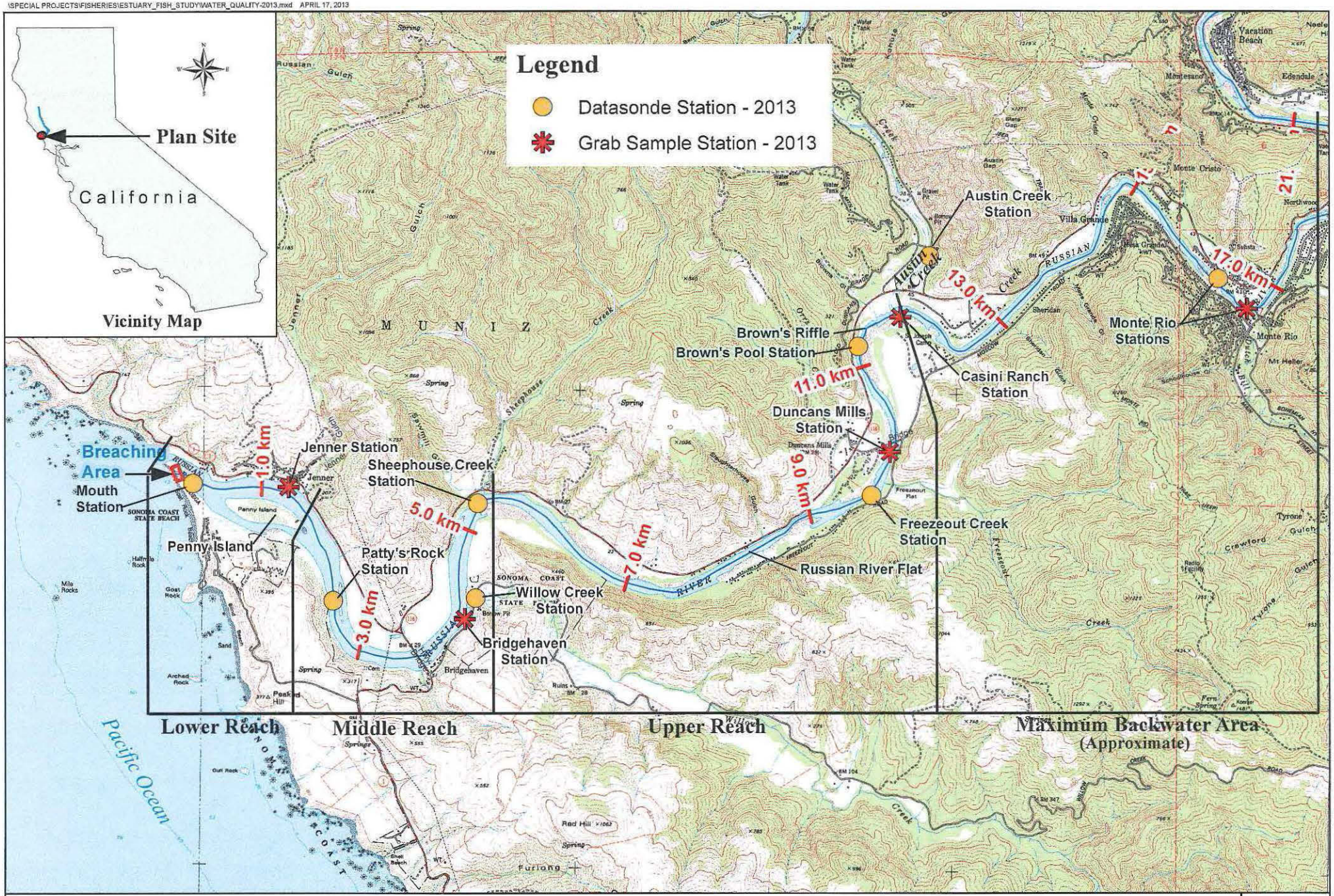

Russian River Estuary
Water Quality Monitoring Stations - 2013

This Map is for general reference only.

Figure 2

Table 3-7. 2013 Monte Rio bacteria concentrations for samples collected by the Sonoma County Water Agency. This site experiences freshwater conditions.

Monte Rio	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				20	20	2	Flow Rate****
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/14/2013	11:40	21.5	7.7	1553.1	7.5	5.2	177
5/21/2013	11:30	21.5	7.8	1986.3	6.3	6.2	131
5/28/2013	11:10	19.4	7.8	>2419.6	33.1	45.9	143
5/30/2013	11:50	21.4	8.0	1203.1	62.0	51.2	138
6/4/2013	11:00	21.7	7.8	1732.9	25.6	21.1	97
6/11/2013	11:15	21.0	7.8	1986.3	31.8	18.9	112
6/13/2013	11:40	21.8	7.7	2419.6	37.4	32.8	94
6/18/2013	10:40	22.1	7.9	1986.3	20.9	45.4	83
6/25/2013	10:50	21.0	7.8	2419.6	64.5	**158.5**	142
7/2/2013	12:20	25.9	7.9	>2419.6	79.8	**70.8**	111
7/9/2013	11:00	23.3	7.7	>2419.6	8.6	**2419.6**	117
7/11/2013	12:20	23.7	7.9	1732.9	5.2	**920.8**	101
7/16/2013	11:10	21.7	8.0	2419.6	4.1	**517.2**	77
7/23/2013	10:50	22.6	7.9	1203.3	9.7	11.8	83
7/30/0213	10:50	20.5	7.9	980.4	7.5	13.5	101
8/6/2013	11:20	21.1	7.9	365.4	3.1	4.1	105
8/13/2013	10:40	21.5	8.0	770.1	10.9	17.1	98
8/20/2013	10:30	21.8	7.6	1299.7	8.4	9.6	107
8/27/2013	12:00	21.8	7.9	1553.1	4.1	3.0	100
9/3/2013	11:40	19.7	7.7	980.4	8.5	13.2	150
9/10/2013	10:30	21.1	8.2	1986.3	6.3	13.5	93
9/17/2013	11:10	19.7	7.7	866.4	20.1	20.1	110
9/24/2013	11:00	18.2	7.5	727	14.5	19.5	127
9/26/2013	12:20	17.1	7.3	1203.3	11.0	20.1	122
10/1/2013	12:20	18.5	7.7	1732.9	116.9	**190.4**	140
10/3/2013	12:20	16.4	7.4	1986.3	166.4	**228.2**	121
10/8/2013	11:50	14.8	7.5	2419.6	**579.4**	**67.7**	93
10/15/2013	11:50	15.6	7.9	1299.7	111.2	**137.6**	99
10/17/2013	12:20	14.9	7.4	344.8	10.9	10.7	100
10/22/2013	10:10	14.5	7.8	233.3	8.6	13.1	101
10/24/2013	12:00	14.9	8.0	111.2	4.1	17.1	99
10/29/2013	10:40	13.7	8.0	435.2	19.7	36.4	113
10/31/2013	11:30	12.8	7.8	365.4	73.2	22.3	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-8. 2013 Casini Ranch bacteria concentrations for samples collected by the Sonoma County Water Agency. This site may experience estuarine conditions.

Casini Ranch	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				20	20	2	Flow Rate****
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/14/2013	11:00	21.3	7.6	1732.9	7.4	3.1	177
5/21/2013	11:00	21.4	7.9	1732.9	8.5	<1.0	131
5/28/2013	10:45	20.0	7.9	>2419.6	55.7	**98.5**	143
5/30/2013	11:10	21.5	8.0	2419.6	45.0	**101.4**	138
6/4/2013	10:30	20.7	7.9	1413.6	17.5	4.1	97
6/11/2013	10:50	20.8	7.8	2419.6	22.8	36.4	112
6/13/2013	11:00	21.8	7.8	1299.7	24.1	18.3	94
6/18/2013	10:10	21.6	8.1	1732.9	16	24.1	83
6/25/2013	10:30	20.2	8.0	>2419.6	29.5	**146.7**	142
7/2/2013	11:50	24.8	7.9	>2419.6	35.9	34.5	111
7/9/2013	10:30	22.1	7.9	>2419.6	6.3	13.0	117
7/11/2013	11:50	22.6	8.0	>2419.6	5.1	20.3	101
7/16/2013	10:50	20.3	7.9	>2419.6	2.0	**80.5**	77
7/23/2013	10:20	22.5	8.2	2419.6	25.9	30.7	83
7/30/2013	10:20	19.6	8.0	1732.9	4.1	53.7	101
8/6/2013	10:40	20.1	8.0	204.6	3.1	20.9	105
8/13/2013	10:10	20.5	7.8	613.1	3.1	16.1	98
8/20/2013	10:10	20.8	7.8	686.7	9.6	47.1	107
8/27/2013	11:20	21.5	8.0	214.3	3.1	8.6	100
9/3/2013	11:10	20.0	8.4	1553.1	7.5	10.7	150
9/10/2013	10:10	19.7	8.1	1119.9	10.9	30.9	93
9/17/2013	10:40	20.0	8.4	435.2	4.1	12.6	110
9/24/2013	10:30	17.8	8.1	461.1	4.1	4.1	127
9/26/2013	11:30	18.5	8.0	816.4	21.8	10.8	122
10/1/2013	11:50	19.6	7.9	1119.9	55.6	**142.1**	140
10/3/2013	11:50	18.5	7.9	1986.3	165.8	**686.7**	121
10/8/2013	11:10	16.0	8.0	770.1	24.1	58.3	93
10/15/2013	11:20	16.4	8.2	648.8	6.2	**61.3**	99
10/17/2013	11:30	15.5	7.4	461.1	8.6	13.5	100
10/22/2013	9:50	14.5	8.2	461.1	15.8	5.1	101
10/24/2013	11:30	14.8	8.3	224.7	26.2	**148.3**	99
10/29/2013	10:20	14.1	8.1	488.4	32.4	32.7	113
10/31/2013	11:00	13.8	8.1	547.5	36.4	19.5	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-9. 2013 Duncans Mills bacteria concentrations for samples collected by the Sonoma County Water Agency. This site may experience estuarine conditions.

Duncans Mills	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				20	20	2	Flow Rate****
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/14/2013	10:30	20.8	8.0	1732.9	10.7	1.0	177
5/21/2013	10:40	21.6	8.0	1732.9	12	3.1	131
5/28/2013	10:25	19.5	8.0	1299.7	21.6	60.2	143
5/30/2013	10:30	21.2	8.2	1203.3	46.4	37.9	138
6/4/2013	10:10	20.5	7.8	1732.9	34.5	12.1	97
6/11/2013	10:20	20.4	7.9	2419.6	29.9	30.5	112
6/13/2013	10:20	21.3	8.0	1986.3	199.6	28.5	94
6/18/2013	9:50	20.9	8.3	>2419.6	11	18.7	83
6/25/2013	10:10	19.7	8.0	>2419.6	47.3	12.1	142
7/2/2013	11:20	24.1	8.0	>2419.6	78.5	**178.9**	111
7/9/2013	10:10	22.2	8.0	>2419.6	20.3	3.0	117
7/11/2013	11:10	22.4	8.1	>2419.6	9.7	8.4	101
7/16/2013	10:20	20.3	8.0	>2419.6	10.9	14.2	77
7/23/2013	10:10	21.9	8.3	>2419.6	21.3	48.2	83
7/30/2013	10:00	19.5	8.1	2419.6	5.2	41.7	101
8/6/2013	10:10	20.3	8.2	2419.6	3.1	39.3	105
8/13/2013	9:50	19.9	8.1	1413.6	2.0	25.0	98
8/20/2013	9:50	17.6	8.0	1986.3	18.7	**62.7**	107
8/27/2013							100
9/3/2013	10:50	18.9	8.1	179.3	2.0	25.6	150
9/10/2013	9:50	20.0	8.0	1986.3	13.2	48	93
9/17/2013	10:20	18.9	8.1	648.8	5.2	19.5	110
9/24/2013	10:10	18.3	8.0	579.4	3.1	21.1	127
9/26/2013	11:10	17.9	7.9	>2419.6	29.2	**68.9**	122
10/1/2013	11:00	19.0	7.8	1413.6	36.4	**69.7**	140
10/3/2013	11:20	17.1	7.8	1046.2	42.6	60.2	121
10/8/2013	10:40	15.5	8.0	>2419.6	26.2	**104.3**	93
10/15/2013	11:00	16.0	8.2	1732.9	5.2	46.4	99
10/17/2013	11:00	15.1	7.7	>2419.6	6.3	6.3	100
10/22/2013	9:40	14.5	8.2	>2419.6	27.5	7.4	101
10/24/2013	10:50	14.7	8.3	727.0	13.2	**106.3**	99
10/29/2013	10:00	13.9	8.2	980.4	42.0	21.1	113
10/31/2013	10:30	13.8	8.2	816.4	3.1	6.2	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-10. 2013 Bridgehaven bacteria concentrations for samples collected by the Sonoma County Water Agency. Estuarine conditions exist at this site.

Bridgehaven	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)***
MDL*				20	20	2	Flow Rate****
Date		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/14/2013	10:10	20.0	8.1	1986.3	9.7	6.0	177
5/21/2013	10:20	19.2	8.4	1732.9	12.0	19.7	131
5/28/2013	10:05	17.6	8.2	2419.6	71.4	20.1	143
5/30/2013	10:00	18.6	8.4	1986.3	**248.1**	**73.3**	138
6/4/2013	9:50	18.5	7.8	>2419.6	32.7	**365.4**	97
6/11/2013	10:00	18.8	8.4	>2419.6	26.2	9.6	112
6/13/2013	9:50	19.3	8.5	2419.6	63.1	6.2	94
6/18/2013	9:30	18.5	8.4	>2419.6	34.5	**95.9**	83
6/25/2013	9:50	17.2	7.9	>2419.6	**1046.2**	**387.3**	142
7/2/2013	10:40	22.3	8.2	>2419.6	63.8	3.1	111
7/9/2013	9:50	17.6	7.9	>2419.6	121.1	45.0	117
7/11/2013	10:30	19.0	7.9	>2419.6	23.5	48.9	101
7/16/2013	9:50	17.3	8.0	>2419.6	3.0	**62.4**	77
7/23/2013	9:50	17.8	7.9	>2419.6	24.3	32.3	83
7/30/2013	9:40	16.0	7.6	>2419.6	3.0	**82.3**	101
8/6/2013	9:40	17.4	8.1	>2419.6	4.1	6.3	105
8/13/2013	9:30	17.1	7.8	>2419.6	5.2	6.2	98
8/20/2013	9:30	19.1	8.0	>2419.6	13.4	42.2	107
8/27/2013	10:30	17.1	7.9	>2419.6	9.8	7.4	100
9/3/2013	10:30	17.1	8.0	>2419.6	6.3	11.4	150
9/10/2013	9:40	16.7	7.7	>2419.6	32	**185**	93
9/17/2013	10:00	17.1	8.0	>2419.6	5.2	39.3	110
9/24/2013	9:50	16.5	8.2	>2419.6	25.3	21.3	127
9/26/2013	10:30	14.3	8.3	>2419.6	193.5	**85.7**	122
10/1/2013	10:00	17.0	8.0	>2419.6	39.9	**118.7**	140
10/3/2013	11:00	14.7	7.9	>2419.6	50.4	**77.6**	121
10/8/2013	10:10	13.4	7.9	>2419.6	18.5	**71.2**	93
10/15/2013	10:30	14.5	8.1	1203.3	9.7	22.6	99
10/17/2013	10:30	15.0	7.7	>2419.6	5.2	32.6	100
10/22/2013	9:20	12.6	8.0	>2419.6	28.5	26.2	101
10/24/2013	10:20	13.2	8.3	325.5	48.8	28.7	99
10/29/2013	9:40	12.4	8.1	>2419.6	30.1	45.0	113
10/31/2013	10:10	11.5	8.1	1299.7	7.5	42.8	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

Table 3-11. 2013 Jenner bacteria concentrations for samples collected by the Sonoma County Water Agency. Estuarine conditions exist at this site.

Jenner Boat Ramp	Time	Temperature	pH	Total Coliforms (Colilert)	E. coli (Colilert)	Enterococcus (Enterolert)	USGS 11467000 RR near Guerneville (Hacienda)**
MDL*				20	20	2	Flow Rate***
Unit of Measure		°C		MPN/100mL	MPN/100mL	MPN/100mL	(cfs)
5/14/2013	9:40	18.2	7.8	>2419.6	19.5	12.5	177
5/21/2013	10:00	17.2	8.2	>2419.6	112.6	**66.9**	131
5/28/2013	9:15	16.1	8.2	>2419.6	**1986.3**	**145.0**	143
5/30/2013	9:40	17.0	8.3	>2419.6	**>2419.6**	**214.3**	138
6/4/2013	9:30	19.2	7.9	>2419.6	70.3	18.9	97
6/11/2013	9:40	17.5	8.5	>2419.6	16.4	14.4	112
6/13/2013	9:30	17.7	8.4	>2419.6	73.3	**104.3**	94
6/18/2013	9:10	17.8	8.5	>2419.6	3.0	31.8	83
6/25/2013	9:40	17.8	8.4	>2419.6	95.7	**1413.6**	142
7/2/2013	10:20	22.2	8.2	>2419.6	63.8	**73.3**	111
7/9/2013	9:30	17.7	8.0	>2419.6	6.3	**579.6**	117
7/11/2013	9:50	18.2	8.5	2419.6	2.0	**136.7**	101
7/16/2013	9:30	16.5	8.0	>2419.6	6.1	**110.6**	77
7/23/2013	9:40	17.6	8.1	>2419.6	<1.0	53.7	83
7/30/2013	9:20	15.4	7.9	>2419.6	29.6	42.8	101
8/6/2013	9:10	15.8	7.9	>2419.6	7.3	21.1	105
8/13/2013	9:10	16.0	8.0	>2419.6	3.1	<1.0	98
8/20/2013	9:20	16.8	7.7	>2419.6	3.1	55.4	107
8/27/2013	10:00	16.6	8.0	>2419.6	4.1	2.0	100
9/3/2013	10:10	15.7	7.9	>2419.6	1.0	25.9	150
9/10/2013	9:20	15.8	7.8	>2419.6	43.7	**108.1**	93
9/17/2013	9:50	15.7	7.9	>2419.6	5.1	58.8	110
9/24/2013	9:20	14.5	8.1	>2419.6	4.1	13.4	127
9/26/2013	10:00	13.7	8.1	>2419.6	34.6	52.1	122
10/1/2013	9:40	16.4	8.2	372.4	36.8	**325.5**	140
10/3/2013	10:30	14.1	8.1	>2419.6	157.6	**344.8**	121
10/8/2013	9:50	13.9	8.0	>2419.6	21.8	**365.4**	93
10/15/2013	10:10	14.8	8.2	>2419.6	9.8	34.5	99
10/17/2013	10:00	15.1	7.7	>2419.6	1.0	50.4	100
10/22/2013	9:00	12.7	8.0	>2419.6	15.8	34.5	101
10/24/2013	10:00	12.4	8.3	71.7	19.7	9.5	99
10/29/2013	9:30	11.9	8.0	1732.9	25.6	42.8	113
10/31/2013	9:40	11.4	8.1	>2419.6	12.2	**62.0**	127

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revision.

** United States Geological Survey (USGS) Continuous-Record Gaging Station

*** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Recreational Water Quality Criteria - Statistical Threshold Value (STV) and Geomteric Mean (GM)

(Beach posting is recommended when indicator organisms exceed the STV) - Indicated by red text

E. coli (STV): 235 per 100 ml — Enterococcus (STV): 61 per 100 ml

E. coli (GM): 126 per 100mL — Enterococcus (GM): 33 per 100 mL

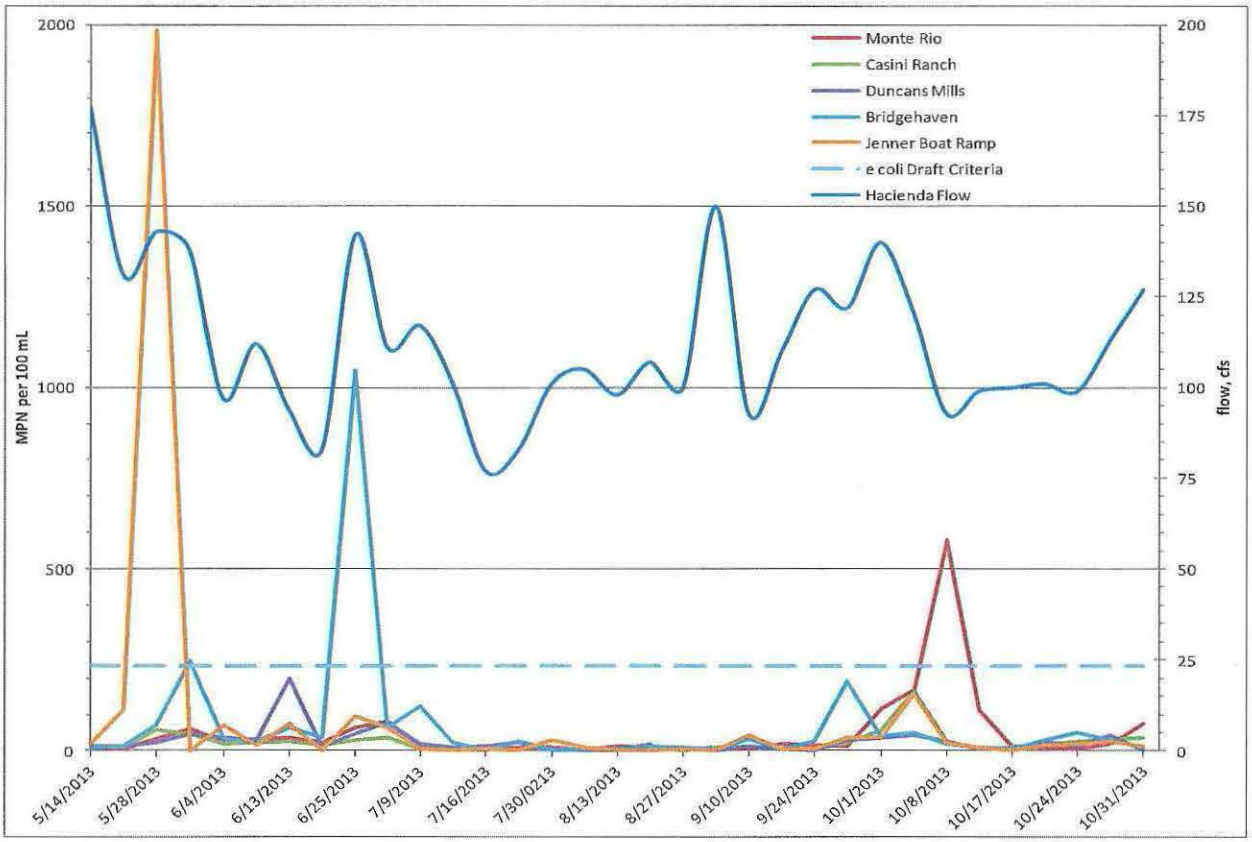

Figure 3-9. E. coli results on for the Russian River from Monte Rio to Jenner in 2013.

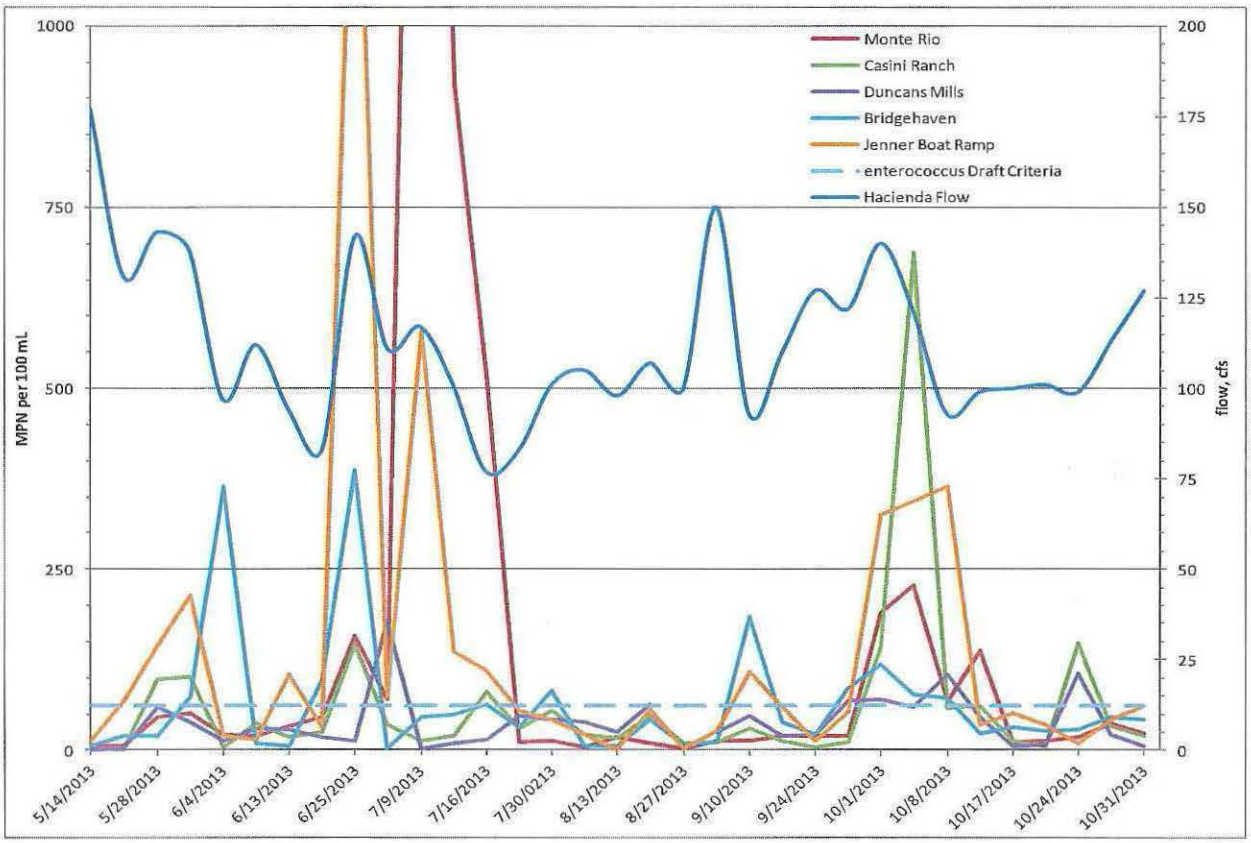

Figure 3-10. Enterococcus results for the Russian River from Monte Rio to Jenner in 2013.

Table 3-12. 2013 Monte Rio nutrient grab sample results. This site experiences freshwater conditions.

Monte Rio	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L
5/14/2013	11:40	21.5	7.7	ND	0.10	0.0023	0.12	ND	0.21	0.33	**0.047**	0.097	1.61	2.19	170	3.0	**0.0028**
5/21/2013	11:30	21.5	7.8	ND	0.18	0.0049	0.12	ND	0.21	0.34	**0.051**	0.043	1.58	2.02	160	3.6	**0.0035**
5/28/2013	11:10	19.4	7.8	ND	ND	ND	0.12	ND	0.24	0.37	**0.05**	0.10	1.44	1.82	42	2.7	**0.0038**
5/30/2013	11:50	21.4	8.0	ND	0.14	0.0055	ND	ND	0.21	0.21	**0.043**	0.088	1.53	1.78	160	2.8	**0.0048**
6/4/2013	11:00	21.7	7.8	0.21	0.14	0.0038	ND	ND	0.35	0.35	**0.057**	0.12	1.38	1.77	170	4.0	**0.0052**
6/11/2013	11:15	21.0	7.8	ND	0.10	0.0026	ND	ND	ND	0.18	**0.056**	0.14	1.60	2.07	160	2.3	**0.0025**
6/13/2013	11:40	21.8	7.7	ND	0.14	0.003	ND	ND	ND	0.18	**0.056**	0.12	1.83	2.12	180	2.7	**0.0019**
6/18/2013	10:40	22.1	7.9	ND	0.14	ND	ND	ND	0.24	0.24	**0.054**	0.13	1.66	5.18	170	2.4	**0.0048**
6/25/2013	10:50	21.0	7.8	ND	0.14	ND	ND	ND	ND	0.14	**0.052**	0.12	1.40	1.91	150	2.3	**0.0064**
7/2/2013	12:20	25.9	7.9	ND	0.14	ND	0.14	ND	0.32	**0.45**	**0.066**	0.16	1.74	3.51	140	1.9	**0.0032**
7/9/2013	11:00	23.3	7.7	ND	0.14	ND	ND	ND	0.24	0.24	**0.088**	0.24	2.40	2.76	150	2.6	**0.0025**
7/11/2013	12:20	23.7	7.9	ND	0.24	0.0095	0.1	ND	ND	0.28	**0.073**	0.19	1.92	2.37	150	1.8	**0.0019**
7/16/2013	11:10	21.7	8.0	ND	0.21	0.0089	ND	ND	ND	0.18	**0.05**	0.26	1.77	2.12	150	1.6	0.0017
7/23/2013	10:50	22.6	7.9	ND	0.10	ND	ND	ND	0.28	0.28	**0.038**	0.10	1.29	1.78	140	1.3	0.0014
7/30/0213	10:50	20.5	7.9	ND	ND	ND	ND	ND	ND	0.18	**0.025**	0.098	1.34	1.87	150	1.4	**0.0018**
8/6/2013	11:20	21.1	7.9	ND	0.14	ND	ND	ND	ND	0.14	**0.028**	0.071	1.39	1.68	140	1.2	0.00091
8/13/2013	10:40	21.5	8.0	ND	0.10	ND	ND	ND	ND	0.18	**0.033**	0.069	1.48	1.73	140	2.1	0.00053
8/20/2013	10:30	21.8	7.6	ND	0.10	ND	ND	ND	ND	0.18	**0.027**	0.073	1.55	2.15	130	1.6	0.0012
8/27/2013	12:00	21.8	7.9	ND	0.14	ND	ND	ND	0.21	0.21	**0.027**	0.060	1.52	1.86	140	0.46	0.00064
9/3/2013	11:40	19.7	7.7	ND	0.14	ND	ND	ND	ND	0.18	**0.051**	0.057	1.47	1.35	140	1.8	0.0011
9/10/2013	10:30	21.1	8.2	ND	0.18	ND	ND	ND	ND	0.14	**0.026**	0.054	1.68	2.07	140	1.8	0.0011
9/17/2013	11:10	19.7	7.7	ND	ND	ND	0.10	ND	0.24	0.35	**0.024**	0.054	1.41	2.25	130	1.3	0.00028
9/24/2013	11:00	18.2	7.5	ND	ND	ND	ND	ND	0.21	0.21	**0.024**	0.060	1.35	1.83	130	1.8	0.00080
9/26/2013	12:20	17.1	7.3	ND	ND	ND	ND	ND	ND	0.14	**0.044**	0.096	1.68	2.03	150	1.8	0.00040
10/1/2013	12:20	18.5	7.7	ND	ND	ND	ND	ND	ND	0.18	**0.026**	0.047	1.50	1.90	140	1.6	0.00028
10/3/2013	12:20	16.4	7.4	ND	ND	ND	0.1	ND	ND	0.28	**0.027**	0.054	1.13	1.61	120	1.5	0.00028
10/8/2013	11:50	14.8	7.5	ND	0.18	0.0014	0.11	ND	0.24	0.35	**0.022**	0.060	1.47	1.83	150	1.2	0.0008
10/15/2013	11:50	15.6	7.9	0.24	0.14	ND	0.2	ND	0.38	**0.59**	**0.041**	0.099	1.42	1.78	130	0.79	0.0011
10/17/2013	12:20	14.9	7.4	0.38	0.14	ND	0.16	ND	0.52	**0.69**	**0.031**	0.078	1.37	1.72	130	0.79	0.00068
10/22/2013	10:10	14.5	7.8	ND	0.10	0.0061	0.16	ND	0.28	**0.44**	**0.034**	0.080	1.37	1.65	140	0.89	0.00013
10/24/2013	12:00	14.9	8.0	ND	0.28	0.0071	0.12	ND	ND	0.30	**0.027**	0.040	1.41	1.55	140	0.91	0.0004
10/29/2013	10:40	13.7	8.0	0.21	ND	ND	0.16	ND	0.21	0.21	**0.036**	0.079	1.33	1.86	140	1.0	0.00046
10/31/2013	11:30	12.8	7.8	ND	0.10	0.0014	0.15	ND	ND	0.25	**0.03**	0.11	1.50	1.64	150	0.74	0.00061

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revi

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-13. 2013 Casini Ranch nutrient grab sample results. This site may experience estuarine conditions.

Casini Ranch	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L
5/14/2013	11:00	21.3	7.6	ND	0.14	0.0022	0.15	ND	0.32	**0.46**	**0.057**	0.13	1.74	2.24	170	**2.8**	**0.0028**
5/21/2013	11:00	21.4	7.9	ND	0.14	0.0044	0.13	ND	ND	0.3	**0.048**	0.042	1.62	2.16	180	2.3	**0.0042**
5/28/2013	10:45	20	7.9	ND	0.14	0.0043	ND	ND	0.28	0.28	**0.044**	0.098	1.72	1.91	160	**2.5**	**0.0055**
5/30/2013	11:10	21.5	8.0	ND	0.14	0.0059	ND	ND	0.21	0.21	**0.045**	0.076	1.48	1.79	160	**2.6**	**0.0053**
6/4/2013	10:30	20.7	7.9	ND	0.10	0.0033	0.12	ND	0.24	0.37	**0.053**	0.12	1.51	1.87	170	2.0	**0.0049**
6/11/2013	10:50	20.8	7.8	ND	0.14	0.0035	ND	ND	ND	0.14	**0.049**	0.14	1.52	2.02	160	0.95	**0.0047**
6/13/2013	11:00	21.8	7.8	ND	0.14	0.0038	ND	ND	0.21	0.21	**0.061**	0.13	1.66	2.18	160	1.9	**0.0043**
6/18/2013	10:10	21.6	8.1	ND	0.18	ND	ND	ND	ND	0.18	**0.058**	0.13	1.86	2.06	140	1.4	**0.0027**
6/25/2013	10:30	20.2	8.0	ND	ND	ND	ND	ND	0.21	0.21	**0.054**	0.12	1.48	2.07	140	1.7	**0.0058**
7/2/2013	11:50	24.8	7.9	0.21	0.14	ND	ND	ND	0.35	0.35	**0.059**	0.16	1.80	2.52	150	**2.4**	**0.0030**
7/9/2013	10:30	22.1	7.9	ND	0.10	ND	0.11	ND	0.28	**0.39**	**0.080**	0.22	2.22	2.78	150	2.3	**0.0033**
7/11/2013	11:50	22.6	8.0	ND	0.18	ND	ND	ND	ND	0.18	**0.082**	0.21	2.16	2.73	150	1.5	**0.0028**
7/16/2013	10:50	20.3	7.9	ND	0.24	0.0072	ND	ND	ND	0.18	**0.058**	0.084	1.84	2.25	140	1.2	**0.0025**
7/23/2013	10:20	22.5	8.2	ND	ND	ND	0.13	ND	0.21	0.34	**0.050**	0.11	1.78	1.90	150	1.5	0.0014
7/30/2013	10:20	19.6	8.0	ND	ND	ND	ND	ND	ND	0.18	**0.039**	0.12	1.44	1.99	140	0.85	0.0014
8/6/2013	10:40	20.1	8.0	ND	0.14	ND	0.12	ND	ND	0.22	**0.033**	0.083	1.44	1.73	140	1.2	0.00065
8/13/2013	10:10	20.5	7.8	ND	0.10	ND	0.12	ND	ND	0.29	**0.035**	0.065	1.29	1.88	140	1.2	0.00067
8/20/2013	10:10	20.8	7.8	ND	0.10	ND	ND	ND	0.28	0.28	**0.033**	0.077	1.61	2.22	140	1.4	0.0014
8/27/2013	11:20	21.5	8.0	ND	0.14	ND	0.11	ND	0.21	0.32	**0.030**	0.060	1.50	2.10	140	0.22	0.00089
9/3/2013	11:10	20.0	8.4	ND	ND	ND	ND	ND	0.21	0.21	**0.050**	0.057	1.52	1.99	150	1.3	0.0012
9/10/2013	10:10	19.7	8.1	ND	ND	ND	ND	ND	0.24	0.24	**0.048**	0.058	1.63	3.07	140	**2.4**	0.00093
9/17/2013	10:40	20.0	8.4	ND	ND	ND	0.17	ND	ND	0.34	**0.028**	0.054	1.54	1.99	120	1.2	0.00042
9/24/2013	10:30	17.8	8.1	ND	0.10	ND	ND	ND	0.24	0.24	**0.026**	0.057	1.66	2.00	120	1.2	0.00066
9/26/2013	11:30	18.5	8.0	ND	ND	ND	0.12	ND	ND	0.22	**0.029**	0.053	1.48	1.79	130	1.4	0.00013
10/1/2013	11:50	19.6	7.9	ND	ND	ND	ND	ND	ND	0.18	**0.032**	0.059	1.71	2.13	130	1.2	0.00056
10/3/2013	11:50	18.5	7.9	ND	ND	ND	ND	ND	ND	0.18	**0.025**	0.050	0.866	1.82	140	2.2	0.00056
10/8/2013	11:10	16.0	8.0	ND	0.18	0.0048	ND	ND	0.28	0.28	0.020	0.064	1.54	1.97	160	0.87	0.0011
10/15/2013	11:20	16.4	8.2	ND	0.10	ND	0.15	ND	0.28	**0.43**	**0.041**	0.11	1.73	1.92	130	0.9	**0.0032**
10/17/2013	11:30	15.5	7.4	0.21	0.14	ND	0.13	ND	0.35	**0.48**	**0.034**	0.081	1.39	1.73	140	1.1	0.00027
10/22/2013	9:50	14.5	8.2	ND	0.10	0.016	0.12	ND	0.28	**0.40**	**0.030**	0.065	1.30	1.74	150	1.1	0.00013
10/24/2013	11:30	14.8	8.3	ND	0.14	ND	ND	ND	ND	0.18	**0.023**	0.078	1.46	1.65	150	0.71	0.0004
10/29/2013	10:20	14.1	8.1	0.21	ND	ND	ND	ND	0.21	0.21	**0.025**	0.059	1.47	1.72	130	0.78	0.00061
10/31/2013	11:00	13.8	8.1	0.32	ND	ND	ND	ND	0.32	0.32	**0.030**	0.059	1.57	1.79	120	0.67	**0.0021**

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final rev

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-14. 2013 Duncans Mills nutrient grab sample results. This site may experience estuarine conditions.

Duncans Mills	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L
5/14/2013	10:30	20.8	8.0	0.21	0.1	0.0041	0.14	ND	0.32	**0.46**	**0.057**	0.12	1.63	2.15	180	1.7	**0.0022**
5/21/2013	10:40	21.6	8.0	ND	0.10	0.0044	0.12	ND	0.24	0.37	**0.044**	0.036	1.70	1.94	180	1.7	**0.0033**
5/28/2013	10:25	19.5	8.0	ND	0.1	0.0039	0.13	ND	0.21	0.34	**0.044**	0.090	1.58	1.96	120	1.4	**0.0063**
5/30/2013	10:30	21.2	8.2	ND	0.25	0.014	ND	ND	0.28	0.18	**0.043**	0.076	1.51	1.83	150	1.8	**0.0068**
6/4/2013	10:10	20.5	7.8	0.32	ND	ND	0.13	ND	0.38	**0.51**	**0.059**	0.12	1.48	1.79	180	1.8	**0.0052**
6/11/2013	10:20	20.4	7.9	ND	0.18	0.0054	ND	ND	0.24	0.24	**0.048**	0.12	1.51	1.97	160	1.6	**0.0080**
6/13/2013	10:20	21.3	8.0	ND	0.14	0.0055	ND	ND	ND	0.18	**0.053**	0.11	1.59	2.18	180	1.5	**0.0048**
6/18/2013	9:50	20.9	8.3	ND	0.1	ND	ND	ND	ND	0.18	**0.054**	0.12	1.73	2.02	170	1.2	**0.0043**
6/25/2013	10:10	19.7	8.0	ND	0.14	ND	ND	ND	0.21	0.21	**0.066**	0.13	1.57	1.93	160	1.5	**0.0067**
7/2/2013	11:20	24.1	8.0	ND	0.18	ND	0.12	ND	0.28	**0.40**	**0.040**	0.090	1.03	2.00	130	2.2	**0.0035**
7/9/2013	10:10	22.2	8.0	0.24	ND	ND	0.11	ND	0.28	**0.39**	**0.077**	0.20	2.19	2.60	160	1.4	**0.0028**
7/11/2013	11:10	22.4	8.1	ND	0.14	ND	ND	ND	0.21	0.21	**0.075**	0.21	2.11	2.66	150	1.3	**0.0025**
7/16/2013	10:20	20.3	8.0	ND	0.14	ND	ND	ND	ND	0.18	**0.057**	0.14	1.65	2.18	150	1.2	**0.0036**
7/23/2013	10:10	21.9	8.3	ND	ND	ND	ND	ND	0.21	0.21	**0.043**	0.12	1.58	1.86	150	1.4	**0.0020**
7/30/0213	10:00	19.5	8.1	0.21	ND	ND	ND	ND	0.21	0.21	**0.036**	0.098	1.39	2.03	160	1.1	0.0012
8/6/2013	10:10	20.3	8.2	ND	0.14	ND	0.12	ND	0.21	0.33	**0.033**	0.071	1.46	1.76	140	1.5	0.0012
8/13/2013	9:50	19.9	8.1	ND	0.18	ND	ND	ND	0.21	0.21	**0.033**	0.057	1.29	1.98	150	1.4	0.0012
8/20/2013	9:50	17.6	8.0	ND	ND	ND	0.11	ND	0.24	0.36	**0.037**	0.073	1.65	2.21	140	1.6	0.0016
8/27/2013																	
9/3/2013	10:50	18.9	8.1	ND	0.10	ND	0.10	ND	ND	0.28	**0.041**	0.065	1.50	1.96	150	1.3	0.0016
9/10/2013	9:50	20.0	8.0	ND	0.14	ND	ND	ND	0.21	0.21	**0.034**	0.058	1.72	2.26	140	1.4	0.0016
9/17/2013	10:20	18.9	8.1	ND	ND	ND	0.10	ND	ND	0.28	**0.030**	0.054	1.46	2.06	140	0.92	0.00057
9/24/2013	10:10	18.3	8.0	0.28	ND	ND	0.10	ND	0.28	**0.38**	**0.036**	0.060	1.45	1.99	87	1.3	0
9/26/2013	11:10	17.9	7.9	ND	0.14	ND	0.13	ND	ND	0.30	**0.029**	0.049	1.51	1.90	140	1.1	0.00053
10/1/2013	11:00	19.0	7.8	0.21	ND	ND	ND	ND	0.21	0.21	**0.030**	0.070	1.81	2.33	150	0.83	0.00084
10/3/2013	11:20	17.1	7.8	ND	ND	ND	ND	ND	ND	0.18	**0.027**	0.054	1.19	1.80	150	1.0	0.00084
10/8/2013	10:40	15.5	8.0	ND	0.1	0.0028	0.12	ND	ND	0.26	**0.024**	0.064	1.61	1.99	210	1.2	0.0011
10/15/2013	11:00	16.0	8.2	0.21	0.14	ND	ND	ND	0.35	0.35	**0.039**	0.064	1.59	1.98	160	1.2	**0.0085**
10/17/2013	11:00	15.1	7.7	ND	0.18	ND	0.14	ND	0.32	**0.45**	**0.038**	0.081	1.44	1.77	280	1.0	0.00082
10/22/2013	9:40	14.5	8.2	ND	ND	0.013	0.11	ND	0.24	0.36	**0.025**	0.057	1.50	1.72	160	1.3	0.00067
10/24/2013	10:50	14.7	8.3	ND	0.18	ND	ND	ND	ND	0.14	**0.023**	0.067	1.42	1.66	140	0.78	0.00081
10/29/2013	10:00	13.9	8.2	0.24	ND	ND	ND	ND	0.24	0.24	**0.024**	0.052	1.49	1.76	140	0.76	0.00092
10/31/2013	10:30	13.8	8.2	ND	ND	ND	ND	ND	ND	0.10	**0.025**	0.051	1.57	1.74	160	0.69	**0.0028**

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final rev

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*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Total Nitrogen: 0.38 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-15. 2013 Bridgehaven nutrient grab sample results. Estuarine conditions exist at this site.

Bridgehaven	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L
5/14/2013	10:10	20.0	8.1	ND	0.1	0.0041	0.28	ND	0.28	**0.56**	**0.056**	0.14	1.91	1.93	2100	**2.9**	0.00023
5/21/2013	10:20	19.2	8.4	0.38	0.14	0.0100	ND	ND	0.52	**0.52**	**0.11**	0.057	2.29	2.43	1100	**12**	**0.011**
5/28/2013	10:05	17.6	8.2	0.280	0.14	0.006	ND	ND	0.42	**0.42**	**0.054**	0.11	1.99	2.15	380	2.0	**0.0035**
5/30/2013	10:00	18.6	8.4	ND	0.21	0.016	ND	ND	0.28	0.28	**0.042**	0.084	2.09	2.14	720	2.3	**0.0024**
6/4/2013	9:50	18.5	7.8	0.280	0.14	0.0027	0.13	ND	0.42	**0.55**	**0.058**	0.13	1.99	2.26	1500	**2.9**	0.0012
6/11/2013	10:00	18.8	8.4	ND	0.18	0.015	ND	ND	ND	0.18	**0.051**	0.12	1.80	1.93	590	2.0	**0.0047**
6/13/2013	9:50	19.3	8.5	ND	0.14	0.012	ND	ND	0.28	0.28	**0.049**	0.087	1.92	2.03	1500	1.6	**0.0037**
6/18/2013	9:30	18.5	8.4	ND	0.14	ND	ND	ND	0.24	0.24	**0.042**	0.084	2.06	2.05	3000	1.4	0.0014
6/25/2013	9:50	17.2	7.9	ND	0.21	0.0041	ND	ND	0.21	0.21	**0.058**	0.10	2.23	2.33	3300	**2.4**	**0.0033**
7/2/2013	10:40	22.3	8.2	0.21	ND	ND	0.13	ND	0.28	**0.41**	**0.046**	0.091	1.97	2.58	730	1.9	**0.0032**
7/9/2013	9:50	17.6	7.9	0.24	0.1	ND	ND	ND	0.35	0.35	**0.043**	0.097	3.98	3.79	3300	1.5	0.00079
7/11/2013	10:30	19	7.9	ND	0.21	0.0047	ND	ND	0.24	0.24	**0.045**	0.10	3.26	3.32	3900	1.3	0.00076
7/16/2013	9:50	17.3	8	ND	0.1	ND	ND	ND	0.24	0.24	**0.066**	0.14	1.52	1.55	4800	1.6	**0.0032**
7/23/2013	9:50	17.8	7.9	ND	0.18	ND	ND	ND	0.24	0.24	**0.044**	0.093	1.18	1.12	8400	1.7	**0.0030**
7/30/2013	9:40	16	7.6	0.24	ND	ND	ND	ND	0.24	0.24	**0.038**	0.090	1.08	1.09	9700	1.4	**0.0024**
8/6/2013	9:40	17.4	8.1	ND	0.14	ND	ND	ND	0.21	0.21	**0.033**	0.079	1.33	1.13	4600	1.4	0.0016
8/13/2013	9:30	17.1	7.8	ND	0.10	ND	ND	ND	0.24	0.24	**0.038**	0.061	1.28	1.42	5300	1.5	0.00053
8/20/2013	9:30	19.1	8	0.24	0.14	ND	ND	ND	0.38	**0.38**	**0.041**	0.065	2.15	2.21	6000	1.6	**0.012**
8/27/2013	10:30	17.1	7.9	ND	ND	ND	0.60	ND	0.24	0.36	**0.035**	0.064	2.09	2.11	6400	0.77	**0.0029**
9/3/2013	10:30	17.1	8.0	0.32	0.1	ND	ND	ND	0.42	**0.42**	**0.040**	0.069	1.99	1.94	5700	1.3	**0.0088**
9/10/2013	9:40	16.7	7.7	ND	0.14	ND	ND	ND	0.24	0.24	**0.032**	0.046	1.63	1.57	11000	0.69	**0.0031**
9/17/2013	10:00	17.1	8.0	0.35	ND	ND	ND	ND	0.42	**0.42**	**0.045**	0.065	1.64	1.70	8400	1.7	**0.011**
9/24/2013	9:50	16.5	8.2	0.28	ND	ND	0.56	ND	0.35	**0.91**	**0.081**	0.060	2.40	2.37	2400	1.9	**0.0080**
9/26/2013	10:30	14.3	8.3	ND	0.18	ND	0.12	ND	0.28	**0.40**	**0.040**	0.057	2.33	2.34	1300	1.3	**0.0029**
10/1/2013	10:00	17	8.0	ND	ND	ND	ND	ND	0.21	0.21	**0.034**	0.074	2.37	2.56	510	0.92	**0.0035**
10/3/2013	11:00	14.7	7.9	ND	ND	ND	0.11	ND	ND	0.25	**0.037**	0.071	2.38	2.25	690	1.4	0.0011
10/8/2013	10:10	13.4	7.9	ND	0.18	0.0024	ND	ND	0.35	0.35	**0.025**	0.064	2.50	2.54	1800	1.1	**0.0019**
10/15/2013	10:30	14.5	8.1	0.21	0.14	ND	ND	ND	0.35	0.35	**0.034**	0.048	2.44	2.55	1400	1.3	**0.0019**
10/17/2013	10:30	15	7.7	0.63	0.18	ND	0.14	ND	0.46	**0.59**	**0.060**	0.14	2.25	2.34	1800	1.3	0.0014
10/22/2013	9:20	12.6	8.0	ND	ND	0.0059	0.14	ND	0.24	**0.38**	**0.044**	0.096	1.99	2.08	2000	1.3	0.00067
10/24/2013	10:20	13.2	8.3	0.21	0.14	ND	ND	ND	0.35	0.35	**0.038**	0.051	2.03	1.96	860	0.96	**0.0067**
10/29/2013	9:40	12.4	8.1	ND	0.1	0.0028	ND	ND	0.24	0.24	**0.037**	0.059	2.02	2.14	1900	1.3	**0.0061**
10/31/2013	10:10	11.5	8.1	ND	ND	ND	ND	ND	ND	0.18	**0.029**	0.051	2.17	2.04	1300	0.65	**0.0044**

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final revi

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*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

Table 3-16. 2013 Jenner Boat Ramp nutrient grab sample results. Estuarine conditions exist at this site.

Jenner Boat Ramp	Time	Temperature	pH	Total Organic Nitrogen	Ammonia as N	Ammonia as N Unionized	Nitrate as N	Nitrite as N	Total Kjeldahl Nitrogen	Total Nitrogen**	Phosphorus, Total	Total Orthophosphate	Dissolved Organic Carbon	Total Organic Carbon	Total Dissolved Solids	Turbidity	Chlorophyll-a
MDL*				0.200	0.10	0.00010	0.030	0.030	0.10		0.020	0.020	0.0400	0.0400	4.2	0.020	0.000050
Date		°C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L
5/14/2013	9:40	18.2	7.8	ND	0.18	0.0030	1.3	ND	0.24	**1.50**	**0.054**	0.14	1.35	1.27	8600	**3.8**	0.00023
5/21/2013	10:00	17.2	8.2	0.210	0.10	0.0004	0.14	ND	0.32	**0.45**	**0.063**	0.049	1.57	1.53	5700	**16**	**0.0021**
5/28/2013	9:15	16.1	8.2	0.210	0.14	0.0051	ND	ND	0.32	0.32	**0.050**	0.090	2.16	2.21	1100	1.6	**0.0033**
5/30/2013	9:40	17.0	8.3	ND	0.14	0.0068	ND	ND	0.24	0.24	**0.047**	0.072	2.06	2.06	1900	**2.4**	**0.0021**
6/4/2013	9:30	19.2	7.9	0.21	0.14	0.0032	ND	ND	0.35	0.35	**0.053**	0.11	1.83	1.79	2600	**3.1**	**0.0023**
6/11/2013	9:40	17.5	8.5	ND	0.21	0.017	0.11	ND	0.24	0.36	**0.056**	0.10	1.98	2.00	1300	1.4	**0.0036**
6/13/2013	9:30	17.7	8.4	0.21	ND	ND	ND	ND	0.28	0.28	**0.053**	0.083	1.72	1.81	2800	2.2	**0.0020**
6/18/2013	9:10	17.8	8.5	ND	ND	ND	ND	ND	0.24	0.24	**0.043**	0.076	1.74	1.54	6200	2.2	**0.0025**
6/25/2013	9:40	17.8	8.4	ND	0.18	ND	0.15	ND	0.21	0.36	**0.050**	0.098	2.01	2.06	3200	**4.4**	**0.0039**
7/2/2013	10:20	22.2	8.2	ND	0.18	ND	0.13	ND	0.35	**0.48**	**0.044**	0.074	2.40	2.48	1900	2.1	**0.0019**
7/9/2013	9:30	17.7	8.0	0.24	0.1	ND	ND	ND	0.35	0.35	**0.043**	0.11	1.16	1.26	11000	1.8	**0.0036**
7/11/2013	9:50	18.2	8.5	ND	0.18	ND	ND	ND	0.21	0.21	**0.051**	0.13	1.26	1.23	12000	2.0	**0.0023**
7/16/2013	9:30	16.5	8.0	ND	0.14	ND	ND	ND	0.21	0.21	**0.051**	0.12	1.08	1.14	11000	2.1	0.0016
7/23/2013	9:40	17.6	8.1	0.24	ND	ND	ND	ND	0.24	0.24	**0.040**	0.093	0.921	0.840	18000	2.1	**0.0049**
7/30/0213	9:20	15.4	7.9	ND	0.14	ND	ND	ND	0.24	0.24	**0.036**	0.094	0.905	0.905	14000	0.9	**0.0020**
8/6/2013	9:10	15.8	7.9	ND	0.18	ND	ND	ND	0.24	0.24	**0.037**	0.079	1.00	0.92	12000	1.4	**0.0042**
8/13/2013	9:10	16.0	8.0	ND	ND	ND	ND	ND	ND	0.18	**0.031**	0.065	1.14	1.41	8100	1.2	0.00053
8/20/2013	9:20	16.8	7.7	0.32	0.1	ND	ND	ND	0.42	**0.42**	**0.040**	0.088	1.13	1.51	17000	1.3	**0.0061**
8/27/2013	10:00	16.6	8.0	ND	0.1	ND	0.58	ND	0.21	0.33	**0.032**	0.064	1.98	1.84	9600	0.56	0.0011
9/3/2013	10:10	15.7	7.9	0.28	ND	ND	1.1	ND	0.32	**0.43**	**0.038**	0.089	1.32	1.28	14000	2.0	**0.0023**
9/10/2013	9:20	15.8	7.8	0.28	0.1	ND	ND	ND	0.38	**0.38**	**0.043**	0.077	1.50	1.41	15000	**3.1**	**0.0036**
9/17/2013	9:50	15.7	7.9	0.28	ND	ND	1.2	ND	0.28	**1.50**	**0.038**	0.081	1.22	1.20	15000	1.9	0.0014
9/24/2013	9:20	14.5	8.1	ND	0	ND	ND	ND	0.28	0.28	**0.035**	0.060	2.18	2.12	5400	1.1	**0.0061**
9/26/2013	10:00	13.7	8.1	0.32	ND	ND	0.58	ND	0.35	**0.47**	**0.048**	0.053	2.18	1.99	5600	1.6	**0.0049**
10/1/2013	9:40	16.4	8.2	ND	ND	ND	0.12	ND	0.21	0.33	**0.026**	0.043	2.53	3.07	2200	1.0	**0.0042**
10/3/2013	10:30	14.1	8.1	ND	ND	ND	ND	ND	0.24	0.24	**0.035**	0.046	2.36	2.27	3100	1.5	**0.0032**
10/8/2013	9:50	13.9	8.0	ND	0.1	0.002	0.58	ND	0.28	**0.86**	**0.029**	0.052	2.67	2.68	2800	1.3	**0.0032**
10/15/2013	10:10	14.8	8.2	0.21	0.14	ND	ND	ND	0.35	0.35	**0.038**	0.052	2.68	2.71	2300	1.8	**0.0024**
10/17/2013	10:00	15.1	7.7	0.32	0.14	ND	0.24	ND	0.46	**0.57**	**0.062**	0.14	2.47	2.42	2800	**2.8**	**0.0021**
10/22/2013	9:00	12.7	8.0	ND	0.14	0.0076	ND	ND	0.24	0.24	**0.060**	0.10	2.02	1.98	3500	1.3	**0.0027**
10/24/2013	10:00	12.4	8.3	0.21	0.14	ND	ND	ND	0.35	0.35	**0.035**	0.063	2.19	2.17	3100	0.92	**0.0026**
10/29/2013	9:30	11.9	8.0	0.24	ND	ND	ND	ND	0.24	0.24	**0.033**	0.063	2.05	1.99	3500	1.9	**0.0043**
10/31/2013	9:40	11.4	8.1	ND	ND	ND	ND	ND	ND	0.18	**0.029**	0.055	2.25	2.15	2800	1.2	**0.0054**

* Method Detection Limit - limits can vary for individual samples depending on matrix interference and dilution factors, all results are preliminary and subject to final rev

** Total nitrogen is calculated through the summation of the different components of total nitrogen: organic and ammoniacal nitrogen (together referred to as Total Kjeldahl Nitrogen or TKN) and nitrate/nitrite nitrogen.

*** United States Geological Survey (USGS) Continuous-Record Gaging Station

**** Flow rates are preliminary and subject to final revision by USGS.

Recommended EPA Criteria based on Aggregate Ecoregion III

Total Phosporus: 0.02188 mg/L (21.88 ug/L) ≈ 0.022 mg/L

Total Nitrogen: 0.38 mg/L

Chlorophyll *a*: 0.00178 mg/L (1.78 ug/L) ≈ 0.0018 mg/L

Turbidity: 2.34 FTU/NTU

4.0 Additional Monitoring

4.1 Permanent Datasondes

In coordination with the USGS the Water Agency maintains five, multi-parameter water quality sondes on the Russian River located at Russian River near Hopland, Russian River at Diggers Bend near Healdsburg, the Russian River near Guerneville (aka Hacienda Bridge), the Water Agency's water supply facility at Mirabel (RDS), and Johnson's Beach. These five sondes are referred to as "permanent" because the Water Agency maintains them as part of its early warning detection system for use year-round. The sondes take real time readings of water pH, temperature, dissolved oxygen content (DO), specific conductivity, turbidity, and depth, every 15 minutes.

In addition to the permanent sondes, the Water Agency, in cooperation with the USGS, installed seasonal sondes with real-time telemetry at the USGS river gage station at Russian River near Cloverdale (north of Cloverdale at Comminsky Station Road) and at the gage station at Russian River at Jimtown (Alexander Valley Road Bridge). These two additional sondes are included by the USGS on its "Real-time Data for California" website.

The data collected by the sondes described above are evaluated in Section 4.2 in response to the SWRCB request to evaluate whether and to what extent the reduced flows authorized by the Order caused any impacts to water quality or availability of aquatic habitat for salmonids. In addition, the 2013 data will help provide information to evaluate potential changes to water quality and availability of habitat for aquatic resources resulting from the proposed permanent changes to D1610 minimum instream flows that are mandated by the Biological Opinion. A complete evaluation of the water quality data is being conducted as part of the California Environmental Quality Act (CEQA) analysis associated with proposed permanent changes to D1610

4.2 Aquatic Habitat for Salmonids

4.2.1 Introduction

Altered flow regimes in rivers have the potential to change the environmental conditions experienced by salmonids occupying mainstem habitats. NMFS (2008) found that high summer time flows related to reservoir releases can increase velocities to the point that there is a reduction in the amount of optimal habitat available to summer rearing salmonids. However there is concern that summer flows could be reduced to the point that water temperature may increase and dissolved oxygen (DO) may decrease, thereby degrading summer salmonid rearing habitat. In the Order issued on May 1, 2013, the SWRCB tasked the Water Agency with evaluating impacts associated with reductions in minimum instream flows authorized by the Order to water quality and the availability of aquatic habitat for salmonids in the Russian River. The period covered by the Order is May 1 through October 28, 2013 (SWRBC 2013). This report summarizes Russian River flow, temperature, DO, and salmonid monitoring data in order to evaluate the potential effect of reducing minimum instream flows on salmonid habitat.

4.2.2 Life Stages

Salmonids in the Russian River can be affected by flow, temperature, and DO changes at multiple life stages. The Russian River supports three species of salmonids: coho salmon, steelhead, and Chinook

salmon (Martini-Lamb and Manning 2011). These species follow a similar life history where adults migrate from the ocean to the river and move upstream to spawn in the fall and winter. Females dig nests called redds in the stream substrate on riffles and pool tail crests. As eggs are deposited into the nest, they are fertilized by males. The eggs are covered with gravel by the female and the eggs remain in the nest for 8-10 weeks before hatching. After hatching the larval fish, identified as alevins, remain in the gravel for another 4-10 weeks before emerging. After emerging these young salmonids are identified first as fry and then later as parr once they have undergone some freshwater growth. Parr rear for a few months (Chinook) to 2 years (steelhead) in freshwater before undergoing a physiological change identified as smoltification. At this stage, fish are identified as smolts, and are physiologically able to adapt to living in saltwater, and are ready for ocean entry (Quinn 2005). In the Russian River smolts move downstream to the ocean in the spring (Chase et al. 2005 and 2007, Obedzinski et al. 2006). Salmonids spend 1 to 4 years at sea before returning to the river to spawn as adults (Moyle 2002). Because all life stages of all three species of Russian River salmonids spend a period of time in the Russian River watershed, they must cope with the freshwater conditions they encounter including flow, temperature, and DO levels. While broadly all three species follow a similar life history, each species tends to spawn and rear in different locations and are present in the Russian River watershed at slightly different times; consequently, these subtle but important differences may expose each species to a different set of freshwater conditions.

Coho timing

Wild coho have become scarce in the Russian River and monitoring data relies mainly on fish released from the Warm Springs Dam hatchery as part of the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP). Data collected on the Water Agency's Mirabel inflatable dam video camera system from 2011 through 2013 indicate that the adult coho salmon run may start in late October and continue through at least January (SCWA unpublished data). Spawning and rearing occurs in the tributaries to the Russian River (NMFS 2008). Downstream migrant trapping in tributaries of the Russian River indicate that the coho smolt out-migration starts before April and continues through mid-June (Obedzinski et al. 2006). Coho salmon have been detected as late as mid-July in the mainstem Russian River downstream migrant traps operated by the Water Agency (Martini-Lamb and Manning 2011). For coho, only the temperature and DO data relating to the adult and smolt life stages will be summarized for this report. Spawning and rearing take place in the tributaries which are outside of the spatial boundaries governed by the Order (Table 4-1).

Steelhead timing

Based on video monitoring at the Water Agency's Mirabel inflatable dam and returns to the Warm Springs Dam Hatchery, adult steelhead return to the Russian River later than Chinook. Deflation of the inflatable dam and removal of the underwater video camera system preclude a precise measure of adult return timing or numbers; however, continuous video monitoring at the Inflatable dam during late fall through spring in 2006-2007, timing of returns to the hatchery, and data gathered from steelhead angler report cards (SCWA unpublished data, Jackson 2007) suggests that although very few adult steelhead may return as early September in some years, the vast majority of returns occur between January and April. Additionally, during coho spawner surveys conducted by the University of California Cooperative Extension (UCCE), steelhead have been observed spawning in tributaries of the Russian River in January, but more often in February and March (Obedzinski 2012).

Many steelhead spawn and rear in the tributaries of the Russian River while some steelhead rear in the upper mainstem Russian River (NMFS 2008, Cook 2003). Cook (2003) found that summer rearing steelhead in the main stem of the Russian River were distributed in the highest concentrations between Hopland and Cloverdale (Canyon Reach). Steelhead were also found in relatively high numbers (when compared to habitats downstream of Cloverdale) in the section of river between the Coyote Valley Dam and Hopland (Ukiah Reach), but at a lower density than in the Canyon Reach. The Canyon Reach is the highest gradient section of the mainstem Russian River and contains fast water habitats that include riffles and cascades (Cook 2003). Both the Canyon and Ukiah reaches have cooler water temperatures when compared to other mainstem reaches. The cool water found in the Canyon and Ukiah reaches is a direct result of releases made at the Coyote Valley Dam. Therefore, for steelhead parr, water temperature data will only be summarized at Hopland and Cloverdale because they are the only sites where water temperature data was collected that are within the section of the upper Russian River known to support summer rearing steelhead parr.

The steelhead smolt migration in the Russian River begins at least as early as March and continues through June, peaking between mid-March and mid-May (Martini-Lamb and Manning 2011). For Russian River steelhead, adult migratory, parr (rearing), and smolt life stages are present in the mainstem during the time period covered by the Order and only these life stages will be analyzed for the potential effect of altered temperature and DO levels related to the Order (Table 4-1).

Chinook timing

Based on video monitoring at the Water Agency's inflatable dam in Mirabel, adult Chinook are typically observed in the Russian River before coho and steelhead. Chinook enter the Russian River as early as September, but are typically not present in high numbers until mid-October. Generally the Chinook run peaks between mid-October and mid-November and is over in late December (Chase et al. 2005 and 2007, SCWA unpublished data). Chinook are mainstem spawners and deposit their eggs into the stream bed of the mainstem Russian River and in Dry Creek during the fall (Chase et al. 2005 and 2007, Cook 2003, Martini-Lamb and Manning 2011). Chinook offspring rear for approximately two to four months before out-migrating to sea in the spring. Based on downstream migrant trapping data the majority of the Chinook smolt out-migration appears to be complete by mid to late June (Chase et al. 2005 and 2007, Martini-Lamb and Manning 2011). The adult migratory and smolt life stages are present in the mainstem of the Russian River during the time period covered by the Order. Therefore, temperature and DO levels during the time period related to the Order will be analyzed for these Chinook life stages in this report (Table 4-1).

4.2.3 Methods

The Water Agency operated a downstream migrant trap and later an underwater camera system at the Mirabel inflatable dam approximately 4.8 river kilometers (rkm) upstream of Hacienda. Data from this monitoring site was used to determine what species and life stages were present in the Russian River during the Order. Physical habitat conditions (flow, water temperature, and DO) were collected at multiple sites (Hopland, Cloverdale, Diggers Bend and Hacienda) in the Russian River during the Order. These conditions were compared to findings in the literature that were used to construct temperature and DO criteria for Russian River salmonids during different life history phases. These criteria were used to assess potential impacts to salmonids related to temperature, and DO.

Table 4-1. The species and life stage of salmonids found in the Russian River watershed that will be analyzed for this report during the period covered by the Order (May 1 to October 28, 2013) and the justification for excluding certain life stages from the analysis. The Order only applies to the Mainstem Russian River and not its tributaries.

Species	Life stage	Summarized in report	Comments
Chinook	adult	x	September to late December
	spawning		Fall/winter
	egg		Winter/early spring
	alevin		Winter/early spring
	fry		Winter/early spring
	smolt	x	Spring/early summer
steelhead	adult	x	Fall/winter
	spawning		Winter/early spring
	egg		Winter/early spring
	alevin		Winter/early spring
	fry		Spring/early summer
	parr	x	spring/summer/fall/possibly winter
	smolt	x	Winter/early spring
coho	adult		Fall/winter
	spawning		spawns in tributaries
	egg		eggs deposited tributaries
	alevin		Alvin emerge in tributaries
	fry		freshwater rearing takes place in tributaries
	parr		freshwater rearing takes place in tributaries
	smolt	x	Spring/early summer

Temperature

Daily minimum and daily maximum water temperature were collected at 4 sites (Hopland, Cloverdale, Diggers bend and Hacienda) on the Russian River and compared to temperature zones and limits that were constructed from a compilation of temperature data found in the literature. Salmonids have different temperature requirements depending on the species or life stage, therefore the temperature zones and upper limit used in this report differ by species and life stage.

Stream temperatures that restrict salmonids vary with species and possibly by geographical region. Critical temperatures that limit production and survival of salmonids vary widely in the literature. As a result, establishing a single set of criteria that describes the suitability of a particular stream's thermal regime to support salmonids is difficult. For example, Bell (1986) states that the upper lethal temperature of steelhead is 23.8 °C, while Nielsen et al. (1994) reported steelhead in the Eel River feeding at water temperatures of 24 °C. Further, growth of Chinook has been reported to be maximized at a temperature of 14.8 °C when food rations are maintained at 60 percent of satiation, but at 18.9 to 20.5°C when fish were fed to satiation. Much of the literature analyzing the effects of temperature on fish is focused on determining "optimal" or lethal levels. However, even in natural environments, fish

often spend the majority of their time exposed to "suboptimal" conditions. Depending on the elevated temperature, fish are able to survive, grow, and reproduce at temperatures above their theoretical "optimum." Brett (1956) developed a generalized concept of the effects of temperature on salmonids. He used four categories (zones) with five responses to relate the effects of temperature on growth and survival; the upper lethal limit where death occurs rapidly, zone of resistance where death can occur depending on the length of exposure, zone of tolerance where there is no mortality but no growth as well, and the zone of preference where growth occurs proportional to food availability, and optimal zone where growth occurs at all but starvation rations. Below the Zone of Preference growth is reduced by excessively cold temperatures. Sullivan et al. (2000) illustrated this concept graphically (Figure 4-1). It is within the Zone of Preference that fish spend the majority of their lives.

Chinook salmon and steelhead have similar temperature tolerances. In addition, they both spawn in the mainstem Russian River. Coho salmon generally have a lower tolerance for temperature and do not spawn in the mainstem Russian River. Therefore, criteria evaluating the effects of temperature on Chinook salmon and steelhead will be combined, while a separate set of criteria will be developed for Coho salmon. However, the time of year that they are present in the river differ.

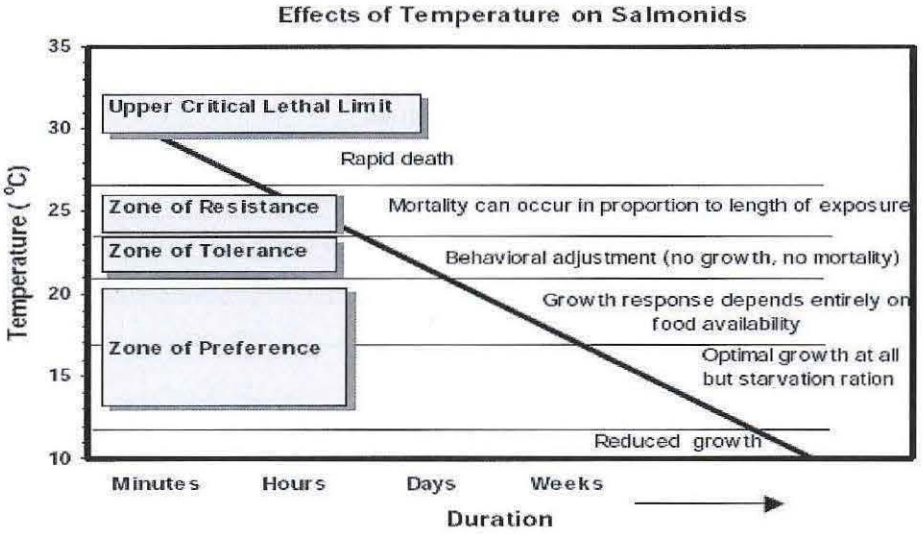


Figure 4-1. General environmental effects of temperature on salmonids in relation to duration and magnitude of temperature (from Sullivan et al. 2000, page 2-2).

Coho salmon

Bell (1986) gives the preferred range of temperatures for emigrating juvenile coho salmon as 7.2 to 16.7 °C. The Environmental Protection Agency (EPA 1977) developed the concept of the "Maximum Weekly Average Temperature" (MWAT). A MWAT is the highest temperature that an organism can survive over the long term and maintain a healthy population (the MWAT is based on a 7-day moving average, and is the warmest seven consecutive days recorded annually). The EPA determined that the MWAT for coho salmon was 17.7 °C. Welsh *et al.* (2001) compared the distribution of juvenile coho salmon in 21 tributaries in the Mattole River Basin with the maximum weekly maximum temperature (MWMT), defined as the highest average maximum temperature over a seven day period, and the MWAT. The warmest tributaries supporting coho salmon had a MWMT of 18 °C, and a MWAT of 16.7 °C. All

tributaries that had a MWMT of less than 16.3 °C and a MWAT of less than 14.5 °C supported juvenile coho salmon.

The maximum sustained cruising (swimming) speed of under yearling coho salmon occurred at 20 °C; above this temperature, swimming speed decreased significantly (Griffiths and Alderice (1972) and Brett *et al.* (1958), cited by Bell (1986)). Growth of coho salmon fry was reported as high between 8.9 and 12.8 °C, but decreased (from 55 mg/day to 35 mg/day) when temperature was increased to 18.1°C (Stein *et al.* 1972). Coho salmon growth apparently stops at temperatures above 20 °C (Bell 1973, cited by McMahon 1983). However, in a field study conducted in Washington, no differences in coho salmon growth rates were found between streams where the daily maximum water temperature exceeded 20 °C during July and August and other nearby streams of similar size (Bisson *et al.* 1988). Sullivan *et al.* (2000) concluded that setting an upper threshold for the 7-day maximum temperature at 16.5 °C would minimize growth loss for coho salmon. Thomas *et al.* (1986) examined the effects of fluctuating temperature on mortality, stress and energy reserves of juvenile coho salmon. Coho salmon held in a fluctuating environment of 6.5 to 20 °C had higher levels of plasma cortisol (which may indicate that the fish were under stress); however, the fish did not exhibit common signs of stress, such as flashing, gasping at the surface, or disorientation. Thomas *et al.* (1986) also reported that all test fish survived when daily temperature fluctuation ranged from 5.0 to 23 °C.

Holt *et al.* (1975) found that the percentage of coho salmon and steelhead dying after exposure to a bacterial infection increased with temperature from no mortality at a temperature of 9.4 °C to 100 percent mortality at a temperature of 20.6 °C. All control fish survived the maximum temperatures tested (23.3 °C).

Steelhead

The upper lethal water temperature for steelhead has been reported to be 23.8 °C (Bell 1986). Myrick and Cech (2000) reported that various strains of rainbow trout/steelhead can withstand temperatures near 26 °C for short periods of time. In the Eel River, juvenile steelhead were observed feeding in surface waters with ambient temperatures up to 24 °C (Nielsen *et al.* 1994). Optimal water temperatures for rearing steelhead have been reported to be 10 to 12.7 °C (Bell 1984) and 14.2 °C (Bovee 1978). Steelhead streams should have summer water temperatures between 10 and 15 °C, with maximum water temperatures below 20 °C (Barnhart 1986). Myrick and Cech (2000) reported a preferred temperature for wild Feather River steelhead of approximately 17 °C under both fed and food deprived conditions, even though the fish were collected from water with temperatures below 15 °C. Myrick and Cech (2005) tested steelhead growth rates at three temperatures (11, 15 and 19 °C). Food consumption rates were the same at each temperature, however growth rate was higher at 19 °C suggesting improved food conversion efficiency at the higher temperature. Reese and Harvey (2002) found that the growth of and the size of the territory defended by dominant steelhead was reduced in the presence of juvenile pikeminnow at temperatures between 20.0-23 °C, but growth was not reduced when the two species were held in treatment water ranging between 15 and 18 °C. Werner et al. (2005) detected significant increases in the heat shock protein (hsp) 72 in wild steelhead parr collected in the Navarro River Watershed when the short- and long term daily average temperatures were 18 to 19 °C, and daily maximum temperatures were 20 to 22.5 °C. Although this study did not report on the ecological consequences of juvenile steelhead rearing at temperatures above 18 °C (e.g., reduced

growth, survival, etc.), the presence of hsp indicate that the fish were undergoing a response to an outside stressor (temperature in this case), implying a physiological cost to the fish. Nielsen *et al.* (1994) reported an increase in agonistic behavior and a decrease in foraging as stream temperatures increased above 22 °C. Harvey et al. (2002) found steelhead in relatively high densities in some tributaries to the Eel River where MWATs ranged between 20-22 °C. Steelhead were not observed to move into thermally stratified pools at temperatures below 22 °C. Wurtsbaugh and Davis (1977) reported that for fish fed to satiation, an increase in temperature led to an increase in the maximum consumption rates. The high feeding rates decreased the negative effects of increased water temperatures, up to 22.5 °C for rainbow trout. Above 22.5 °C, feeding rates decreased, possibly due to temperature related stress.

Sullivan *et al.* (2000) concluded that setting an upper threshold for the 7-day maximum temperature at 20.9 °C would minimize growth loss for steelhead. Roelofs *et al.* (1993) classified water temperatures in the Eel River as: extremely stressful for steelhead above 26 °C, causing chronic physiological stress that jeopardizes survival at temperatures between 23 and 26 °C, and as having chronic effects at temperatures between 20 and 23 °C. A MWAT has not been calculated for steelhead.

Chinook salmon

The upper critical lethal limit for Chinook salmon has been variously reported to be 26 °C (Hansen 1999, cited in Myrick and Cech 2000), 25 °C (Brett 1952 and Bell 1986), and 23 °C (±1°C) (Baker *et al.* 1995). Chinook salmon can tolerate brief exposure to temperatures of 28.8°C when acclimated to a temperature 19 °C (Myrick and Cech 1999). The upper chronic thermal limit (temperature survived for at least 7 days) is similar to the upper lethal temperatures (24 to 25.1°C) (Myrick and Cech 2000).

The preferred temperature range for Chinook salmon has been reported to range from 12 to 14 °C (Brett 1952) and 13.0 to 14.4 °C (Bell 1986). However, Myrick and Cech (2000) reviewed several studies analyzing the effects of temperature on growth of Chinook salmon, and found that growth was maximized at temperatures ranging between 15.3 and 20.5 °C, when food was not limiting. Brett et al. 1982 reported growth was maximized between 18.9 and 20.5 °C (when fed to satiation), depending on the stock used. Stauffer (1973) (modified by McLean 1979) developed a model for Chinook and coho salmon in a Washington State fish hatchery that predicts growth rate based on ration levels and water temperature. When ration levels were cut to 60 percent of satiation, maximum growth occurred at 14.8 °C, and theoretically, zero growth would occur at 21.4 °C. Rich (1987) reported maximum growth occurred at 15.3 °C, but water quality may have been a factor in the reducing growth in this study. Marine and Cech (2004) reported that Chinook smolts reared at fluctuating temperatures between 17 and 20.0 °C grew at rates similar to Chinook smolts reared at 13 to 16 °C, and that Chinook smolts survived and grew at temperatures up to 24 °C at ration levels found in the wild. However, the rate of growth decreased for fish reared at temperatures above 22 °C (Brett et al. 1982).

Water temperatures above 21.1 °C have been reported to stop downstream migration of Chinook salmon smolts (Department of Water Resources (DWR) 1988 cited by NCRWQCB 2000). However, in the Russian River, Chinook salmon have been captured in downstream migrant traps (presumed migrating) at temperatures in excess of 21.9 °C (Chase et al. 2004). Chinook reared at temperatures greater than 17 °C had impaired hypoosmoregulatory capability (ability to adapt to seawater) compared to fish reared between 13 and 16 °C (Marine and Cech 2004). However, smolts reared at temperatures between 17 and 20 °C did not experience a statistically significant decrease in survival during acute

seawater test compared to fish reared at 13 to 16 °C. Compared to smolts reared at cooler temperatures, smolts reared at warmer temperatures were more vulnerable to predation during test held at cooler temperatures ranging between 15.0 and 17 °C, but were not more vulnerable to predation when the test were held at temperatures ranging from 18 to 21 °C. Marine (1997) demonstrated that Chinook salmon can successfully smolt at temperatures up to 20.0 °C, however, they did exhibit some impaired patterns compared to fish reared at lower temperatures. Clarke and Shelbourn (1985) and Clarke et al. (1981) reported that optimal temperatures for smolting Chinook salmon range between 10.0 and 17.5 °C.

Fall Adult Chinook salmon reportedly migrate at temperatures ranging from 10.6 to 19.4 °C, with an optimal temperature of 12.2 °C (Bell 1991). Upstream migration by adult Chinook salmon in the San Joaquin River was halted when temperatures exceeded 21.1 °C, but resumed when temperatures declined below 17.8 °C (Hallock 1970, cited by Entrix (in DW Kelly and Associates and 1992)). However, Dunham (1968, cited by SWRCB 1988) reported that adult salmon migrated through the Klamath River at water temperatures as high as 24.4 °C. In the Russian River, adult Chinook salmon have been observed migrating past the Inflatable Dam at temperatures up to 21.8 °C, but relatively large numbers of adults are rarely observed at temperatures above 17 °C.

Assessing the potential impacts of temperature on adult salmonids is complicated by the fact that temperatures that have little or no impact on the adults may result in reduced survival of their subsequent embryos. Eggs from salmon held for a prolonged time period at 15.6 to 16.7 °C had a lower survival rate to hatching (70 percent) compared to eggs from salmon held at 12.8 to 15 °C (80 percent survival). Eggs incubated at temperatures above 16.7 °C experienced 100 percent mortality (Hinze 1959, cited by DW Kelly and Associates and 1992). Since spawning success involves impacts to both adults and egg development, upstream migration and spawning are considered to be one life stage, and the temperature criteria will be based on the developing eggs, as opposed to impacts to adults which have a higher temperature tolerance.

Adult Chinook salmon begin to migrate upstream through the Russian River in earnest in October through November [low numbers of Chinook salmon have been counted at the Inflatable Dam in late August (≤ 9 annually) and September (0 to 176 annually)]. Entry into freshwater is based on a number of variables, including time of year, ocean conditions, streamflow, whether the river mouth is opened or closed, and possibly water temperature. Although Chinook salmon have been observed migrating past the Inflatable dam at temperatures ranging to 22.6 °C, approximately 91 percent of the adult Chinook salmon have been observed at the fish counting station after the average daily temperature declined below 17.1 °C (SCWA unpublished data). Annually, between approximately 73 and 97 percent of the fish counted at the Inflatable dam pass after the average daily temperature declines below 15.6 °C.

Using information gathered from the literature water temperature criteria were constructed for coho, Steelhead, and Chinook. These criteria for each species were subdivided by the following life stages; downstream migrants (smolts), upstream migration and spawning (adults), and juvenile rearing (parr) (Tables 4-2 through 4-4).

Table 4-2. Water Temperature Criteria and Life History Phase used to Assess Potential Impacts Related to coho salmon in the Russian River (upstream and downstream migrations).

Downstream migrants (March through June)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	< 15
Zone of Preference – Suitable	15 – 17.8
Zone of Tolerance	17.8– 20
Zone of Resistance	20 – 23.8
Upper Critical Lethal Limit	> 23.9
Upstream migration and spawning (November through January)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	<12.2
Zone of Preference – Suitable	12.2 – 15.6
Zone of Tolerance	15.6 – 16.9
Zone of Resistance	16.9 – 21.1
Upper Critical Lethal Limit	> 23.9
Juvenile Rearing (June through September)	
Zone	**Temperature (˚C) criteria**
Zone of Preference –Optimal	< 15
Zone of Preference – Suitable	15– 17.8
Zone of Tolerance	17.8 – 20
Zone of Resistance	20 – 23.8
Upper Critical Lethal Limit	> 23.9

Table 4-3. Water Temperature Criteria and Life History Phase used to Assess Potential Impacts Related to steelhead in the Russian River.

Downstream migrants (March through May)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	< 17.5
Zone of Preference – Suitable	17.5 – 18.9
Zone of Tolerance	18.9 – 21.1
Zone of Resistance	21.1 – 23.8
Upper Critical Lethal Limit	> 23.9
Upstream migration and spawning (December through March)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	<12.2
Zone of Preference – Suitable	12.2 – 15.5
Zone of Tolerance	15.5 – 16.9
Zone of Resistance	16.9 – 21.1
Upper Critical Lethal Limit (adults)	> 23.9
Juvenile Rearing (June through September)	
Zone	**Temperature (˚C) criteria**
Zone of Preference –Optimal	< 15.5
Zone of Preference – Suitable	15.5 – 20
Zone of Tolerance	20 – 21.9
Zone of Resistance	21.9 – 23.8
Upper Critical Lethal Limit	> 23.9

Table 4-4. Water Temperature Criteria and Life History Phase used to Assess Potential Impacts Related to Chinook salmon in the Russian River.

Downstream migrants (March through June)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	< 17.5
Zone of Preference – Suitable	17.5 – 18.9
Zone of Tolerance	18.9 – 21.1
Zone of Resistance	21.1 – 23.8
Upper Critical Lethal Limit	> 23.9
Upstream migration and spawning (October through December)	
Zone	**Temperature (˚C) criteria**
Zone of Preference – Optimal	<12.2
Zone of Preference – Suitable	12.2 – 15.5
Zone of Tolerance	15.5 – 16.9
Zone of Resistance	16.9 – 21.1
Upper Critical Lethal Limit (adults)	> 23.9

Dissolved Oxygen

Defining DO criteria for fish is complicated by the interaction between temperature and DO. Temperature strongly influences an organism's metabolism which in turn increases or decreases the DO demand placed on that organism. For example, Raleigh et al. (1986) summarized several studies on DO-requirements for salmonids and concluded that DO levels of 8 mg/l were optimal at temperatures between 7 and 10 ˚C, but at temperatures above 10 ˚C optimal DO levels were >12.0 mg/l. Bjornn and Reiser (1991) summarized several studies and concluded that food conversion was impaired at DO concentrations less than 5.0 mg/L and that salmonids were not impaired when DO concentrations exceeded 8 mg/L. Depending on temperature, the lower lethal limit for DO is around 3.0 mg/l (Raleigh et al. 1984).

Table 4-5. Dissolved oxygen criteria used to assess conditions for salmonids in Dry Creek and the Russian River.

DO range (mg/L)	Descriptive rating
≤3.0	Lower Lethal Limit
3.1 to <5.0	Zone Resistance
5.0 to < 8.0	Zone Tolerance
8.0 to <12.0	Zone of Preference – Suitable
≥12.0	Zone of Preference – Optimal

4.2.4 Results

Flow

Flow in the Russian River was lower than in recent years. The spring of 2013 had the lowest rainfall on record. Storage in Lake Mendocino was extremely low entering the summer. The Water Agency petitioned the SWRCB to make a temporary change to minimum instream flows in the Russian River. These changes were implemented in early May. As a result flows in the upper Russian River (between Coyote Valley Dam and the confluence with Dry Creek) were lower than average and at times the lowest since 1960 (Figure 4-2).

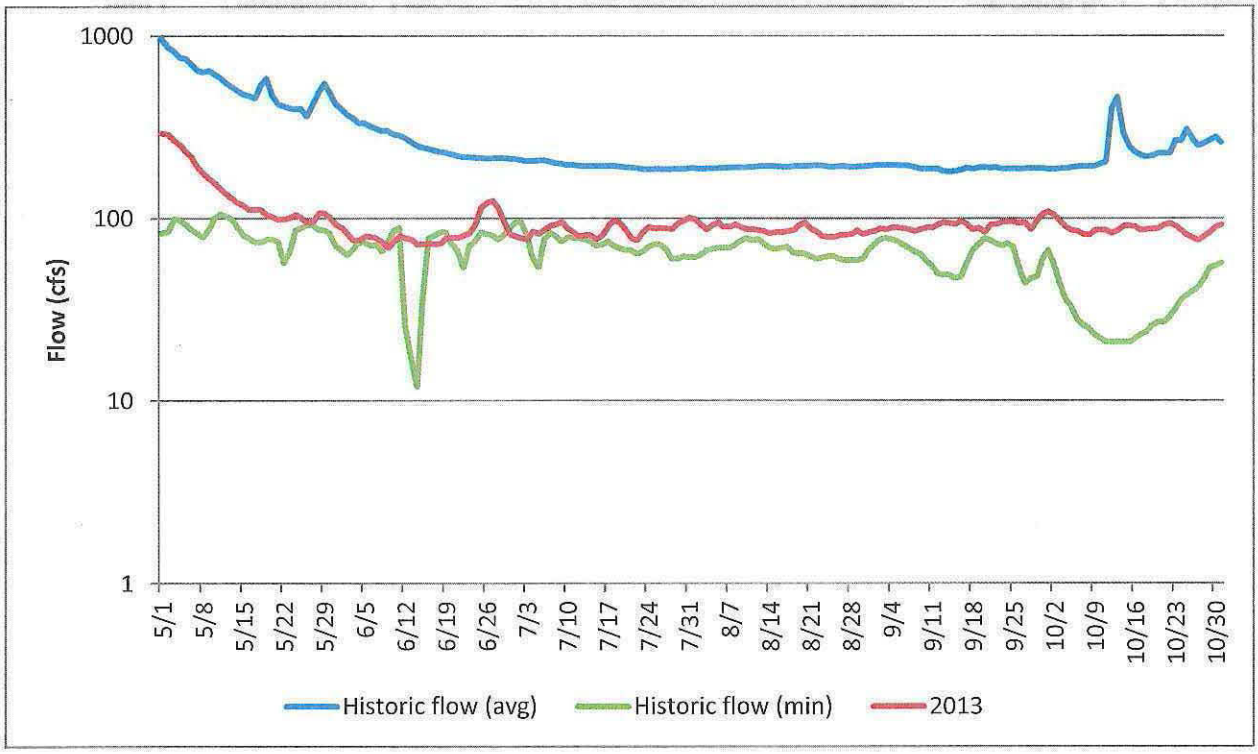


Figure 4-2. The 2013 Healdsburg average daily flow shown with the historic average flow at Healdsburg and the lowest flows recorded at Healdsburg (1960-2012)

Temperature

While the change in minimum instream flows under the Order is attempting to improve summer rearing steelhead habitat in the upper Russian River by lowering flows and thereby velocities with which fish must cope, it has an added benefit for summer rearing steelhead and adult Chinook of also reducing water temperatures in the upper Russian River during normal water years. Water releases from Lake Mendocino are made from near the bottom of the lake. In the summer the lake stratifies and water temperatures are much cooler at the bottom of the lake than at the surface. Water released from this cold water pool improves summer rearing steelhead habitat in the upper Russian River. However this cold water pool is generally not large enough to persist throughout the entire summer when making higher reservoir releases for D1610 flows. During consecutive dry years storage in Lake Mendocino can be so low that the cold water pool may be too small to persist throughout the summer even when making reservoir releases that are lower than D1610, as was the case in 2013.

When compared to water temperatures in the fall following implementation of minimum instream flows recommended by the Biological Opinion, 2013 water temperatures were warmer. This was largely due to 2013 drought conditions which led to low storage in Lake Mendocino and depletion of the cold water pool (the potion of cold water at the bottom of the lake below the thermocline). In 2013 vertical profiles in Lake Mendocino showed that the cold water pool was becoming depleted in August and became fully depleted by September 23 (Figure 4-3). Water temperatures at Hopland in fall 2013 were similar to water temperatures in years that had flows set by D1610 (Figure 4-4).

In other years the depletion of the cold water pool occurred during D1610 releases, but was preserved under temporary changes in minimum instream flows are described in the Biological Opinion. For

example in August 2012, a year following implementation of TUC minimum instream flow changes described in the Biological Opinion, the daily maximum water temperatures in the upper Russian River was significantly lower than in recent normal water years following D1610 minimum instream flows (2002, 2003, 2005, 2006). On September 21, 2012, this difference became the most apparent as the maximum daily water temperature at Hopland was 4.5 °C cooler than the historic water temperature for normal water years (the average of the 2002, 2003, 2005, 2006 maximum daily water temperatures for that day, Figure 4-5).

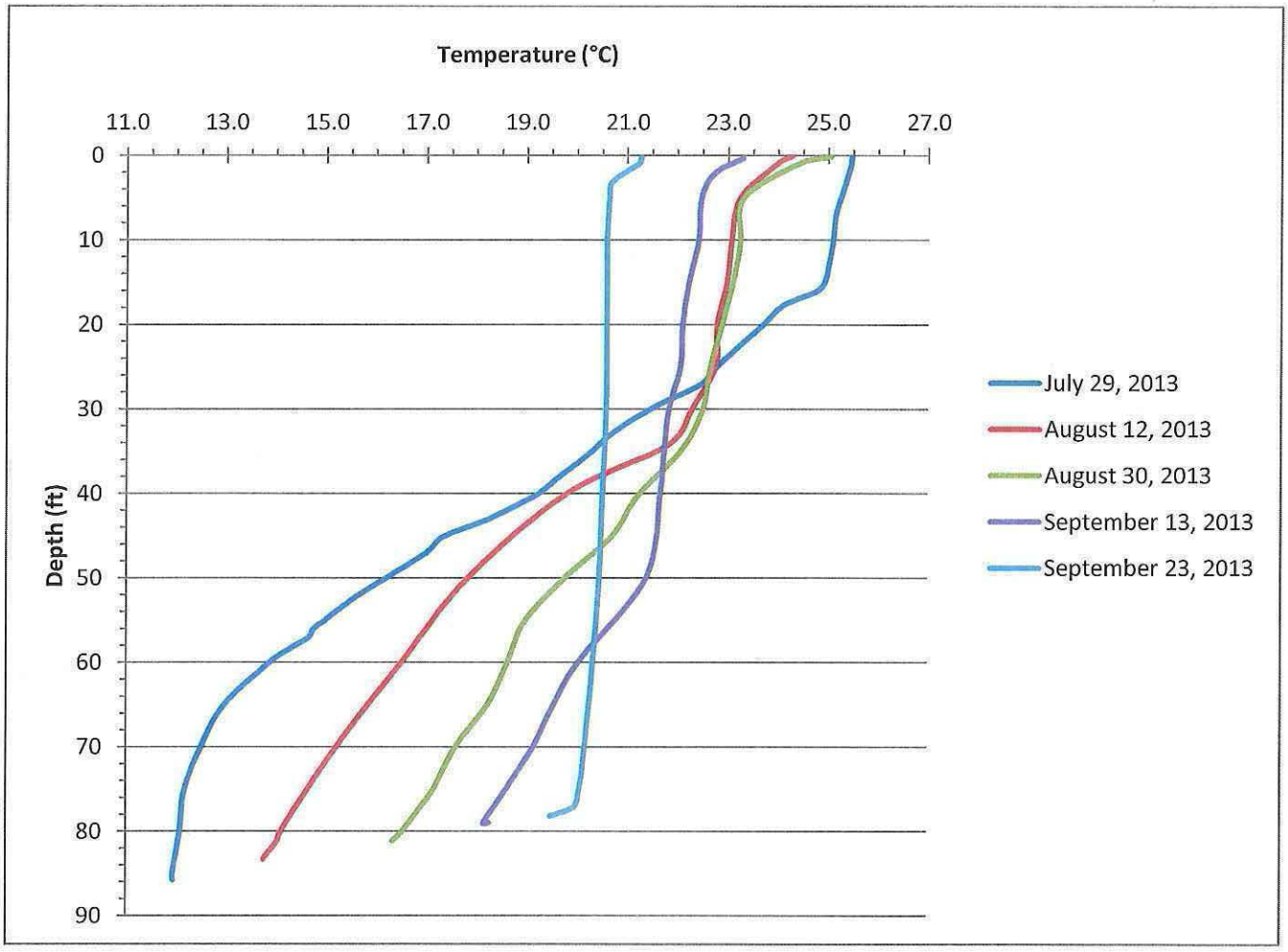


Figure 4-3. Vertical temperature profiles taken in Lake Mendocino in 2013.

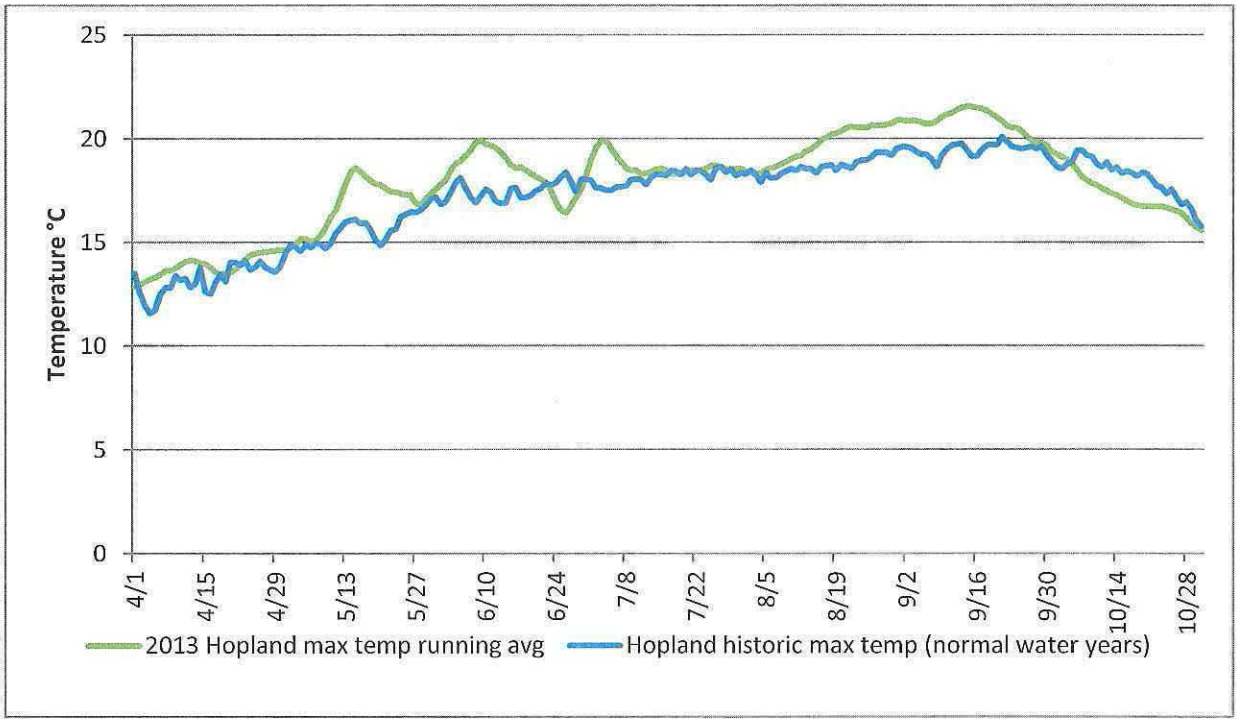


Figure 4-4. The 7 day running average of the daily maximum water temperature in 2013 at Hopland and the historic daily maximum water temperature (the average of the daily maximum water temperature from Decision 1610 normal water years (2002, 2003, 2005, 2006).

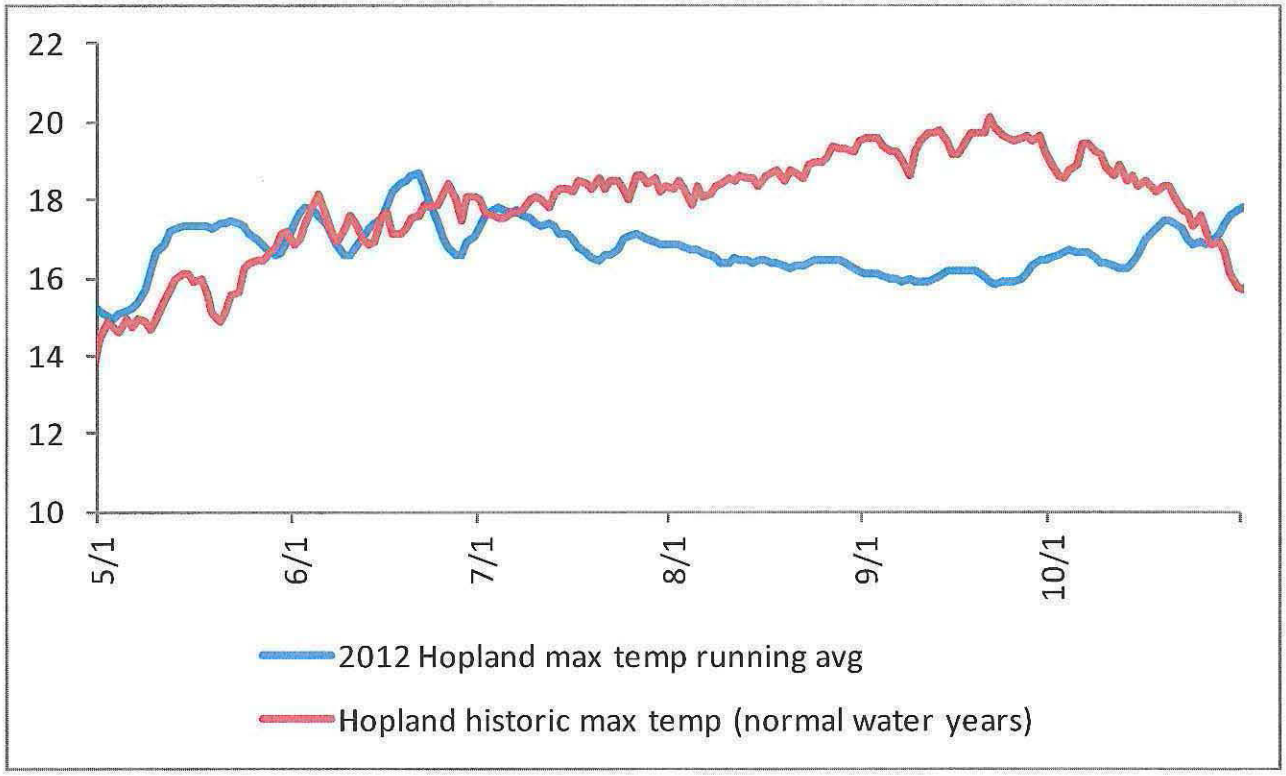


Figure 4-5. The 7-day running average of the daily maximum water temperature in 2013 at Hopland and the historic daily maximum water temperature (the average of the daily maximum water temperature from Decision 1610 normal water years (2002, 2003, 2005, 2006)

The preservation of the cold water pool may also rely on carry-over storage from the previous year as well as the degree of lake mixing which is likely wind driven. Flow is not the only factor in determining water temperature. Ambient air temperature is likely an important factor in determining mainstem Russian River water temperatures. Preserving the cold water pool into the fall likely provides adult Chinook, as well as summer rearing steelhead, with cooler temperatures in the upper reaches of the mainstem Russian River. However in some drought years (e.g., 2013) it may not be operationally possible to preserve the coldwater pool.

In the lower river, 2013 water temperatures were generally similar to normal water years and showed less divergence from normal water years than did Hopland (Figure 4-6). It is important to note that while flow was lower in 2013 than in normal water years, water temperatures were similar between these two groups.

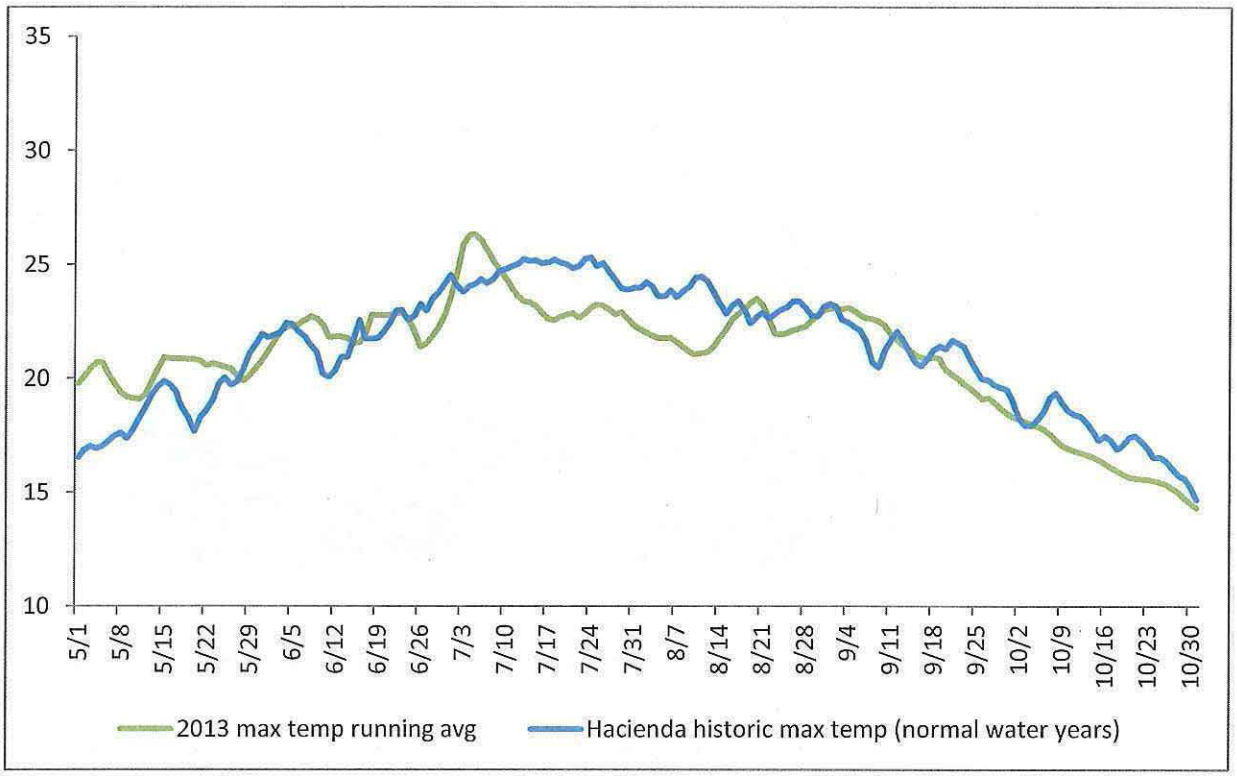


Figure 4-6. The 7-day running average of the daily maximum water temperature at Hacienda during the period of the Order in 2013 and historic daily maximum water temperature (the average of the daily maximum water temperature from Decision 1610 normal water years (2002, 2003, 2005, 2006).

Coho

Fish observed on the underwater video camera system at Mirabel that have coho characteristics are sent to a panel of biologists for a verification of species identification. At the time of this writing the panel has not reviewed all the video that was sent to them. Therefore the adult coho numbers reported here are preliminary and subject to change. During the Order two coho adults were observed on the underwater video camera system at Mirabel. Water temperatures at Hacienda ranged from 13.7 to 20.9 °C. At this time water temperatures at Hacienda for coho adults were in the zones of preference and

resistance (Figure 4-7). However it is important to note that coho adults voluntarily leave the ocean and enter the Russian River, and that the bulk of the adult coho migration occurs in the winter when water temperatures are much cooler.

Coho smolts were migrating through the mainstem Russian River during the beginning portion of the Order. Based on downstream migrant trapping at Mirabel in 2013, coho smolts were present in the mainstem Russian River until at least June 29, 2013. At Mirabel, 283 coho smolts, representing 26 % of the season total catch were captured after the Order went into effect on May 1, 2013. During the time that coho smolts were captured at Mirabel water temperatures at Hacienda ranged from 16.3°C to 26.3 °C, which encompass the suitable temperature zone, the zones of tolerance, and resistance and upper lethal limit (Figure 4-8).

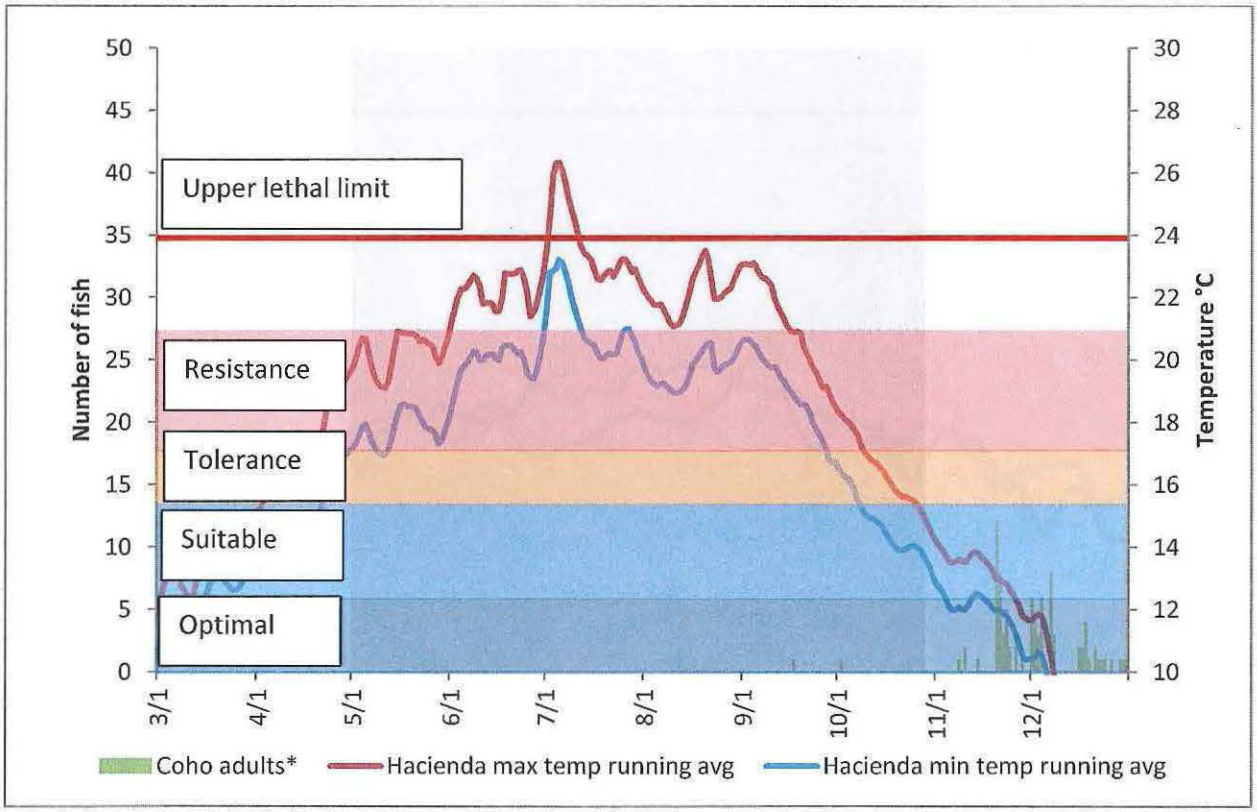


Figure 4-7. The number of coho adults observed on the Mirabel camera system (*preliminary data and subject to change) shown with the daily maximum and minimum water temperature 7-day running averages collected at Hacienda. Also shown are the temperature zones of optimal (<12.2 °C), suitable (12.2-15.6 °C), tolerance (15.6-16.9 °C), resistance (16.9-21.1 °C), and the upper critical lethal limit (>23.9 °C) for coho adults. The period of the Order is shaded in grey.

Steelhead

Few adult steelhead were found in the Russian River during the time period that the Order was in effect. The first adult steelhead of the 2013 video monitoring season was observed on September 15. A total of 5 adult steelhead were estimated to have passed the Inflatable dam during the 2013 Order (SCWA unpublished data). Water temperatures at Hacienda, ranged from 12.2 °C to 21.2 °C during the period of the Order when adult steelhead were observed at the inflatable dam. During this time, water temperatures at Hacienda were in the zones of suitability, tolerance, and resistance for adult steelhead (Figure 4-9). However it is important to note that steelhead adults voluntarily leave the ocean and enter

the Russian River, and that the bulk of the adult steelhead migration occurs from December through April when water temperatures are much cooler (Chase 2005, Jackson 2007, SCWA unpublished data).

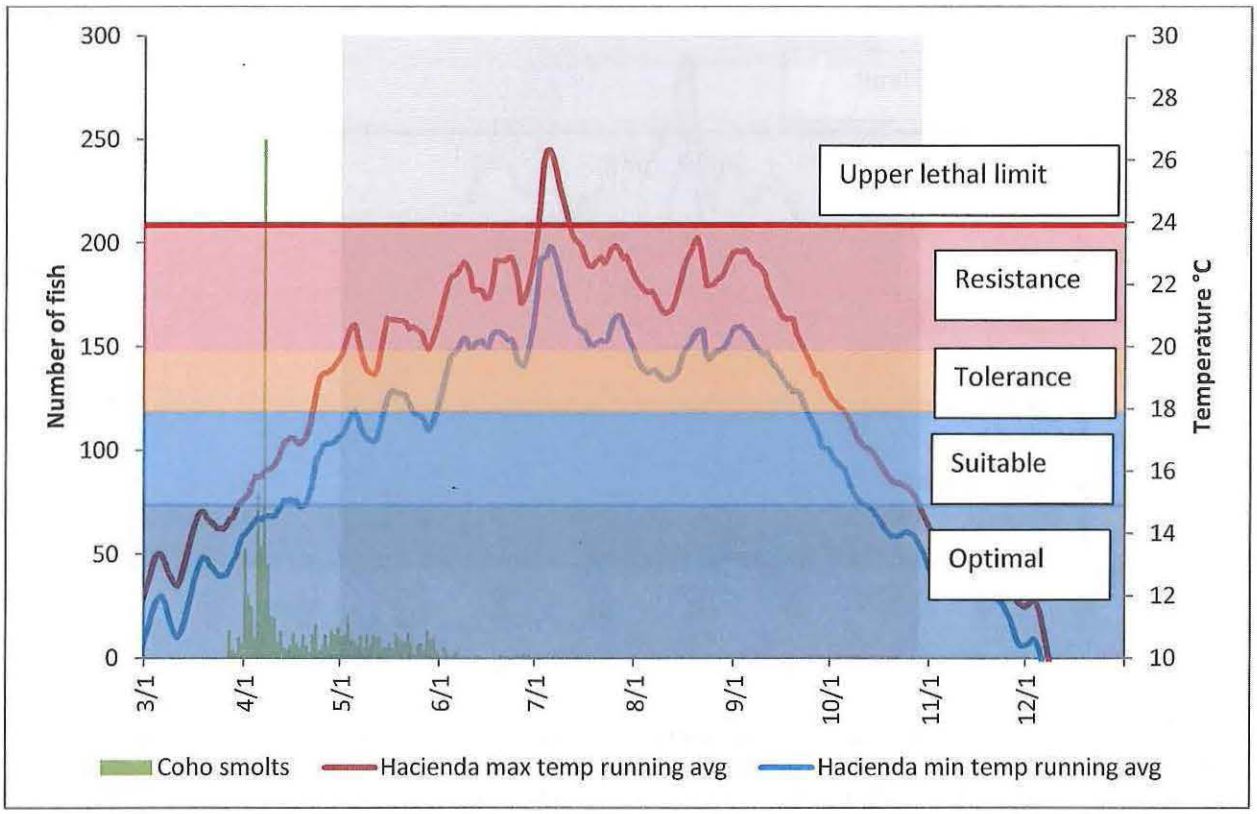


Figure 4-8. The number of coho smolts captured at Mirabel shown with the maximum and minimum daily water temperature 7-day running averages collected at Hacienda. Also shown are the temperature zones of optimal (<15 °C), suitable (15-17.8 °C), tolerance 17.8-20 °C), resistance (20-23.8 °C), and the upper critical lethal limit (>23.9 °C) for coho smolts. The period of the Order is shaded in grey.

In reaches that are considered steelhead rearing habitat, Ukiah to Cloverdale, water temperatures were often favorable for juvenile steelhead. Water temperatures downstream of Cloverdale are considered too high to support summer rearing steelhead (NMFS 2008 and Figure 4-10). During the time period that the Order was in effect, daily water temperatures measured at the USGS gauge (11462500) near Hopland ranged from 12.1 °C to 21.8 °C and were generally in the optimal and suitable temperature zones (Figure 4-11). At Cloverdale daily water temperatures ranged from 13.3 °C to 25.0 °C (during the period that temperature was collected; May 1 through October 20, 2013) and minimum temperatures were in the zones of optimum or suitability. While maximum water temperatures were generally in the zones of tolerance and resistance, it is important to note that the Cloverdale gage is at the downstream limit of the reaches considered to be steelhead habitat and that water temperatures are gradually cooler as one moves upstream from Cloverdale towards Hopland. Water temperatures remained below the upper critical lethal limit at Hopland (Figure 4-11). The maximum daily water temperature was above the upper critical limit at Cloverdale on July 4 and 5, 2013 (Figure 4-12).

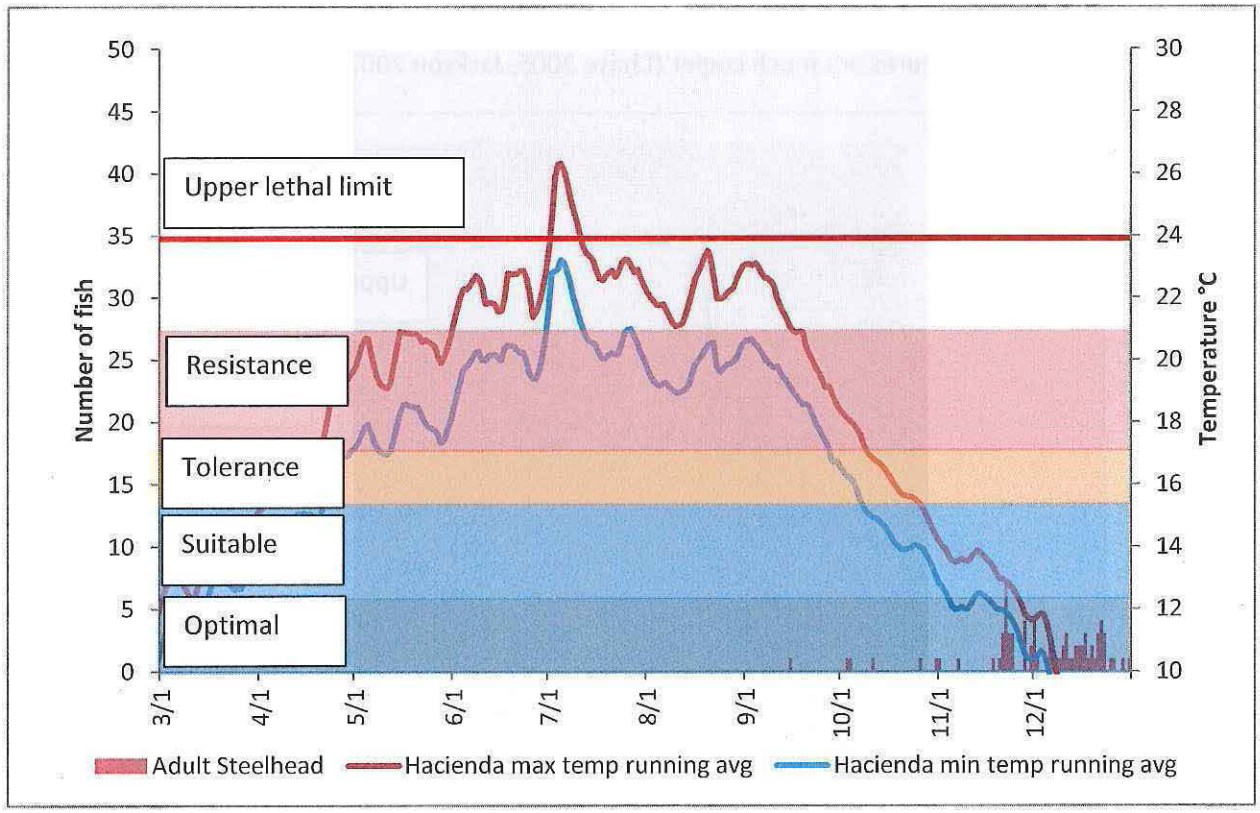


Figure 4-9. The number of steelhead adults observed on the Mirabel camera system shown with the daily maximum and minimum water temperature 7-day running averages collected at Hacienda. Also shown are the temperature zones of optimal (<12.2 °C), suitable (12.2-15.5 °C), tolerance (15.5-16.9 °C), resistance (16.9-21.1 °C), and the upper critical lethal limit (>23.9 °C) for steelhead adults . The period of the Order is shaded in grey.

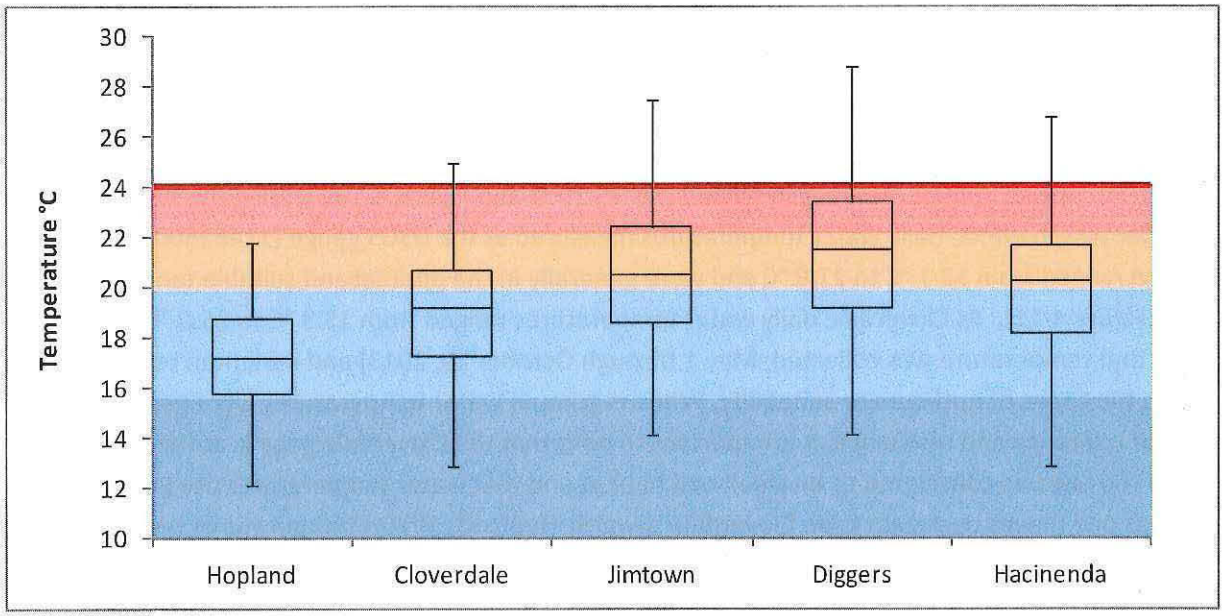


Figure 4-10. The minimum, 25 percentile, median, 75 percentile, and maximum water temperatures at Hopland, Cloverdale, Jimtown, Diggers Bend, and Hacienda for May 1 through October 28, 2013. Also shown are the zones of optimum (dark blue), suitability (light blue), tolerance (orange), and the upper lethal limit (red line) for summer rearing steelhead.

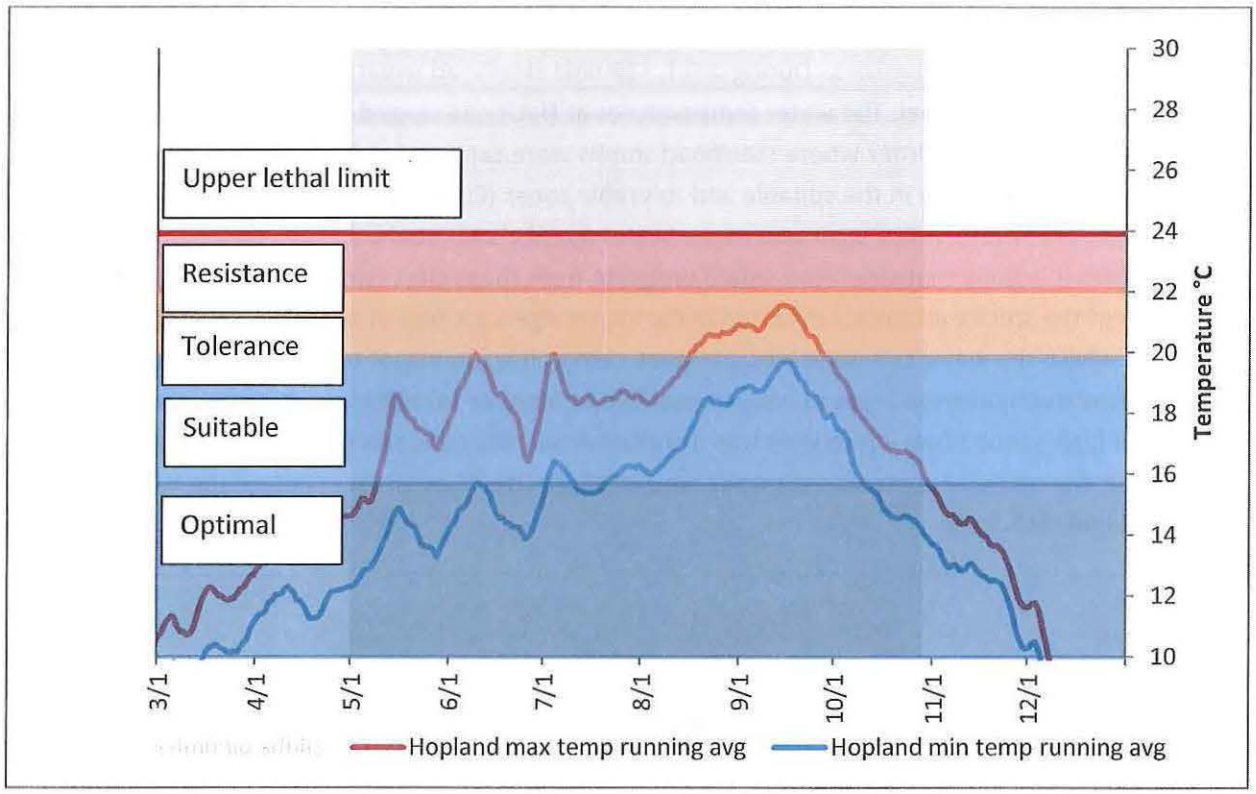


Figure 4-11. The maximum daily water temperature 7-day running average collected at Hopland shown with the temperature zones of optimal (>15.5 °C), suitable (15.5-20 °C), tolerance (20-21.1 °C), resistance (21.9-23.8 °C), and the upper critical lethal limit (>23.9 °C) for steelhead parr. The period of the Order is shaded in grey.

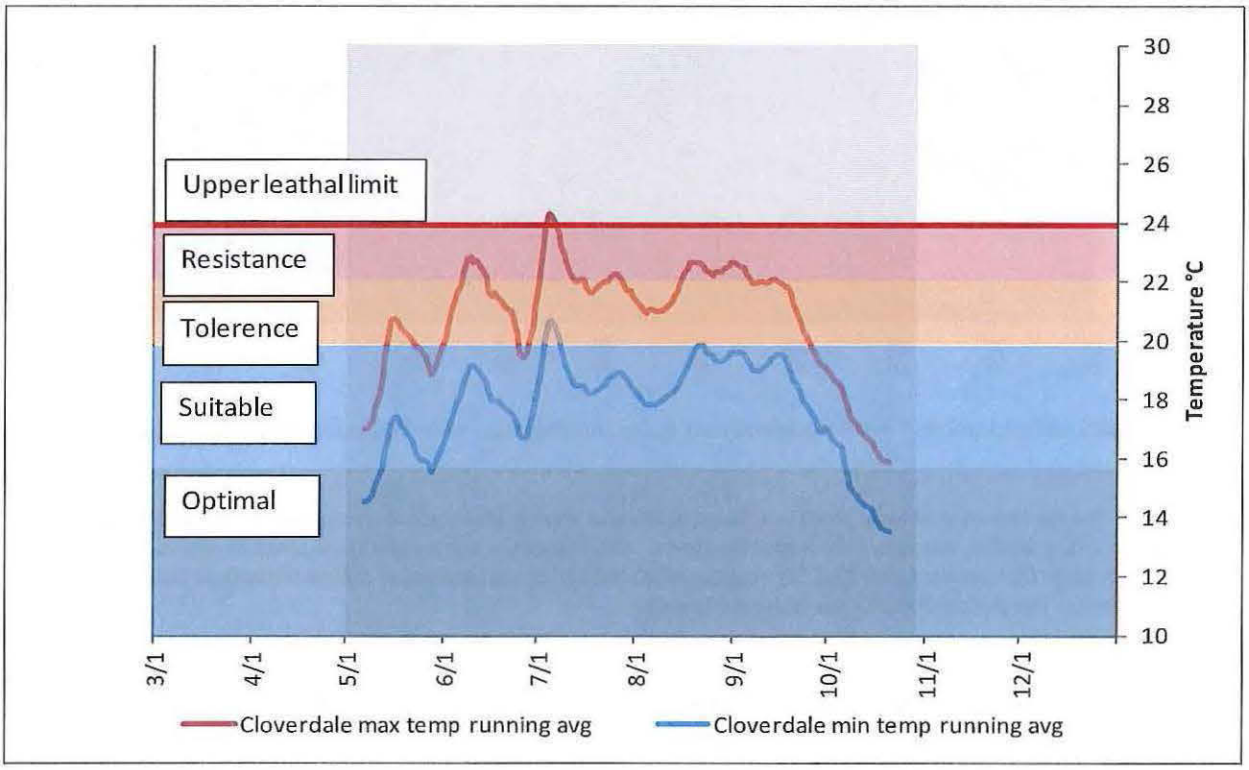


Figure 4-12. The maximum daily water temperature 7-day running average collected at Cloverdale shown with the temperature zones of optimal (>15.5 °C), suitable (15.5-20 °C), tolerance (20-21.1 °C), resistance (21.9-23.8 °C), and the upper critical lethal limit (>23.9 °C) for steelhead parr. The period of the Order is shaded in grey.

Steelhead smolts were present in the Russian River during the time period that the Order was in effect, although probably in low numbers. During 2013, 118 wild steelhead smolts were captured between May 1 and July 30 at Mirabel. The water temperatures at Hacienda ranged from 16.3 °C to 26.8 °C. During the portion of the Order where steelhead smolts were captured at Mirabel water temperatures at Hacienda were generally in the suitable and tolerable zones (Figure 4-13). Hopland, Cloverdale, and Diggers Bend are several miles upstream of the Water Agency's Mirabel trap site. Based on water temperatures it is likely that steelhead would emigrate from these sites earlier in the year. It is likely that many of the steelhead smolts detected in the Water Agency's trap at Mirabel had emigrated from Dry Creek where the water temperatures are much cooler. It is important to note that the Water Agency installs downstream migrant traps as early as possible to monitor salmonid smolt outmigration, however because of high spring flows which limit trap installation and the early run timing of steelhead smolts it is likely that the majority of steelhead smolts emigrate from the Russian River before the Water Agency can install their fish traps.

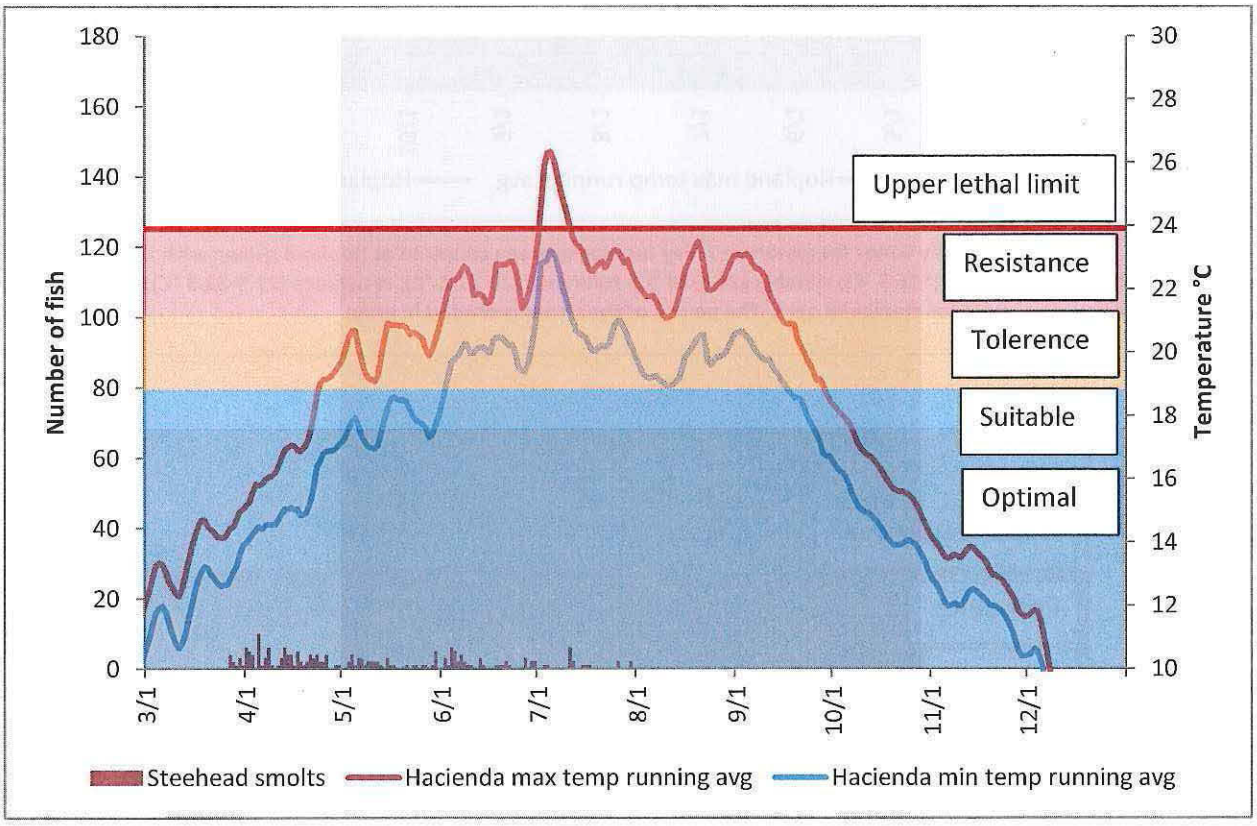


Figure 4-13. The number of steelhead smolts captured at Mirabel shown with the maximum and minimum daily water temperature 7-day running averages collected at Hacienda. Also shown are the temperature zones of optimal (<17 °C), suitable (17.5-18.9 °C), tolerance 18.9-21.1 °C), resistance (21.1-23.8 °C), and the upper critical lethal limit (>23.9 °C) for steelhead smolts. The period of the Order is shaded in grey.

Chinook

Chinook adults were present in the Russian River during the latter portion of the time span regulated by the Order. The first Chinook adult of 2013 was observed on September 2. By October 28, a total of 93 Chinook were estimated to have passed the dam, or 3 % of the Chinook adults detected at the inflatable dam. During this time period daily water temperatures at Hacienda were generally in the zones of tolerance and resistance for the portion of the Chinook run that took place during the Order (Figure 4-

14). Dry Creek is an important spawning area and many Chinook salmon migrating upstream during this time period may have been destined for by Dry Creek and the colder water the creek offers.

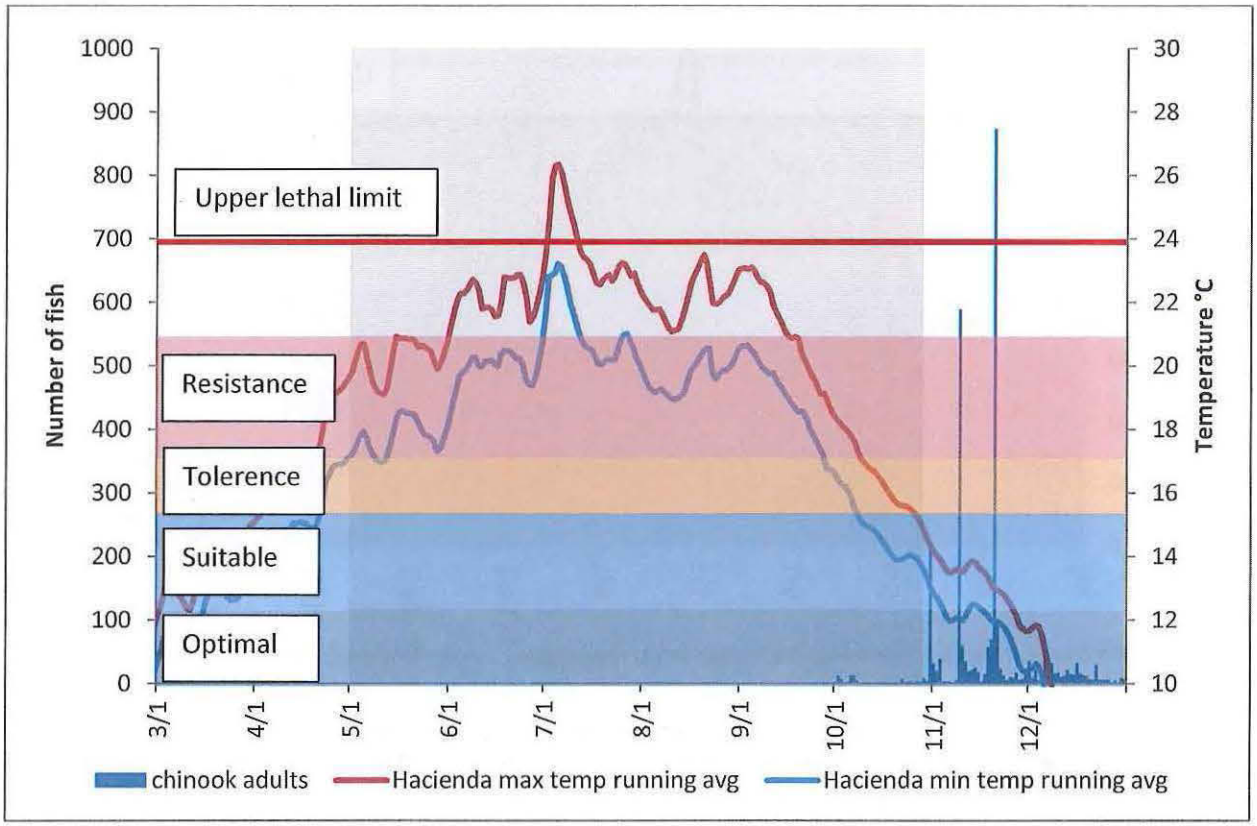


Figure 4-14. The number of Chinook adults detected at Mirabel shown with the maximum daily water temperature 7-day running average collected at Hacienda. Also shown are the temperature zones of optimal (<12.2 °C), suitable (12.2-15.5 °C), tolerance (15. 5-16.9 °C), resistance (16.9-21.1 °C), and the upper critical lethal limit (>23.9) for Chinook adults. The period of the Order is shaded in grey.

Between May 1, 2013 and when the traps were removed on July 31, 2013, a total of 5,084 Chinook smolts were captured at Mirabel. During the period of the Order water temperatures at Hacienda were in the zones of optimal, suitable, tolerance, and resistance temperature conditions, with the tolerance, resistance and the upper lethal limit temperature conditions occurring during the tail of the Chinook smolt run (Figure 4-15). While water temperatures entered the zones of tolerance, resistance and the upper lethal limit Russian River Chinook adapted under historic conditions that were likely naturally warm. Smolts from the Russian River Chinook population may be able to cope with warmer water than the populations of Chinook used in the literature to construct these temperature zones.

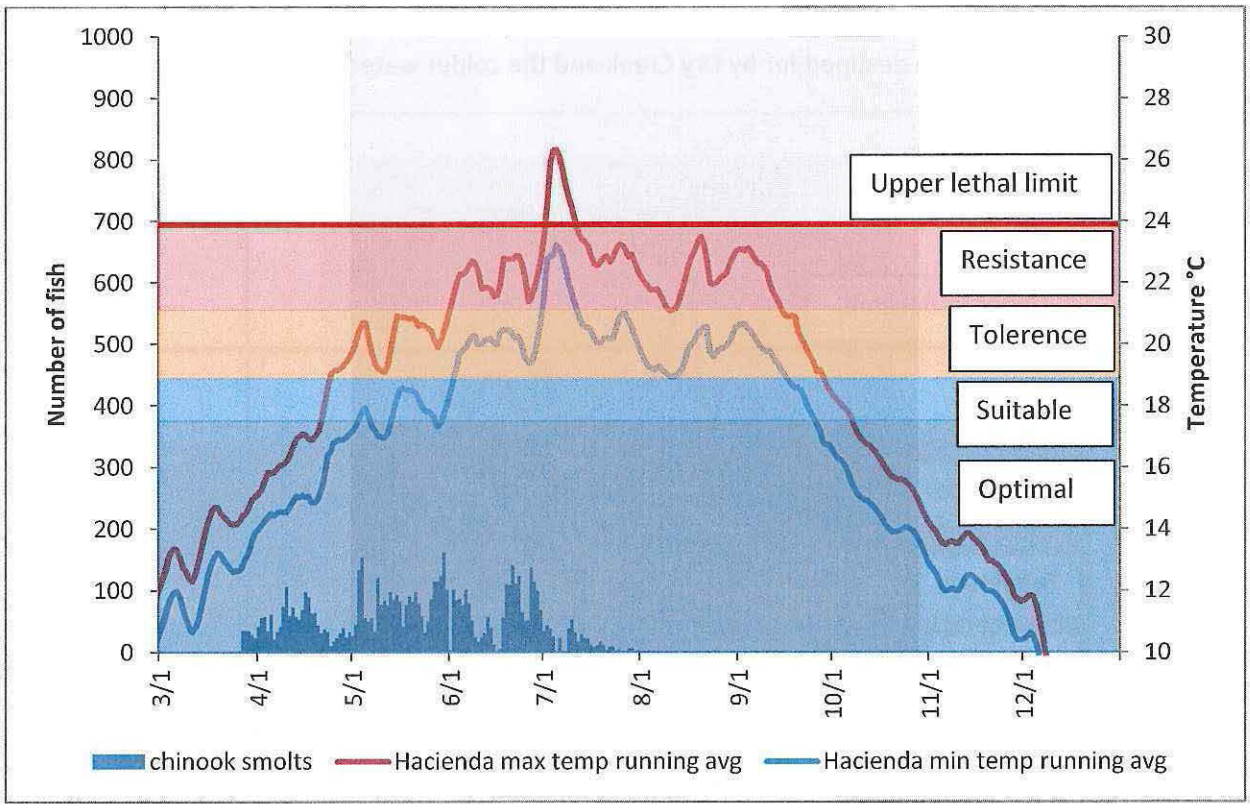


Figure 4-15. The number of Chinook smolts detected at Mirabel shown with the maximum daily water temperature 7-day running average collected at Hacienda. Also shown are the zones of optimal (<17 °C), suitable (17.5-18.9 °C), tolerance 18.9-21.1 °C), resistance (21.1-23.8 °C), and the upper critical lethal limit (>23.9 °C) for Chinook smolts. The period of the Order is shaded in grey.

Dissolved Oxygen

The data for the DO section of this report has been summarized for the time period when the Order overlaps the presence of each salmonid life stage found in the upper mainstem of the Russian River. Unlike temperature, dissolved oxygen requirements are fairly similar between species.

Adult Salmonids

Adult steelhead and Chinook were present in the Russian River during a portion of the Order. The first adult salmonid observed in 2013 at the Inflatable dam was a Chinook on September 2. A total of 93 adult Chinook were observed passing the Inflatable dam before October 28, 2013. The first steelhead observed on the camera system was on September 15 and by October 28, 2013, a total of 5 steelhead were counted as they passed the Inflatable dam (SCWA unpublished data). The first adult coho was observed on September 17, 2013. During the Order two adult coho were observed on the Mirabel camera system. From September 2 to October 28, 2013, the lowest minimum DO readings at Hacienda was 7.7 mg/L. Both daily minimum and maximum levels of DO were typically within the suitable zone for adult salmonids at Hacienda during the time that adult salmonids were observed (Figure 4-16).

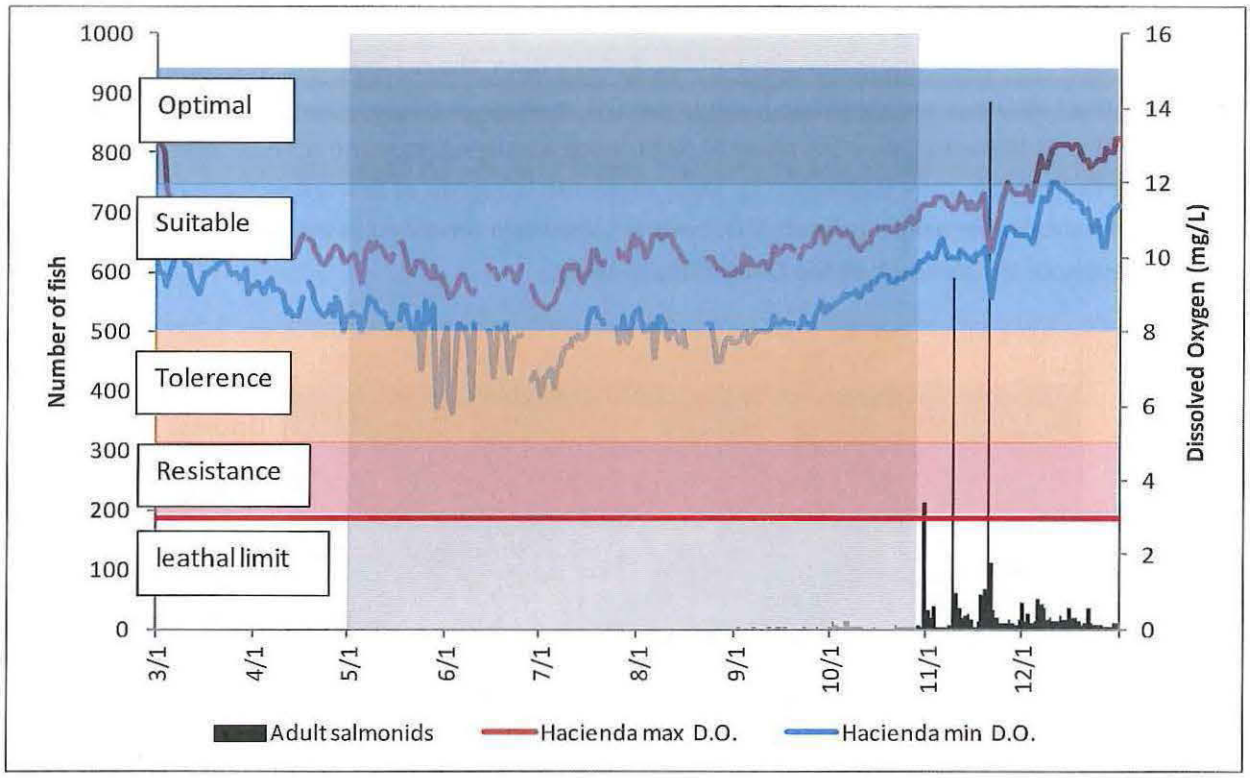


Figure 4-16. The number of adult salmonids observed at Mirabel shown with the daily minimum and daily maximum levels of DO at Hacienda. Also show are the DO zones of optimal (≥ 12 mg/L), suitable (8 to <12 mg/l), tolerance (5 to <8 mg/L), resistance (3.1 to <5 mg/L), and the lower lethal limit (≤3 mg/L) of DO for adult salmonids.

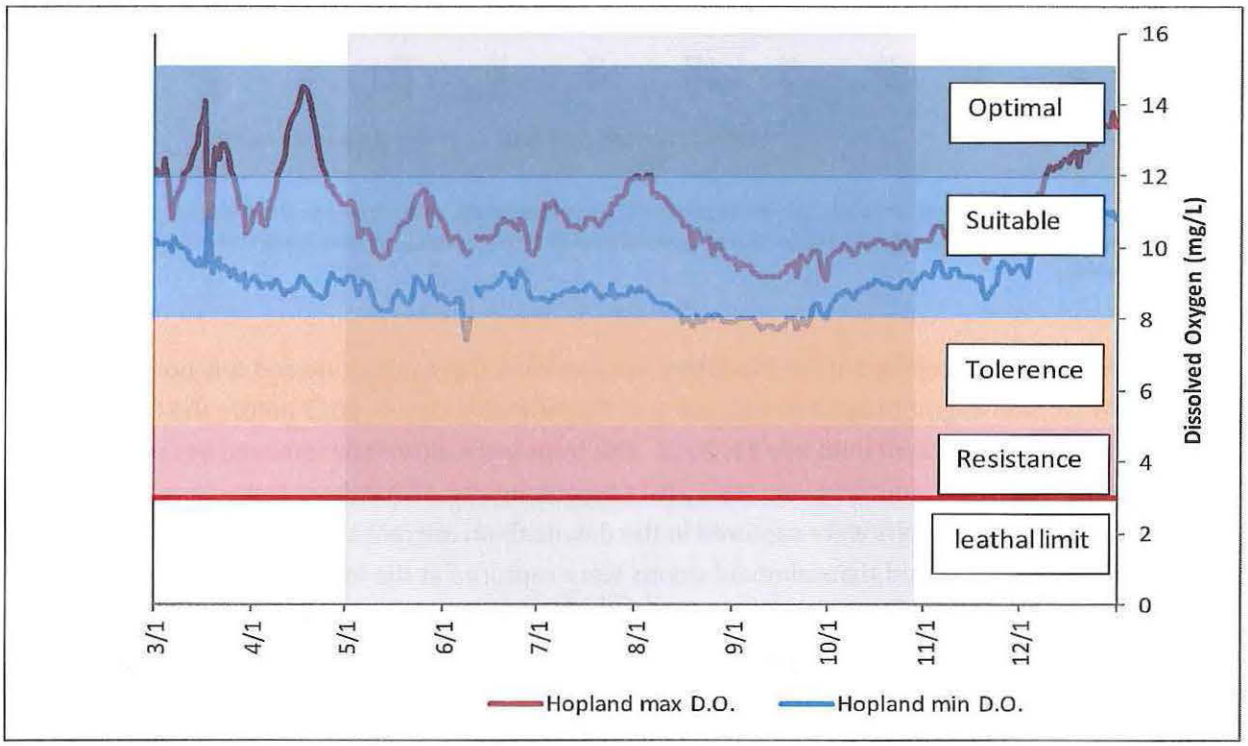


Figure 4-17. The daily minimum and daily maximum levels of DO at Hopland. Also show are the DO zones of optimal (≥ 12 mg/L), suitable (8 to <12 mg/l), tolerance (5 to <8 mg/L), resistance (3.1 to <5 mg/L), and the lower lethal limit (≤3 mg/L) of DO for salmonids.

Juvenile freshwater rearing

Steelhead parr rear in the upper mainstem of the Russian River above Cloverdale year around (NMFS 2008). During the Order the lowest daily minimum DO readings at Hopland was 7.4 mg/L and 6.6 mg/l in Cloverdale. At Hopland daily minimum DO levels occasionally entered the zone of tolerance, but were typically in the suitable zone (Figure 4-17). Daily minimum DO levels at Cloverdale were typically in the zone of tolerance while daily maximum DO levels at Cloverdale remained in the suitable or optimal zones throughout the duration of the Order (Figure 4-18).

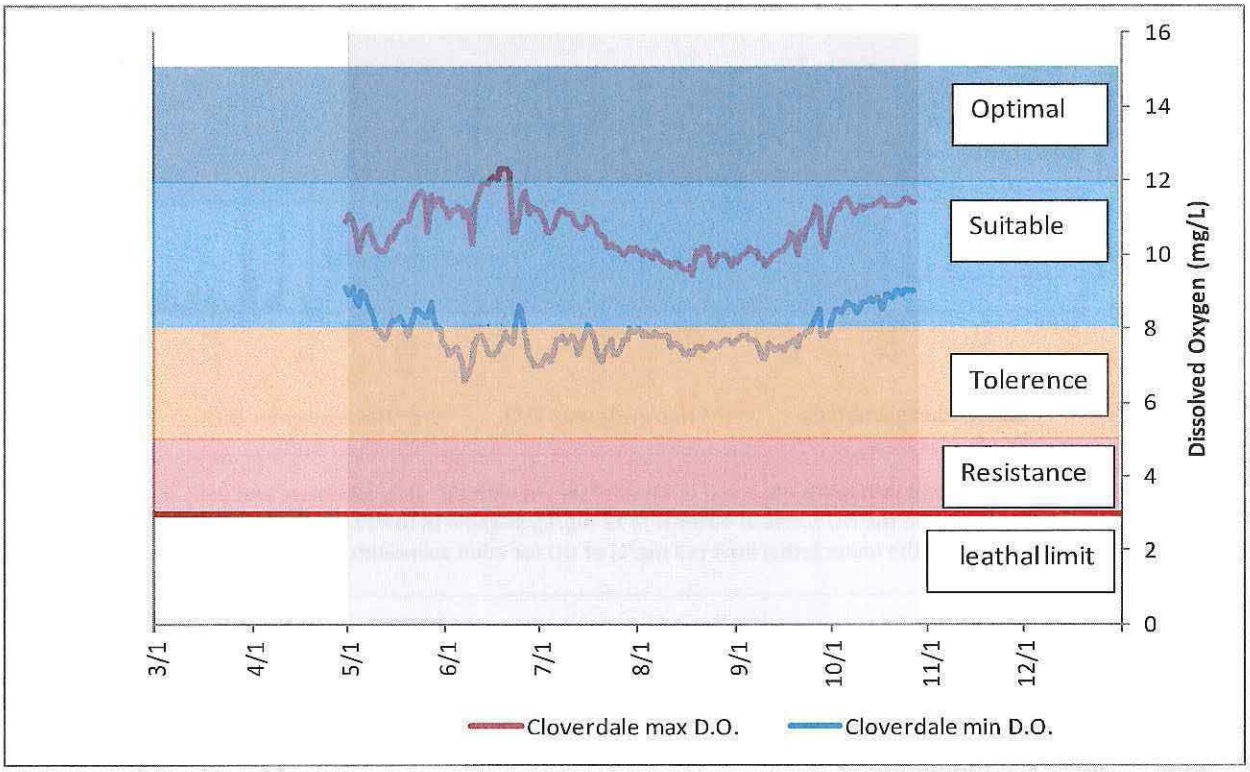


Figure 4-18. The daily minimum and daily maximum levels of DO at Cloverdale. Also show are the DO zones of optimal (≥ 12 mg/L), suitable (8 to <12 mg/l), tolerance (5 to <8 mg/L), resistance (3.1 to <5 mg/L), and the lower lethal limit (≤3 mg/L) of DO for salmonids.

Smolts

Salmonid smolts were observed in the mainstem Russian River during the June and July portion of the Order. Downstream migrant traps were installed at the Inflatable dam in 2013 before the Order went into effect and were operated until July 31, 2013. The traps were ultimately removed because the daily catch of salmonids was diminishing. In total 5,084 Chinook smolts, 40 hatchery and wild coho smolts, and 118 wild steelhead smolts were captured in the downstream migrant traps from May 1 to July 31, 2013. During the time period that salmonid smolts were captured at the inflatable dam daily minimum and maximum DO readings at Hacienda were 5.8 mg/L and 10.6 mg/L, respectively. During this time the daily minimum DO at Hacienda was typically in the suitable DO zone and occasionally in the zone of tolerance while the daily maximum DO remained in the suitable DO zone (Figure 4-19).

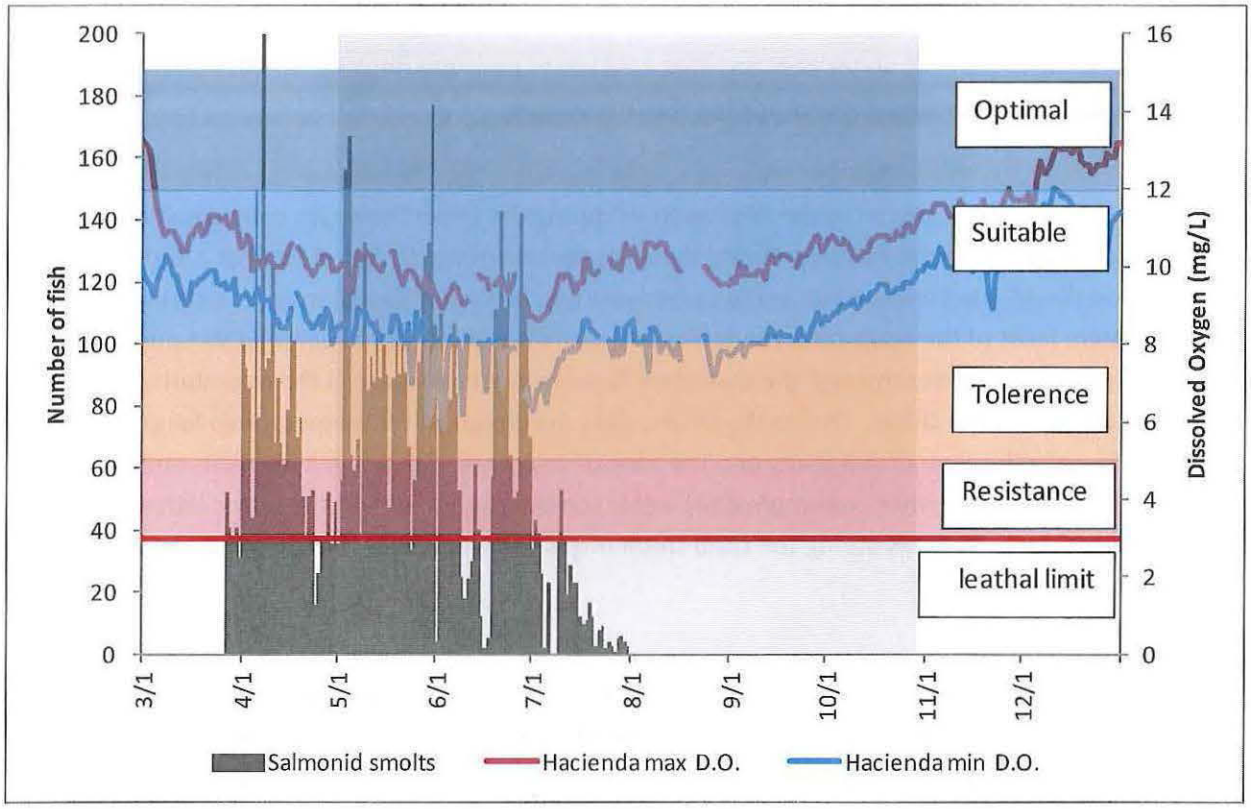


Figure 4-19. The number of salmonid smolts observed at Mirabel shown with the daily minimum and daily maximum levels of DO at Hacienda. Also show are the DO zones of optimal (≥ 12 mg/L), suitable (8 to <12 mg/l), tolerance (5 to <8 mg/L), resistance (3.1 to <5 mg/L), and the lower lethal limit (≤3 mg/L) of DO for salmonids.

4.2.5 Summary

The Water Agency was tasked with evaluating impacts to water quality and the availability of aquatic habitat for salmonids in the Russian River associated with flow reductions outlined in the Order. However due to a relatively small temperature and DO data set coupled with climate variability it is difficult to determine, in most cases, if changes in temperature or DO were due to flow changes related to the Order. Therefore the Water Agency summarized the environmental conditions experienced by salmonids during the Order and compared these conditions to standards outlined in the literature.

Flow

Flows in the Russian River near Healdsburg were lower than usual due to the drought experienced in 2012-13. For much of the duration of the 2013 Order, flows in the upper Russian River were closer to the historic minimum flow than to the historic average (Figure 4-2). This is due to the region experiencing a drought that required adjustments to reservoir releases in order to ensure reservoir reliability.

Temperature

At Hopland water temperatures in the fall of 2013 were warmer than when compared to 2012. Hopland water temperatures in 2012 were cooler than in either 2013 or when compared to historic normal water years where flows were above D1610 minimums (Figure 4-4). This is likely due to preserving the cold water pool (the cooler portion of the lake below the thermocline) in Lake Mendocino during the 2012 flow regime, but depleting the cold water pool during D1610 flows. Because of the low rainfall

experienced in 2013 the storage in Lake Mendocino was lower than in 2012. As a result there was likely a smaller volume in the cold water pool and that cold water pool was depleted in 2013 even with the flow reductions made to preserve storage in Lake Mendocino.

Coho

Few adult coho where observed in the Russian River during the Order; however coho smolts were regularly encountered at the fish trap during the early portion of the Order. A total of 2 adult coho were observed on the Mirabel underwater video camera during the Order. Based on counts at the Mirabel inflatable dam most of the adult coho run took place well after the Order expired (SCWA unpublished data). Coho smolts migrate through the mainstem Russian River and were in the river during the beginning portion of the Order. During the Order, daily maximum water temperatures for coho at Hacienda were in the zone of suitability and the zone of tolerance with a few individuals emigrating during the tail of the run when maximum daily water temperatures reached the upper lethal limit. The elevated water temperatures during the coho smolt migration were likely related to rising air temperatures.

Steelhead

Adult steelhead were observed in the Russian River during the time period that the Order was in effect. However, it is important to note that only a few individual adult steelhead were detected during the Order and that the bulk of the adult steelhead migration occurs later in the year from December through April when water temperatures are cooler. The water temperatures during the portion of the Order that steelhead adults were observed in the Russian River were in the zones of tolerance and resistance and the maximum daily water temperature exceeded the upper lethal limit. While water temperatures at Hacienda were in the zone of tolerance and resistance water temperatures at Hacienda in 2013 were similar to water temperatures during normal water years (2002, 2003, 2005, 2006) when flows were above D1610 minimum flows (Figure 4-6). It is important to note that adult steelhead voluntarily leave the ocean and enter the Russian River.

Steelhead parr rear throughout the summer in a section of the upper Russian River near Ukiah and Hopland. During most of the Order the maximum water temperature at Hopland remained in the suitable temperature zone, but did enter the zone of tolerance during the late summer. This was due to the cold water pool in Lake Mendocino being depleted in 2013. Due to the low amount of rainfall in 2013 the cold water pool was likely much smaller in 2013 than in previous years and became depleted despite the lower reservoir releases. The daily minimum water temperature remained in the optimal and suitable temperature zones for the duration of the Order.

Steelhead smolts were in the mainstem Russian River during the beginning portion of the Order. During the Order daily maximum water temperatures for steelhead smolts at Hacienda were in the optimum zone, the zone of suitability, and the zone of tolerance with only a few individuals emigrating during a period of time where the maximum daily water temperature exceeded the upper lethal limit. The elevated water temperatures during the steelhead smolt migration were likely related to rising air temperatures in June.

Chinook

Chinook adult upstream migration in the Russian River begins during the latter portion of the time span regulated by the Order. At Hacienda, daily maximum water temperatures where generally in the zone of resistance for adult Chinook during the Order. The daily minimum water temperatures were in the zone of tolerance and zone of resistance during the period of the order that adult Chinook were observed at Hacienda. It is important to note that while water temperatures at Hacienda were in the zone of resistance water temperatures at Hacienda in 2013 were similar to water temperatures during normal water years (2002, 2003, 2005, 2006) when flows were above D1610 minimum flows (Figure 4-6). Furthermore Chinook passing Mirabel have the option of taking thermal refuge in Dry Creek which is cooler than the mainstem Russian River.

Chinook smolts were captured in mainstem Russian River traps during portions of the Order when water temperatures were in the zones of suitability, tolerance, and resistance. However, despite lower flow in 2013, the water temperatures were similar to water temperatures during normal water years (2002, 2003, 2005, 2006) when flows were above D1610 minimum flows. The water temperatures observed during the smolt migration were likely a result of the ambient air temperatures.

Dissolved oxygen

Dissolved oxygen levels were generally favorable for salmonids in the Russian River. For the adult life stage, Hacienda daily minimum and maximum DO remained in the zone of suitability for all but the very beginning of the adult run. For the parr life stage at Hopland, both the daily minimum and daily maximum DO remained in the zone of suitability for the duration of the order except for a short period where the daily minimum DO dropped into the zone of tolerance. At Cloverdale the daily minimum DO generally in the zone of tolerance while the daily maximum DO remained in the zone of suitability for the duration of the order. For the smolt life stage the daily minimum DO occasionally dipped into the zone of tolerance, but was generally in the zone of suitability while the daily maximum DO remained in the zone of suitability for the duration of the order. During the order DO levels were typically favorable for all salmonid species and life stages at the locations where water quality data was summarized.

References

Bell, M. C. 1986. Fisheries handbook of engineering requirements and biological criteria. Fisheries Engineering and Research Program, U.S. Army Corps of Engineers Division, Portland, Oregon.

Baker, P. F., T. P. Speed, and F. K. Ligon. 1995. Estimating the influence of temperature on the survival of Chinook salmon smolts (Oncorhynchus tshawytscha) migrating through the Sacramento-San Joaquin River Delta of California. Journal of Fisheries and Aquatic Sciences 52: 855-863.

Barnhart, R. A. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest) -- steelhead. U.S. Fish and Wildlife Service report 82(11.60). U.S. Army Corps of Engineers, TR EL-82-4. 21 pp.

Bell, M. C. 1991. Fisheries handbook of engineering requirements and biological criteria. Fisheries Engineering and Research Program, U.S. Army Corps of Engineers Division, Portland, Oregon.

Bisson, P. A. and J. L. Nielsen, and J. W. Ward. 1988. Summer production of coho salmon stocked in Mount St. Helens streams 3-6 years after the 1980 eruption. Transactions of the American Fisheries Society 117: 322-335.

Bovee, K. D. 1978. Probability of Use Criteria for the Family Salmonidae. U.S. Fish and Wildlife Service.(FWS/OBS-78/07.): 53.

Brett, J. R. 1952. Temperature tolerance in young Pacific salmon, genus Oncorhynchus. Journal of the Fisheries Research Board of Canada 9(6): 265-309.

Brett, J. R., M Hollands, and D. F. Alderdice. 1958. The effects of temperature on the cruising speed of young sockeye and coho salmon. Journal of the Fisheries Research Board of Canada. 15(4):587-605.

Brett, J. R., W. C. Clar, and J. E. Shelbourn. 1982. Experiments on the thermal requirements for growth and food conversion efficiency of juvenile Chinook salmon. Canadian Technical Report of Fisheries and Agricultural Science. 1127. Pacific Biological Station, Nanaimo, BC. 29 pp.

Carter, K. 2005. The Effects of Temperature on Steelhead Trout, Coho Salmon, and Chinook Salmon Biology and Function by Life Stage: Implication for the Klamath Basin TMDLs. Regional Water Quality Control Board North Coast Region.

CDPH (California Department of Public Health). 2011. Draft Guidance for Freshwater Beaches. Division of Drinking Water and Environmental Management. http://www.cdph.ca.gov/HealthInfo/environhealth/water/Documents/Beaches/DraftGuidanceforFreshWaterBeaches.pdf. Last update: January 2011.

Chase, S. D., R. C. Benkert, D. J. Manning, and S. K. White. 2004. Results of the Sonoma County Water Agency's Mirabel Rubber Dam/Wohler Pool Fish Sampling Program – Year 4 Results: 2003.

Chase, S.D., D. Manning, D. Cook, S. White. 2007. Historic accounts, recent abundance, and current distribution of threatened Chinook salmon in the Russian River, California. California Fish and Game 93(3):130-148. California Dept. Fish and Game, Sacramento California.

Chase, S.D., R.Benkert, D.Manning, and S. White. 2005. Sonoma County Water Agency's Mirabel Dam/ Wohler pool fish sampling program: year 5 results 2004. Sonoma County Water Agency, Santa Rosa, CA.

Clarke, W. C. and J. E. Shelbourn, and J. Brett. 1981. Effects if artificial photoperiod cycles, temperature, and salinity on growth and smolting in underyearling coho (Oncorhynchus kisutch), Chinook (O. tshawytscha), and sockeye (O. nerka) salmon. Aquaculture 22:105-116.

Clarke, W. C. and J. E. Shelbourn. 1985. Growth and development of seawater adaptability by juvenile fall Chinook salmon (Oncorhynchus tshawytscha) in relation to temperature. Aquaculture 45:21-31.

Cook, D. 2004. Chinook salmon spawning study: Russian River – Fall 2002-2003. Sonoma County Water Agency.

Cook, D. 2003. Upper Russian River Steelhead Distribution Study. Sonoma County Water Agency, Santa Rosa, CA.

Crader, P. 2012. Order approving Sonoma County Water Agency's petition for temporary urgency change of permits 12947A, 12949, 12950, and 16596 (applications 12919a, 15736, 15736, 15737, 19351). Division of Water Rights, Permitting and Licensing Section. Sacramento, C A.

EPA (U.S. Environmental Protection Agency). 1977. Temperature criteria for freshwater fish: protocol and procedures. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Duluth, MN. EPA-600/3-77-061.

EPA (U.S. Environmental Protection Agency). 2000. Ambient Water Quality Criteria Recommendations. Information Supporting the Development of State and Tribal Nutrient Criteria for Rivers and Streams in Nutrient Ecoregion III. Office of Water. 4304. EPA-822-B-00-016. December 2000. http://water.epa.gov/scitech/swguidance/standards/upload/2007_09_27_criteria_nutrient_ecoregions_rivers_rivers_3.pdf.

EPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria. Office of Water. 820-F-12-058. http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/upload/RWQC2012.pdf.

Griffiths, J. S. and D. F. Alderice. 1972. Effects of acclimation and acute temperature experience on the swimming speed of juvenile coho salmon. Journal of the Fisheries Research Board of Canada 29: 251-264.

Hallock, R. J., R. T. Elwell, and D. H. Tory. 1970. Migrations of adult king salmon (Oncorhynchus tshawytscha) in the San Joaquin Delta, as demonstrated by the use of sonic tags. Cal. Dept. Fish and Game, Fish Bull. 151.

Hinze, J. A. 1959. Annual report. Nimbus salmon and steelhead hatchery. Fiscal Year 1957-58. CDFG. Inland fish. Admin. Rept. 56-25.

Holt, R. A., J. E. Sanders, J. L. Zinn, J. L. Fryer, K. S. Pilche. 1975. Relation of water temperature to Flexibacter columnaris infection in steelhead trout (Salmo gairdneri), coho (Oncorhynchus kisutch) and Chinook (O. tshawytscha) salmon. Journal of the Fisheries Research Board of Canada 32: 1553-1559.

Jackson, T.A. 2007. California steelhead report-restoration card; a report to the legislature. Department of Fish and Game. Sacramento CA.

Klamt, R. et al. 2000. Review of Russian River Water Quality Objectives for Protection of Salmonid Species Listed Under the Federal Endangered Species Act. Regional Water Quality Control Board North Coast Region. Santa Rosa, CA.

Marine, K. R. 1997. Effects of elevated water temperature on some aspects of the physiology and ecological performance of juvenile Chinook salmon (Oncorhynchus tshawytscha): implications for management of California's Central Valley salmon stocks. Masters Thesis. University of California, Davis.

Martini Lamb, J. and D.J. Manning, editors. 2011. Russian River Biological Opinion status and data report year 2010-11. Sonoma County Water Agency, Santa Rosa, CA. P.208

McMahon, T. E. 1983. Habitat suitability index models: coho salmon. U.S. Department of Int., Fish and Wildlife Service FWS/OBS-82/10.49. 29 pp.

Moyle, P.. 2002. Inland Fishes of California. University of California Press. Berkeley and Los Angeles, CA.

Myrick, C. A. and J. J. Cech, Jr. 2000. Bay-Delta modeling forum technical publication 01-1

Nielsen, J., T. E. Lisle and V. Ozaki. 1994. Thermally stratified pools and their use by steelhead in northern California streams. Transactions of the American Fisheries Society 123: 613-626.

Obedzinski, M. 2012. Personal communication. University of California Cooperative Extension and Sea Grant Program; Russian River coho salmon monitoring program. Santa Rosa, CA.

Obedzinski, M., Pecharich J., Lewis, D., and Olin, P. 2007. Russian River Coho Salmon Captive Broodstock Program Monitoring Activates Annual report July 2006 to June 2007. University of California Cooperative Extension and Sea Grant Program Santa Rosa, CA.

Obedzinski, M., Pecharich, J., Vogeazopoulos, G., Davis, J., Lewis, D., and Olin, P. 2006. Monitoring the Russian River Coho Salmon Captive Broodstock Program: Annual Report July 2005 to June 2006

Raleigh, R. F., W. J. Miller, and P. C. Nelson. 1986. Habitat suitability index models and instream flow suitability curves: Chinook salmon. U.S. Fish and Wildlife Service Biological Report 82(10.022). 64 pp.

Reese, C. D., and B. C. Harvey. 2002. Temperature-dependent interactions between juvenile steelhead and Sacramento pikeminnow in laboratory streams. Transactions of the American Fisheries Society. 131:599-606.

Rich, A. A. 1987. Report on studies conducted by Sacramento County to determine the temperatures which optimize growth and survival in juvenile Chinook salmon (Oncorhynchus tshawytscha): McDonough, Holland & Allen, 555 Capitol Mall Sacramento.

Roelofs, T. D. W. Trush, and J. Clancy. 1993. Evaluation of juvenile salmonid passage through Benbow Lake State Recreation Area. Fisheries Department, Humboldt State University, Arcata, California. Santa Rosa, CA.

Stein, R. A., P. E. Reimers, and J. H. Hall. 1972. Social interaction between juvenile coho (Oncorhynchus kisutch) and fall Chinook salmon (O. tshawytscha) in Sixes River, Oregon. Journal of Fisheries Research Board of Canada 29: 1737-1748.

Sullivan, K. D J. Martin, R. D. Cardwell, J. E. Toll, and S. Duke. 2002. An analysis on the effects of temperature on salmonids of the Pacific Northwest with implications for selecting temperature criteria. Sustainable Ecosystems Institue.

Thomas, R. E., J. A. Gharrett, M. G. Carls, S. D. Rice, A. Moles, S. Korn. 1986. Effects of fluctuating temperature on mortality, stress, and energy reserves of juvenile coho salmon. Transactions of the American Fisheries Society 115: 52-59.

Welsh, H. H. Jr., G. R. Hodgson, B. C. Harvey, and M. F. Roche. 2001. Distribution of juvenile coho salmon in relation to water temperatures in tributaries of the Mattole River, California. North American Journal of Fisheries Management. 21:464-470.

Werner, I, T. B. Smith, J. Feliciano, and M. Johnson. 2005. Heat shock proteins in juvenile steelhead reflect thermal conditions in the Navarro River Watershed, California. 134:399-410. Transactions of the American Fisheries Society.

Wurtzbaugh, W. A. and G. E. Davis. 1977. Effects of temperature and ration level on the growth and food conversion efficiency of Salmo gairdneri Richardson.

State Water Resources Control Board
Order 5/1/2013

Provision 16 – Water Loss and Water Use Efficiency

March 31, 2014

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

1 Introduction

This report has been prepared by the Sonoma County Water Agency (Water Agency) to fulfill the requirements of Term 16 of the State Water Resources Control Board (State Board) Order dated May 1, 2013 (Order).

Term 16 of the Order directs the Water Agency to take the following actions:

> SCWA shall provide a written update to the Deputy Director by March 31, 2014, regarding activities and programs being implemented by SCWA and its water contractors to assess and reduce water loss, promote increasing water use efficiency and conservation, and improve regional water supply reliability. The written update shall include a report regarding the actual maximum applied water allowance (MAWA) achieved by each of SCWA's contractors during May through November 2013.

2 Water Loss and Water Use Efficiency

In response to the dry spring conditions of 2013, the Water Agency launched a public education campaign to encourage residents to voluntarily reduce water consumption. The Water Agency launched the "20-Gallon Challenge" campaign to increase awareness of the water supply situation and as a call to action.

The campaign features a pledge to save 20 gallons per person per day. As an incentive to pledge, monthly prize drawings were held from May to October. The prizes included two high-efficiency toilets, two high efficiency clothes washers, a rainwater catchment or graywater system, and custom water-wise landscape design. The prizes were awarded to residents throughout the region including Santa Rosa, Forestville, Windsor, Cotati and Novato.

The 20-Gallon Challenge website also contained a page for residents to report water waste. When water waste reports were received, the Water Agency sent a postcard to the identified address providing education and resources to the resident about how to save water.

Pledges and contest entries were accepted from the entire Russian River Watershed to encourage both upper and lower Russian River water users to participate in the Challenge. Outreach was conducted through print media, radio ads in English and Spanish, water bill stuffers, social media, newsletters, and outreach events like the Sonoma County Fair, farmers markets and the Santa Rosa Wednesday Night Market.

3 Sonoma-Marin Saving Water Partnership Annual Report

The Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts and the Water Agency formed the Sonoma-Marin Saving Water Partnership in 2010. The purpose of the Sonoma-Marin Saving Water Partnership is to establish the financial obligation for the eight local water utilities, Marin Municipal Water District and

Sonoma County Water Agency, identify and recommend implementation of water conservation projects and to maximize the cost-effective projects for the Partnership.

The Partners are committed to remain as members in good standing of the California Urban Water Conservation Council (CUWCC) and implement the Best Management Practices (BMPs) for water conservation. The Partners will implement or use best efforts to secure the implementation of any water conservation requirements and will publish an Annual Report to track progress. The Annual Report will track program implementation, highlight program milestones, and reinforce the importance of protecting and preserving water resources for future generations. The 2012/2013 Annual Report for the Partnership is attached in Appendix A.

4 Maximum Applied Water Allowance (MAWA)

The Maximum Applied Water Allowance (MAWA) is the upper limit of annual water use for a specific landscaped area based on the square footage of the area, an evapotranspiration (ET) adjustment factor, reference ETo and effective rainfall. MAWA is commonly referred to as a water budget. The Water contractors[1] used an ET adjustment factor of 60% for calculating the reported water budgets.

Water contractors submitted information on calculated water budgets and water use to the Water Agency. The water use reported was through November 2013 as required by the Order. The average actual MAWA achieved by the Water Agency water contractors was 63%.

Below is the report regarding the actual maximum applied water allowance achieved by each of the Water Agency's contractors during May through November 2013.

	Water Budget (AF)	Dedicated Irrigation Metered Sales (AF)	Actual MAWA Achieved (%)
City of Cotati	178	129	43%
City of Petaluma	723	693	58%
City of Rohnert Park	275	329	72%
City of Santa Rosa	1,837	1,993	65%
City of Sonoma	34	76	135%
North Marin Water District	939	874	56%

[1] Under the 2006 Restructured Agreement for Water Supply, the Water Agency's "water contractors" are the Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, the Town of Windsor and the North Marin and Valley of the Moon Water Districts.

Town of Windsor	156	208	80%
Valley of the Moon Water District	25	44	106%
Regional Average	4,167	4,316	63%

Appendix A

2012/2013 Annual Report for the Sonoma-Marin Saving Water Partnership

(begins on the following page)

SONOMA - MARIN
SAVING WATER
PARTNERSHIP

Annual Report

FY 2012/2013

SONOMA - MARIN SAVING WATER PARTNERSHIP

City of Santa Rosa Utilities Department

Rohnert Park 19 62 California

City of Cotati

North Marin Water District

Contents

About the Partnership

The Sonoma-Marin Saving Water Partnership (Partnership) represents 10 water utilities in Sonoma and Marin counties that have joined together to provide regional solutions for water use efficiency.

The utilities include the Cities of Santa Rosa, Rohnert Park, Petaluma, Sonoma, Cotati; North Marin, Valley of the Moon and Marin Municipal Water Districts; Town of Windsor and Sonoma County Water Agency (Partners). Each of the Partners have water conservation programs that can assist you in reducing your water use.

The Partnership was formed to identify and recommend implementation of water use efficiency projects, and maximize the cost-effectiveness of water use efficiency programs in our region.

The Partners are committed to remain members in good standing of the California Urban Water Conservation Council (CUWCC) and implement the Best Management Practices (BMPs) for water conservation.

Our Service Area

More than 600,000 residents in Sonoma and Marin counties rely on the water delivered from the Russian River by the Sonoma County Water Agency (Water Agency) to the nine cities and districts in the Partnership. Supplementing the water provided by the Water Agency are local supplies including recycled water, groundwater from underground aquifers and surface water reservoirs.

Recreation, agriculture and wildlife, including threatened and endangered steelhead and coho and Chinook salmon also rely on these same natural resources in order to thrive.

Realizing the importance of protecting and preserving water resources for future generations, the members of the Partnership have taken a proactive role in helping fund, maintain and implement an array of water supply, water use efficiency and fishery recovery programs.

Working Together

Every day we wake up and turn on the tap to draw water and begin our daily routine. It's a marvel that fresh water appears instantly and this marvel is a testament to the men and women of the Sonoma County Water Agency and area retail water providers working together to insure a safe, reliable water supply is available for the residents of Sonoma and Marin Counties. Whether the water is naturally filtered from the Russian River, local ground water or surface water from local lakes, the coordinated effort to extract, treat and deliver water is often taken for granted. Conservation of precious water resources is critical as we strive to make the water available for our communities while preserving natural resources.

The Sonoma-Marin Saving Water Partnership (Partnership), through its many water efficiency programs, educational seminars and outreach campaigns, is working to educate our communities about the importance of conserving water resources and curbing water-wasting behaviors.

This year the "20-Gallon Challenge" was embraced by community members who pledged to reduce water use by 20 gallons per person per day. The 20-Gallon Challenge was promoted throughout the Russian River Watershed expanding the Partnership reach into Mendocino County. Working together in Sonoma, Marin and Mendocino counties, the 20-Gallon Challenge resulted in a positive response to the 2013 dry spring conditions.

The Partnership received a 2013 WaterSense Excellence award from the U.S. Environmental Protection Agency (EPA) for promoting water efficient irrigation practices through implementation of the Qualified Water Efficient Landscaper Program (QWEL). QWEL educates landscape professionals and their customers on the benefits of sound landscape design, management and irrigation practices. The award was one of only five issued by the EPA nationally.

The time and energy invested in the Partnership has benefitted our region. Water use during Fiscal Year 2012/13 remains down from prior years and the region has avoided water use restriction, even during an extremely dry spring. The Partnership will continue to offer educational resources, programs and incentives to aid our communities in meeting water use efficiency requirements as we work together in response to variable water year conditions and maintain supplies for beneficial use and instream needs.

Sincerely,

Jake Mackenzie, Chair
Water Advisory Committee
Council Member
City of Rohnert Park

David Rabbitt
Chair, Sonoma County Water Agency
Supervisor, County of Sonoma

SONOMA - MARIN
SAVING WATER
PARTNERSHIP

Partnership Achievements By the Numbers

Fiscal Year 2012/2013

122 rebates were issued to businesses for installing high-efficiency toilets.

501 guests visited the nine gardens that participated in the Second Annual Eco Friendly Garden Tour.

607 students graduated from the Qualified Water Efficient Landscaper (QWEL) and Spanish QWEL programs.

4,888 students received direct instruction, 2,679 in the classroom only program and 2,209 in the classroom and Field Study program.

8 businesses were certified through the Sonoma County Green Business Program sponsored by the Water Agency.

356 parents volunteered to chaperone their child's class during their field study visit to the Water Agency's Russian River Field Study Site near Forestville. The parents participated along with the students allowing the Field Study Program to reach adults as well as children.

8,777 students experienced "The Musical Watershed" performed by the ZunZun performing arts group in 37 shows at 25 different elementary schools.

16 laundry to landscape graywater systems were installed.

26,962 students in 1,133 different classrooms received curriculum materials provided by the Water Education Program.

3,558 actions were inspired by the 350 Home & Garden Challenge.

180 landscapes were upgraded through our rebate programs.

695 high school students went on technical tours of the Water Agency's Mirabel and Wohler water transmission facilities. Students learned about the water system and explored career opportunities in the field of water.

6 permitted graywater systems were installed in homes to use water from bathroom sinks, showers, tubs and laundry to irrigate landscaping.

110 businesses participated in our water use survey programs.

2,209 students participated in the Field Study Program where the 5th grade students performed water related experiments along the banks of the Russian River and learned about the riparian ecosystem.

433,189 square feet of lawn were removed through turf conversion programs — enough to cover nearly six professional football fields.

809 rebates were issued to residents for replacing their old, inefficient toilets with new, EPA WaterSense labeled high-efficiency toilets that flush at 1.28 gallons per flush or less.

92 people attended Rainwater Harvesting classes.

1,771 high-efficiency clothes washer rebates were issued. These EPA EnergyStar rated clothes washers use 40 to 60% less water than older top loading models and they save energy from heating less water and wringing out more water before the clothes go into the dryer.

34,731,944 gallons of water per year are being saved by local businesses through sustained reduction programs where rebates are provided for implementing process changes and equipment upgrades resulting in measurable water use efficiencies.

2,570 Water Smart Home evaluations were performed. These in-home water efficiency assessments are performed by trained technicians to find opportunities for improvements, identify leaks, and inform homeowners about their indoor and outdoor water use.

Partnership Highlights

PROGRAM EXPENDTURES

Partners have pledged to fund water use efficiency programs. The baseline funding is established in the Memorandum of Understanding (MOU) and is based on historic water deliveries through the Water Agency's water transmission system, ensuring that programs will always be available to help residents use our water resources efficiently.

Minimum funding levels are presented in the orange bar in the table below along with Fiscal Year 12/13 expenditures.

For the Town of Windsor, additional required funding paid through a direct diversion water conservation sub-charge is not included with their MOU minimum. These additional funds are designated for the Town's water use efficiency programs and are included in their annual program expenditures.

The Water Agency's Water Use Efficiency Program is funded by the water contractors through the Water Conservation Sub-Charge as part of the Water Agency wholesale water rates. The amount of money deposited into the fund is calculated based on an estimate of the total costs for all regional Water Conservation Projects for each fiscal year.

The Sonoma-Marin Saving Water Partnership does not specify a minimum amount that should be utilized for regional programs.

Program Expenditures (in thousands of dollars)

	City of Cotati	Marin Municipal Water District	North Marin Water District	City of Petaluma	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Valley of the Moon Water District	Town of Windsor	Sonoma County Water Agency	Regional Total
FY 12-13	$60	$1,279	$263	$461	$16	$965	$173	$180	$269	$1,510	$5,176
Minimum	**$25**	**$177**	**$241**	**$242**	**$120**	**$557**	**$55**	**$72**	**$10**	**NA**	**$1,500**

ANNUAL MULTI-MEDIA PUBLIC EDUCATION CAMPAIGN

In response to the dry spring conditions, the Partnership doubled its annual public education campaign to encourage residents to voluntarily reduce water consumption. The Partnership launched the "20-Gallon Challenge" campaign to increase awareness of the water supply situation and as a call to action.

The campaign features a pledge to save 20 gallons per person per day. As an incentive to pledge, an entry for monthly prize drawings for high-efficiency toilets and clothes washers, rainwater catchment and graywater systems, and custom water-wise landscape designs were provided.

Pledges and contest entries were accepted from the entire Russian River Watershed to encourage both upper and lower Russian River water users to participate in the challenge.

20 GALLON CHALLENGE

2012 TEMPORARY URGENCY CHANGE PETITION

On March 29, 2013, the Water Agency submitted a report to the State Water Resources Control Board (SWRCB) in response to an Order approving a Water Agency request to modify in-stream flow requirements for the Russian River. The report highlighted two pilot projects focused on unaccounted water loss through residential meters and water use efficiency through customer awareness in addition to the Partnership's water use efficiency efforts.

The Temporary Urgency Change Petition, submitted on April 9, 2012, was needed to improve conditions for juvenile coho and Chinook salmon and steelhead rearing in the river.

On May 2, 2012 the SWRCB issued an Order approving the petition. Included as part of the Order, the SWRCB requested that the Water Agency provide a written update regarding activities and programs being implemented by the Partnership to assess and reduce water loss and promote increasing water use efficiency. The order acknowledged the Partnership's work to date with assigning landscape water budgets to dedicated irrigation accounts and the continued work on compiling with SBx7-7 targets.

PARTNERSHIP JOINS EPA WATERSENSE

In April of 2012, the Partnership became a Promotional Partner to the U.S. Environmental Protection Agency's WaterSense program. Both the Partnership and WaterSense share the goal of promoting efficient water use both indoors and out.

As a Promotional Partner, the Partnership is able to collaborate with and leverage the WaterSense program's national campaigns such as Fix-A-Leak Week and Sprinkler Spruce-Up while helping to get the word out about WaterSense labeled products and services.

The Partnership has a history of working with WaterSense since the program began, actively participating in the development of WaterSense labeling specifications to ensure that the WaterSense label only appears on high-performance, water efficient products that work. In 2008, the Partnership's Qualified Water Efficient Landscaper Program (QWEL) became one of the nation's first WaterSense Labeled professional certification programs. The Partnership continues to actively support and participate with WaterSense.

20 x 2020 GOALS

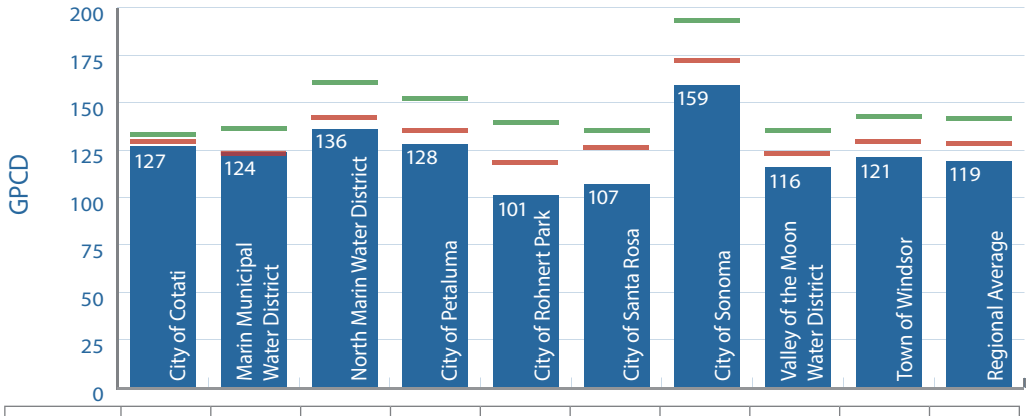
In 2009, SBx7-7 established a statewide goal, known as 20 x 2020, to reduce per capita water use 20% by the year 2020 with an interim goal of a 10% reduction by 2015.

The chart to the right displays 2012 per capita water use in each Partner service area and the region as a whole. The 2015 and 2020 goals are indicated by the green and red lines, respectively.

While the chart shows that all Partners are currently meeting the 2020 targets, we recognize that water use efficiency must continue. Many factors can affect water use patterns as has been seen in recent years. The overall downward trend is a result of many factors including the California drought, economy, changes in weather conditions, and active water conservation programs.

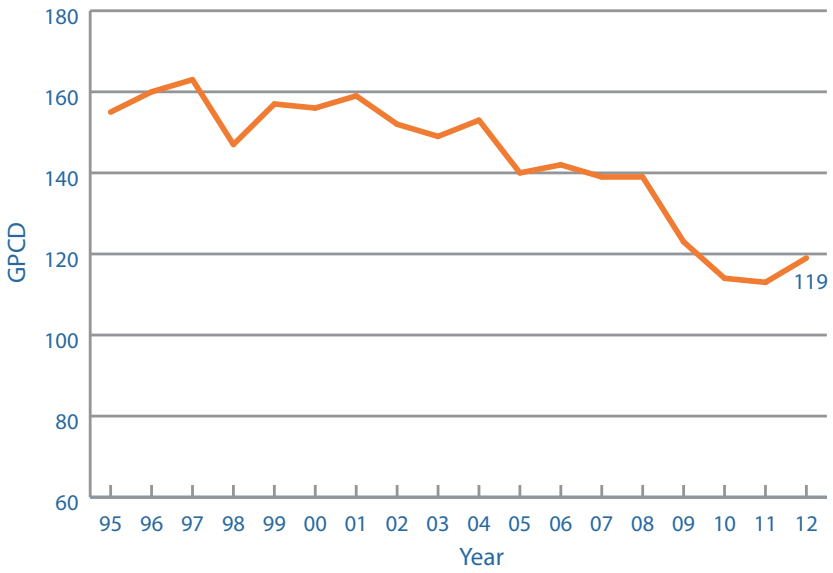
It is important to continue the work on water use efficiency to maintain the savings already achieved and make sure the region captures all the benefits of future water savings.

2012 GPCD and 20 x 2020 Goals



	City of Cotati	Marin Municipal Water District	North Marin Water District	City of Petaluma	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Valley of the Moon Water District	Town of Windsor	Regional Average
2015 Target	134	137	161	153	140	136	194	136	143	142
2020 Target	130	124	143	136	119	127	173	124	130	129

Regional Gallons per Capita per Day (GPCD) Usage



City of Santa Rosa
(707) 543-3985
www.srcity.org/wue

City of Cotati
(707) 665-3631
www.ci.cotati.ca.us

City of Rohnert Park
(707) 588-3300
www.rpcity.org

North Marin
Water District
(415) 897-4133 x8412
www.nmwd.com

Town of Windsor
(707) 838-1004
townofwindsor.com

Valley of the Moon
Water District
(707) 996-1037
www.vomwd.com

City of Petaluma
(707) 778-4507
cityofpetaluma.net/wrcd

Marin Municipal
Water District
(415) 945-1520
www.marinwater.org

City of Sonoma
(707) 933-2237
www.sonomacity.org

Sonoma County Water Agency
(707) 547-1933
www.sonomacountywater.org

SONOMA-MARIN **SAVING WATER** PARTNERSHIP
www.savingwaterpartnership.org

EPA WaterSense PARTNER

State Water Resources Control Board
Order 5/1/2013

Provision 18 – Progress of Santa Rosa Plain Groundwater Management Planning Program

March 31, 2014

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

1 Introduction

This report has been prepared by the Sonoma County Water Agency (Water Agency) to fulfill the requirements of Provision 18 of the State Water Resources Control Board (State Board) Order dated May 1, 2013 (Order).

Provision 18 of the Order directs the Water Agency to take the following actions:

> SCWA shall provide a written update to the Deputy Director regarding the progress of the Santa Rosa Plain Groundwater Management Planning Program by March 31, 2014. The update shall include a discussion of: (1) progress being made toward implementation of groundwater recharge in the Santa Rosa basin; and (2) efforts by SCWA and its water contractors to conjunctively manage surface water and groundwater resources within SCWA's service area. Such management should emphasize the conservation and replenishment of groundwater resources and utilization of available surface water supplies to the extent feasible.

2 Santa Rosa Plain Groundwater Management Planning

In October 2011, the Water Agency's Board of Directors approved a workplan and a Cooperative Agreement with the Sonoma County Water Agency, County of Sonoma, City of Santa Rosa, City of Rohnert Park, City of Sebastopol, City of Cotati, Town of Windsor, and California-American Water Company to fund the preparation of a non-regulatory, voluntary groundwater management plan for the Santa Rosa Plain.

A Basin Advisory Panel (Panel) was convened in December 2011 and will guide the development and implementation of the groundwater management plan. The Panel is comprised of 30 members representing key groundwater interests: Agriculture (Dairies, Farmers & Grape Growers and Wineries); Business / Developers; Environmental; Government (Tribal, State, County, and Cities); Public Health; Rural Residential Well Owners; and Water Supply & Groundwater Technical Expertise. The Panel has met 19 times between December 2011 and March 2014 and has undertaken several actions including development of a charter, governance proposal, draft basin management objectives and components, recommended actions, prioritized an implementation schedule and formation of a Technical Advisory Committee, as well as funding and community forum subcommittees. In addition, the Panel has received presentations on different topics including groundwater basin conditions by United States Geological Survey scientists, regional and local water resource management strategies, enhanced recharge studies and programs, land use planning, and water quality programs. The Panel selected the Water Agency as the lead agency for developing the groundwater management plan and the Water Agency's Board of Directors, following a public hearing on October 23, 2012, adopted a Resolution of Intention to Prepare a Groundwater Management Plan for the Santa Rosa Plain of Sonoma County.

The Panel and Technical Advisory Committee will continue to meet on an approximate monthly basis to finalize elements of the groundwater management plan and integrate the results and findings of a numerical modeling of surface water and groundwater flow performed by the U.S. Geological Survey.

Panel members will continue briefing their constituencies and other interested organizations on the groundwater management plan development and four public forums are planned for May 2014 to present the overall content of the groundwater management plan and results of the U.S. Geological Survey modeling to the public. The groundwater management plan is projected to be completed in summer 2014 and will be considered by the Water Agency's Board of Directors for adoption at a publically noticed hearing. Should the plan be adopted, implementation of the plan would begin in fall 2014. Further information regarding the Santa Rosa Plain Groundwater Management Planning Program can be found on the program website www.scwa.ca.gov/srgroundwater/.

3 Groundwater Recharge and Conjunctive Management Efforts

Among other strategies, the Water Agency and its local partners, including many of its Water Contractors, are evaluating opportunities to enhance the existing conjunctive use of the region's surface water and groundwater resources. The Water Agency's Water Supply Strategies Action Plan identifies enhancing groundwater recharge through groundwater banking and stormwater recharge as primary strategies that emphasize the conservation and replenishment of groundwater resources and utilization of available surface water supplies to the extent feasible. Updates on the status of two studies the Water Agency and its local partners are conducting to pursue these strategies are summarized below:

Groundwater Banking Feasibility Study: To improve the reliability of future water supplies (both surface water and groundwater), the Water Agency partnered with the Cities of Cotati, Rohnert Park and Sonoma, the Town of Windsor and the Valley of the Moon Water District to conduct a feasibility study for a regional groundwater banking program. The feasibility study investigated the viability of enhancing the conjunctive management of surface water and groundwater resources. Conceptually, the groundwater banking program would involve the diversion and transmission of surplus Russian River water produced at existing drinking water production facilities during wet weather conditions (i.e., the winter and spring seasons) for storage in aquifers beneath the Santa Rosa Plain and/or Sonoma Valley . The stored water would then be available for subsequent recovery and use during dry weather conditions (i.e., the summer and fall seasons) or emergency situations. The Water Agency and the study participants are exploring groundwater banking in a systematic and phased approach utilizing information obtained from completed and ongoing scientific studies and groundwater management activities sponsored by the Water Agency and its partners.

A regional feasibility study report was completed in June 2013. The following primary findings from the study will provide a framework for developing a groundwater banking program:

- The groundwater banking program would provide enhanced reliability of the regional water supply during droughts, natural hazard events (e.g., earthquakes), and periods of peak seasonal water demands.

- Additional potential benefits include improved habitat conditions by enhancing tributary base flows by reducing groundwater pumping, or in the case of Dry Creek, reducing summer releases from Warm Springs Dam (due to reduced peak demands) thus improving flow conditions for ESA-listed salmonids.

- Facilities owned and operated by the study participants, including drinking water production facilities along the Russian River and groundwater supply-wells within the two groundwater basins, are well-suited for further testing and developing a groundwater banking program in an incremental and phased manner.

- There appears to be adequate wintertime Russian River water supplies, transmission system capacity, and aquifer storage space to meet preliminary conceptual storage targets through a combination of in-lieu and direct groundwater recharge.

- The quality of drinking water from the Water Agency and Town of Windsor's drinking water facilities and conveyance piping indicate that the potential source water represents an excellent candidate for direct recharge and Aquifer Storage and Recovery (ASR) operations.

- Evaluation of regional hydrogeologic and geochemical conditions has identified 14 potential groundwater banking alternatives in the Santa Rosa Plain and Sonoma Valley, which include a combination of indirect (in lieu) and direct (surface spreading and ASR) recharge methods. Of the two direct recharge methods, ASR is deemed to be the most practical to implement in the near term based on: (1) the ability to incrementally establish an ASR program; (2) the ability to pilot test ASR alternatives in a phased manner; (3) the relatively lower costs associated with ASR; and (4) uncertainties related to the ability of surface spreading alternatives to convey water to aquifers suitable for storage and subsequent recovery.

Based on the above summary of findings, several recommended next steps for establishing a groundwater banking program have been identified and initiated:

- Suitable locations for performing pilot-scale ASR demonstration testing consisting of existing active and inactive municipal supply wells are being evaluated.

- Site-specific groundwater quality data from existing wells deemed suitable for pilot-scale ASR testing have been collected, analyzed, and incorporated into a geochemical model, along with the source water quality data, to assess the potential interaction between the source water and native groundwaters.

- Work plans for performing pilot-scale demonstration testing are being developed for each of the study participants. The work plans will incorporate site-specific hydrogeologic, engineering, and water quality information and form the basis for designing and permitting a pilot-scale ASR demonstration test.

- Briefing of local stakeholders has been accomplished through sharing information on this study at regular Sonoma Valley and Santa Rosa Plain Basin Advisory Panel meetings.

- Briefings and discussions with representatives of the San Francisco Bay and North Coast Regional Water Quality Control Boards (RWQCBs) have occurred to identify permitting requirements for pilot-scale ASR demonstration testing.

- Identifying funding sources for performing pilot-scale demonstration testing. Potential funding sources include grants through the California Department of Water Resources Integrated Regional Water Management program and recent Drought-Relief funding.

- Initiating preparation of permit applications for performing the pilot-scale ASR testing from applicable regulatory entities, including Regional Water Quality Control Boards, the State Water Resources Control Board and the California Department of Public Health.

Based on the results of pilot-scale demonstration testing, full-scale groundwater banking programs and facilities would be designed and developed.

Stormwater Management & Groundwater Recharge Scoping Studies: In three of its flood zones, the Sonoma County Water Agency is identifying opportunities to alleviate flooding, while recharging groundwater aquifers and providing other benefits. The "Stormwater Management-Groundwater Recharge" studies are currently assessing the feasibility of projects in Laguna-Mark West watershed, the Sonoma Valley watershed and the Upper Petaluma River watershed.

The goal of the initial scoping studies (one in each watershed) is to establish the project objectives, identify potential project concepts, and determine, at a preliminary level, the technical and practical feasibility of projects that would reduce flooding while providing additional community benefits. These benefits could include groundwater recharge, water quality improvements, water supply improvements, improved ecosystem functions, preservation of agricultural land use, preservation or enhancement of open spaces, system sustainability or benefits like recreation, public access or education.

To accomplish this goal, consultants in each watershed are collecting and assessing technical data and information about the watersheds, and have met with active stakeholders to discuss project objectives and goals and to solicit ideas on potential projects. The second phase of the studies is to identify possible project opportunities and evaluate at a more detailed level the feasibility of implementing those projects, as indicated by the following process timeline.

- **Phase 1 –** Initiated in December 2010. Draft studies were submitted in Spring 2011. Stakeholder input was provided in Spring-Summer 2011.
- **Phase 2 –** Based on comments received in Phase 1, consultant teams updated the studies and identified possible project areas. Meetings were held in fall and winter 2011-2012 to discuss findings with stakeholders, community members, and regulators.
- **Phase 3 –** For those projects where partners and potential partners express interest, the Water Agency is moving forward with engineering and other supporting studies. The goal is to be positioned to take advantage of potential grant and other funding sources. Where grant funds have already been secured, project designs are proceeding.

Appendix A-5

Dec 19, 2013 Temporary Urgency Change Petition

SONOMA COUNTY WATER AGENCY

CF/42-0.19-9 SWRCB ORDER APPROVING TEMPORARY URGENCY CHANGE IN PERMITS 12947A, 12949, 12950 & 16596 FOR 2013 (ID 4707)

December 19, 2013

Barbara Evoy, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

RE: Petition for Temporary Urgency Change—Permit 12947A

Dear Ms. Evoy:

Enclosed is a Petition for Temporary Urgency Change to modify the methodology for determination of water supply conditions for the Russian River as established by Decision 1610 for Permits 12947A, 12949, 12950 and 16596. Accompanying the petition are the following:

1) Attachment 1, *Description of Temporary Urgency Change Petition Request*
2) Attachment 2, *Supplement to the December 2013 Temporary Urgency Change Petition* (includes basis of petition and supporting analysis)
3) *Environmental Information for Petition*
4) Copy of filed Notice of Exemption
5) California Department of Fish and Wildlife Review Fee Payment
6) State Water Resources Control Board Petition Fee Payment

The petition is being submitted due to severely low storage levels in Lake Mendocino. The current low storage is due to the historic dry conditions in the region since January 1 of this year. With only 7.67 inches of rainfall since January 1, the Ukiah area is at just 22.4% of average (34.18 inches) based on records back to 1893. This is the lowest recorded rainfall in 120 years. The Sonoma County Water Agency requests that the Division of Water Rights act expeditiously to approve the requested changes to conserve critical storage in Lake Mendocino.

I look forward to working with the State Water Resources Control Board and Division of Water Rights staff on this important conservation effort.

Sincerely,

James Togeserf/

Grant Davis
General Manager

404 Aviation Boulevard - Santa Rosa, CA 95403-9019 • (707) 526-5370 - Fax (707) 544-6123 - www.sonomacountywater.org/

Enc.

c: Katy Lee – State Water Resources Control Board
D. Butler, W. Hearn – National Marine Fisheries Service
E. Larson - CA Department of Fish & Game
P. Jeane, D. Seymour, T. Schram, J. Martini Lamb, J. Jasperse – Sonoma County Water Agency
S. Shupe, C. O'Donnell – Sonoma County Counsel
A. Lilly – Bartkiewicz, Kronick & Shanahan

RW\\fileserver\Data\CL\pinks\Prior Years\2013\week 12-16-13\TUCP_Transmittal_draft_dec2013 (2).docx

Please indicate County where your project is located here:

Sonoma / Mendo.

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☐ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☐ **Place of Use** Wat. Code, § 1701
☐ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☒ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☐ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☐ **Other**

Application 12919A Permit 12947A License Statement

I (we) hereby petition for change(s) noted above and described as follows:

Point of Diversion or Rediversion – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present:

Proposed:

Place of Use – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present:

Proposed:

Purpose of Use

Present:

Proposed:

Split

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

Distribution of Storage

Present:

Proposed:

Temporary Urgency
This temporary urgency change will be effective from Jan 1, 2014 to June 29, 2014 .

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

Instream Flow Dedication – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

Waste Water
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

General Information – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☐ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

All Right Holders Must Sign This Form: I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated December 19, 2013 at Santa Rosa .

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

NOTE: All petitions must be accompanied by:
(1) the form Environmental Information for Petitions, including required attachments, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf
(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/
(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)

ATTACHMENT 1

DESCRIPTION OF TEMPORARY URGENCY CHANGE PETITION REQUEST

The Sonoma County Water Agency (Water Agency) requests that the State Water Resources Control Board make the following temporary urgency change to Term 20 of the Water Agency's water right Permit 12947A:

Starting January 1, 2014, the minimum instream flow requirements for the Upper Russian River will be established using an index based on water storage in Lake Mendocino, rather than using the current index which is based on cumulative inflow into Lake Pillsbury. This temporary change is requested to preserve the Lake Mendocino water supply in case below normal rainfall and hydrologic conditions continue. Specifically, the Water Agency proposes that the monthly storage values (bimonthly starting after March 1) listed below be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the Upper Russian River:

a. Dry water supply conditions will exist when storage in Lake Mendocino is less than:

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 acre-feet as of June 1

b. Critical water supply conditions exist when storage in Lake Mendocino is less than:

31,000 acre-feet as of January 1
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16
52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

A description of the methodology used to develop the above criteria is presented in the *Supplement to the December 2013 Temporary Urgency Change Petition* included as Attachment 2.

December 2013

Sonoma County Water Agency

Supplement to the December 2013 Temporary Urgency Change Petition

1.0 BACKGROUND

The Sonoma County Water Agency (Water Agency) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of Decision 1610, which the State Water Resources Control Board (State Water Board) adopted on April 17, 1986. Decision 1610 specifies the minimum flow requirements for the Upper Russian River, Dry Creek and the Lower Russian River. The requirements for the Upper Russian River have been incorporated into Term 20 of the Water Agency's water-right Permit 12947A (Application 12919A). These minimum flow requirements vary based on water supply conditions, which are also specified by Decision 1610 and the above permit term. The Water Agency's operations are also subject to the Russian River Biological Opinion issued by the National Marine Fisheries Service on September 24, 2008.

1.1 Minimum Flow Requirements

Term 20 of Permit 12947A requires a minimum flow of 25 cubic feet per second (cfs) in the East Fork of the Russian River from Coyote Valley Dam to the confluence with the West Fork of the Russian River under all water supply conditions. From this point to Dry Creek, the minimum Russian River flows that are required by this permit term are 185 cfs from April through August and 150 cfs from September through March during *Normal* water supply conditions, 75 cfs during *Dry* conditions and 25 cfs during *Critical* conditions. This permit term further specifies two variations of the *Normal* water supply condition, commonly known as *Dry Spring 1* and *Dry Spring 2*. These conditions provide for lower required minimum flows in the Upper Russian River during times when the combined storage in Lake Pillsbury (owned and operated by the Pacific Gas and Electric Company (PG&E)) and Lake Mendocino on May 31 is unusually low. *Dry Spring 1* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less than 150,000 acre-feet on May 31. Under *Dry Spring 1* conditions, the required minimum flow in the Upper Russian River between the confluence of the East Fork and West Fork and Healdsburg is 150 cfs from June through March, with a reduction to 75 cfs during October through December if Lake Mendocino storage is less than 30,000 acre-feet during those months. *Dry Spring 2* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less than 130,000 acre-feet on May 31. Under *Dry Spring 2* conditions, the required minimum flows in the Upper Russian River are 75 cfs from June through December and 150 cfs from January through March.

From Dry Creek to the Pacific Ocean, the required minimum flows in the Lower Russian River are 125 cfs during *Normal* water supply conditions, 85 cfs during *Dry* conditions and 35 cfs during *Critical* conditions.

In Dry Creek below Warm Springs Dam, the required minimum flows are 75 cfs from January through April, 80 cfs from May through October and 105 cfs in November and December during *Normal* water supply conditions. During *Dry* and *Critical* conditions, these required minimum flows are 25 cfs from April through October and 75 cfs from November through March.

Figure 1 shows all of the required minimum instream flows specified in Decision 1610 and these permit terms by river reach, the gauging stations used to monitor compliance, and the definitions of the various water supply conditions.

1.2 Water Supply Conditions

There are three main water supply conditions that are defined in Decision 1610 and Term 20 of Permit 12947A, and that set the minimum instream flow requirements in the Russian River System. These water supply conditions are determined based on criteria for the calculated cumulative inflow into Lake Pillsbury from October 1 to the first day of each month from January to June. Cumulative inflow for Lake Pillsbury is defined as the algebraic sum of releases from Lake Pillsbury, change in storage and lake evaporation.

Dry water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 8,000 acre-feet as of January 1;
- 39,200 acre-feet as of February 1;
- 65,700 acre-feet as of March 1;
- 114,500 acre-feet as of April 1;
- 145,600 acre-feet as of May 1; and
- 160,000 acre-feet as of June 1.

Critical water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 4,000 acre-feet as of January 1:
- 20,000 acre-feet as of February 1;
- 45,000 acre-feet as of March 1;
- 50,000 acre-feet as of April 1;

- 70,000 acre-feet as of May 1; and
- 75,000 acre-feet as of June 1.

Normal water supply conditions exist whenever a *Dry* or *Critical* water supply condition is not present. As indicated above, Decision 1610 and Term 20 of Permit 12947A further specify three variations of the *Normal* water supply condition, based on the combined storage in Lake Pillsbury and Lake Mendocino on May 31. These three variations of the *Normal* water supply condition determine the required minimum instream flows for the Upper Russian River from the confluence of the East Fork and the West Fork to the Russian River's confluence with Dry Creek. This provision of Decision 1610 and Term 20 of Permit 12947A does not provide for any changes in the required minimum instream flows in Dry Creek or the Lower Russian River (the Russian River between its confluence with Dry Creek and the Pacific Ocean). A summary of the required minimum flows in the Russian River for *Normal*, *Normal — Dry Spring 1* and *Normal — Dry Spring 2* water supply conditions is provided here:

1. *Normal*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 acre-feet or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through August 31	185 cfs
From September 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2. *Normal-Dry Spring 1*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 acre-feet or 90 percent of the estimated water supply storage capacity of the reservoirs, which ever is less, and 130,000 acre-feet or 80 percent or the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through March 31	150 cfs
From April 1 through May 31	185 cfs
If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet	75 cfs

3. *Normal-Dry Spring 2*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 acre-feet or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through December 31	75 cfs
From January 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2.0 CURRENT WATER SUPPLY CONDITIONS

On April 24, 2013, the Water Agency filed a Temporary Urgency Change Petition (2013 TUCP) with the State Board; the State Board Division of Water Rights issued an order approving the 2013 TUCP on May 1, 2013 (Order). The 2013 TUCP requested that the *Dry* year minimum flow requirements specified in Decision 1610 and these permit terms (75 cfs in the upper river and 85 cfs in the lower river) take effect on May 1, rather than June 1. It also requested further reductions in minimum instream flows after July 1 if actual storage in Lake Mendocino fell below a critical storage curve developed for the reservoir during the term of the Order. This change, along with water conservation efforts throughout the region, preserved storage in Lake Mendocino above the critical storage curve, avoiding the need to further reduce minimum flows below *Dry* year conditions. The Order expired on October 28 and the current applicable minimum instream flow requirements are those for *Normal-Dry Spring 2* conditions, which require a minimum instream flow of 75 cfs in the upper river from June 1 through December 31, 2013. On January 1, 2014, the water supply condition will be re-evaluated based on cumulative inflow into Lake Pillsbury between October 1, 2013 and December 31, 2013. As of December 18, this cumulative inflow totaled 4,010 acre-feet.

2.1 Lake Mendocino

On December 18, 2013 the water supply storage level in Lake Mendocino was 28,457 acre-feet. This storage level was 42 percent of the available winter water supply pool and 26 percent of the summer water supply pool. The current low storage level is the result of severely low rainfall in the region since January 1 of this year. Only 7.67 inches of rainfall have fallen in the Ukiah area since January 1st, which is just 22.4% of the average 34.18 inches for this period based on precipitation records going back to 1893. This is the lowest rainfall year on record in 120 years.

Analyses recently prepared by Water Agency engineering staff indicate that, without significant storm events between now and December 31, Lake Mendocino storage will decline to approximately 26,000 acre-feet by the end of the year. This analysis is based on the following assumptions:

- Maintaining the current release of 106 cfs to meet downstream water demands and minimum instream flow requirements in the Upper Russian River;
- An average daily reservoir inflow of 21 cfs; and
- No significant precipitation predicted in National Weather Service's 16 day forecast issued December 19, 2013.

This estimated storage is significantly lower than the December 31 levels that occurred in 1976 and 2009 (These levels were 49,670 acre-feet in 1976 and 33,137 acre-feet in 2009). Furthermore, on December 9, 2013, PG&E filed an application for flow variances for the Potter Valley Project (PVP) with the Federal Energy Regulatory Commission (FERC). PG&E requested these variances due to extremely low storage levels in Lake Pillsbury and the concern that, without these variances, PG&E no longer may be able to meet minimum flow

requirements while also ensuring the safe operation of PVP. The table below summarizes the minimum instream flow variances that PG&E proposed and that FERC approved on December 12, 2014. These variances have resulted in a substantial reduction in required minimum flows in the East Branch of the Russian River and correspondingly reduced inflows into Lake Mendocino. Consequently, Lake Mendocino storage levels have begun to drop at a higher rate.

Compliance Location	Current Minimum Flow Requirement	Proposed Minimum Flow Requirement
Eel River below Scott Dam (E-2)	100 cfs	20 cfs
East Branch Russian River below Potter Valley Powerhouse (E-16)	35 cfs	5 cfs
Eel River Below Cape Horn Dam (E-11)	100 cfs	25 cfs

The Water Agency is concerned that the Decision 1610 hydrologic index, which is based on cumulative inflow into Lake Pillsbury since October 1, 2013, will not accurately reflect water supply conditions in the Russian River System. The cumulative inflow as of December 18 was 4,010 acre-feet, which exceeds the threshold for *Dry* conditions on January 1, while hydrological conditions in the Russian River System remain very dry. Under Decision 1610 and Term 20 of Permit 12947A this will require the Water Agency to maintain higher minimum instream flows in the Upper Russian River than Lake Mendocino can reliably sustain. Specifically, if there no significant storms before the end of the year, then the higher minimum instream flow requirements for the Upper Russian River that are specified by Decision 1610 and Term 20 of Permit 12947A to begin on January 1 could cause storage levels in Lake Mendocino to rapidly decline to unsafe levels. If storage in Lake Mendocino is depleted, then water will not be available to maintain the Upper Russian River flows during the spring, summer and fall of 2014 that are necessary to support threatened and endangered species, agriculture, and domestic and municipal water supplies.

Graphs of current storage levels for Lake Mendocino and cumulative rainfall in the Ukiah area are attached.

2.2 Lake Sonoma

As of December 18, 2013 the water supply storage level in Lake Sonoma was 170,091 acre-feet (AF). This storage level is 69 percent of the available water conservation pool. This storage level is not significantly below normal for this time of year. In addition, the much larger water supply pool of Lake Sonoma provides multiple years of carry over storage. Consequently, the Water Agency is not requesting any changes in the Decision 1610 instream flow requirements for Dry Creek or the Lower Russian River at this time. The Water Agency will re-evaluate water

supply conditions in Lake Sonoma in the spring to determine whether it will be necessary to file a subsequent Temporary Urgency Change Petition to address Lake Sonoma storage conditions.

3.0 REQUESTED TEMPORARY URGENCY CHANGE TO PERMIT 12947A

To address the current and projected water supply conditions in Lake Mendocino and the risks associated with continuing to set Upper Russian River instream flow requirements using the Decision 1610 hydrological index, which is based on cumulative inflow into Lake Pillsbury, the Water Agency requests that the State Board make the following temporary urgency change to Term 20 of the Water Agency's water right Permit 12947A:

Starting January 1, 2014, the minimum instream flow requirements for the Upper Russian River will be established using an index based on water storage in Lake Mendocino, rather than using the Decision 1610 index, which is based on cumulative inflow into Lake Pillsbury. This temporary change is requested to preserve the Lake Mendocino water supply in case very dry hydrologic conditions continue. Specifically, the Water Agency proposes that the monthly storage values listed below be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the Upper Russian River:

a. Dry water supply conditions will exist when storage in Lake Mendocino is less than:

    40,000 acre-feet as of January 1
    59,000 acre-feet as of February 1
    68,000 acre-feet as of March 1
    69,500 acre-feet as of March 16
    71,000 acre-feet as of April 1
    70,000 acre-feet as of April 16
    69,000 acre-feet as of May 1
    67,500 acre-feet as of May 16
    65,000 acre-feet as of June 1

b. Critical water supply conditions exist when storage in Lake Mendocino is less than:

    31,000 acre-feet as of January 1
    36,000 acre-feet as of February 1
    52,000 acre-feet as of March 1
    53,000 acre-feet as of March 16
    54,000 acre-feet as of April 1
    53,000 acre-feet as of April 16
    52,000 acre-feet as of May 1

51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

These Lake Mendocino storage thresholds were calculated using the Water Agency Russian River System Model (RR ResSim). This model was developed using the USACE Hydrologic Engineering Center (HEC) ResSim code and is used as a planning tool by the Water Agency to simulate the effects of various climatic conditions, levels of demand, and operational criteria on the water supply reliability of the Russian River System. RR ResSim calculates what releases must be made from Lake Mendocino and Lake Sonoma to meet minimum instream flow requirements and downstream demands, taking into account USACE flood control operations criteria, and to meet minimum instream flow requirements and system operation requirements. The model uses 99 years of hydrologic data (1910 - 2008), represented as daily unimpaired tributary flows into the Russian River and Dry Creek. Unimpaired flows are the "natural" flows, unaffected by man-made influences, such as water demands, or reservoir operations. These unimpaired flows were synthetically derived by the U.S. Geological Survey using its Basin Characterization Model (BCM) and historical weather, climate and hydrologic data.

Diversions from the Eel River into the Russian River through the Potter Valley Project (PVP) were computed separately using the Eel River Model. This is the same model that was used to evaluate alternatives for the 2004 Federal Energy Regulatory Commission (FERC) license amendment of the PVP, although revisions have been made by the Water Agency to better approximate current operations. The model code has been revised to properly account for the E.5 condition of the Reasonable and Prudent Alternative of the final license amendment. Additionally, the simulations of Eel River diversions have been refined to better approximate post license amendment operations of the PVP.

RR ResSim accounts for losses in the Russian River system that include Water Agency diversions as well as all other depletions from the watershed including: evapotranspiration by riparian vegetation, aquifer recharge, agricultural diversions, and non Water Agency municipal and industrial (M&I) diversions. In the model, system losses are aggregated by reach between each junction. System losses not associated with the Water Agency's diversions were estimated through an analysis of historical M&I data, flow gage data, unimpaired flow data and climate data from 2002 to 2008. Because the model calculates the reservoir releases necessary to meet minimum instream flow requirements, all water uses in the watershed, not just demands of the Water Agency's transmission system, are satisfied by such simulated flow releases.

Based on a historical analysis of cumulative inflow into Lake Pillsbury (the metric used to determine water supply condition under Decision 1610) from 1910 to 2008, the average occurrence frequency of *Normal* water supply conditions is 86%, *Dry* water supply conditions is 11% and *Critical* water supply conditions is 4%. The Water Agency used the RR ResSim model to develop storage thresholds for Lake Mendocino that closely replicate the statistical

occurrence of *Normal*, *Dry* and *Critical* water supply conditions under Decision 1610 from January through June. The percent occurrences of water supply conditions for both Decision 1610 and the proposed Lake Mendocino storage thresholds discussed above are presented in the following Table 1.

	D1610 LP Cumulative Inflow			LM Storage Thresholds		
Date	**Normal**	**Dry**	**Critical**	**Normal**	**Dry**	**Critical**
1-Jan	85.8	8.1	6.1	81.6	11.2	7.1
1-Feb	78.7	13.2	8.1	83.8	11.1	5.1
1-Mar	85.9	10.1	4.0	88.9	7.1	4
1-Apr	86.9	10.1	3.0	86.9	10.1	3
1-May	84.8	13.1	2.0	85.9	11.1	3
1-Jun	86.9	11.1	2.0	87.9	10.1	2
Average	**84.8**	**11.0**	**4.2**	**85.8**	**10.1**	**4.0**

Table 1 - Percent occurrence of water supply conditions by month for D1610 and the proposed Lake Mendocino storage index.

4.0 CRITERIA FOR APPROVING TEMPORARY URGENCY CHANGES TO PERMIT 12947A

As required by Water Code section 1435, subdivision (b), the Board must make the following findings before issuing a temporary change order:

1. The permittee or licensee has an urgent need to make the proposed change;
2. The proposed change may be made without injury to any other lawful user of water;
3. The proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. The proposed change is in the public interest.

4.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an urgent need to make a proposed change exists when the State Water Board concludes that the proposed temporary change is necessary to further the constitutional policy that the water resources of the State be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented.

For this petition, an urgent need for the requested temporary changes exists because of the extremely low storage levels in Lake Mendocino and the fact, with the changes in PVP operations since 2004 and the recent FERC order authorizing PG&E to temporarily reduce PVP imports into the East Branch of the Russian River even further, cumulative inflow into Lake Pillsbury no longer is a good metric to determine water supply conditions in the Russian River System. Without the proposed changes, the applicable minimum instream flow requirements may require releases of water from Lake Mendocino at levels that would risk significant

depletions of storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the spring, summer and fall of 2014. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protection and stable flows in the upper Russian River.

4.2 No Injury to Any Other Lawful User of Water

If this petition is granted, the Water Agency still will be required to maintain specific minimum flows in the Russian River. Because these minimum flows will be present, all other legal users of water still will be able to divert and use the amounts of water that they may legally divert and use. Accordingly, granting this petition will not result in any injury to any other lawful user of water.

4.3 No Unreasonable Effect upon Fish, Wildlife, or Other Instream Beneficial Uses

Although using monthly storage thresholds in Lake Mendocino to determine the water supply conditions that will be used to determine Upper Russian River minimum instream flow requirements is likely to result in lower instream flows in the Upper Russian River after January 1 than would occur with the Decision 1610 hydrologic index (e.g., using the Lake Mendocino threshold will likely result in *Critical* conditions on January 1, whereas Decision 1610 (Lake Pillsbury inflow) would result in *Dry* conditions), any effects associated with such flow reductions would not be unreasonable, considering the potential catastrophic impacts to fish, wildlife and other instream beneficial uses that could occur with the present instream flow requirements, if they led to the draining of Lake Mendocino and the dewatering of the Upper Russian River. The Water Agency has consulted with staff from National Marine Fisheries, California Department of Fish and Wildlife, and the North Coast Regional Water Quality Control Board regarding filing a Temporary Urgency Change Petition requesting that minimum instream flows on the Upper Russian River be set by the proposed storage thresholds in Lake Mendocino rather than cumulative inflow into Lake Pillsbury. All three agencies supported filing the petition and concurred that storage thresholds in Lake Mendocino would most accurately reflect the water supply condition in the Upper Russian River System.

4.4 The Proposed Change is in the Public Interest

Approval of this petition will lead to minimum instream flow requirements for the Upper Russian River that will be based on a more accurate assessment of water supply conditions in Lake Mendocino and the Upper Russian River. This will help conserve stored water in Lake Mendocino, so that it can be released throughout 2014 to maintain instream flows for the benefit of all uses of Russian River water, including the salmonid fisheries in the Russian River. It is in the public interest to preserve these water supplies for these beneficial uses under present hydrological conditions.

5.0 LAKE SONOMA, DRY CREEK AND LOWER RUSSIAN RIVER, WATER AGENCY'S WOHLER/MIRABEL DIVERSIONS AND WATER CONSERVATION

Because the requested changes are not driven by low storage levels in Lake Sonoma and will not affect minimum flows in Dry Creek or the Lower Russian River, reductions in diversions by the Water Agency at its Wohler/Mirabel facilities on the Lower Russian River are not necessary. Furthermore, the Water Agency's current diversions are low, due to low winter demands. However, because of the historic dry conditions, some landscape irrigation is still occurring in the region. The Water Agency's water contractors are committed to eliminating unnecessary use of potable water for landscape irrigation. A regional public information campaign will be launched through the Sonoma-Marin Saving Water Partnership (Partnership) to instruct the public for the need to cease irrigation during the winter months. This campaign should provide a reduction in demands for the benefit of the region's water supply.

Also, the Water Agency and its water contractors continue to implement water use efficiency programs that align with the California Urban Water Conservation Council's Best Management Practices (BMPs) and comply with SB 7x-7. While these BMPs remain the baseline for the region, the establishment of the Partnership in December 2010 memorialized the region's commitment to long term, year round water use efficiency. The Partnership removes one of the most significant barriers to implementing conservation programs, funding. Each of the Partners has committed to a sustained level of funding that is allocated specifically to conservation program implementation.

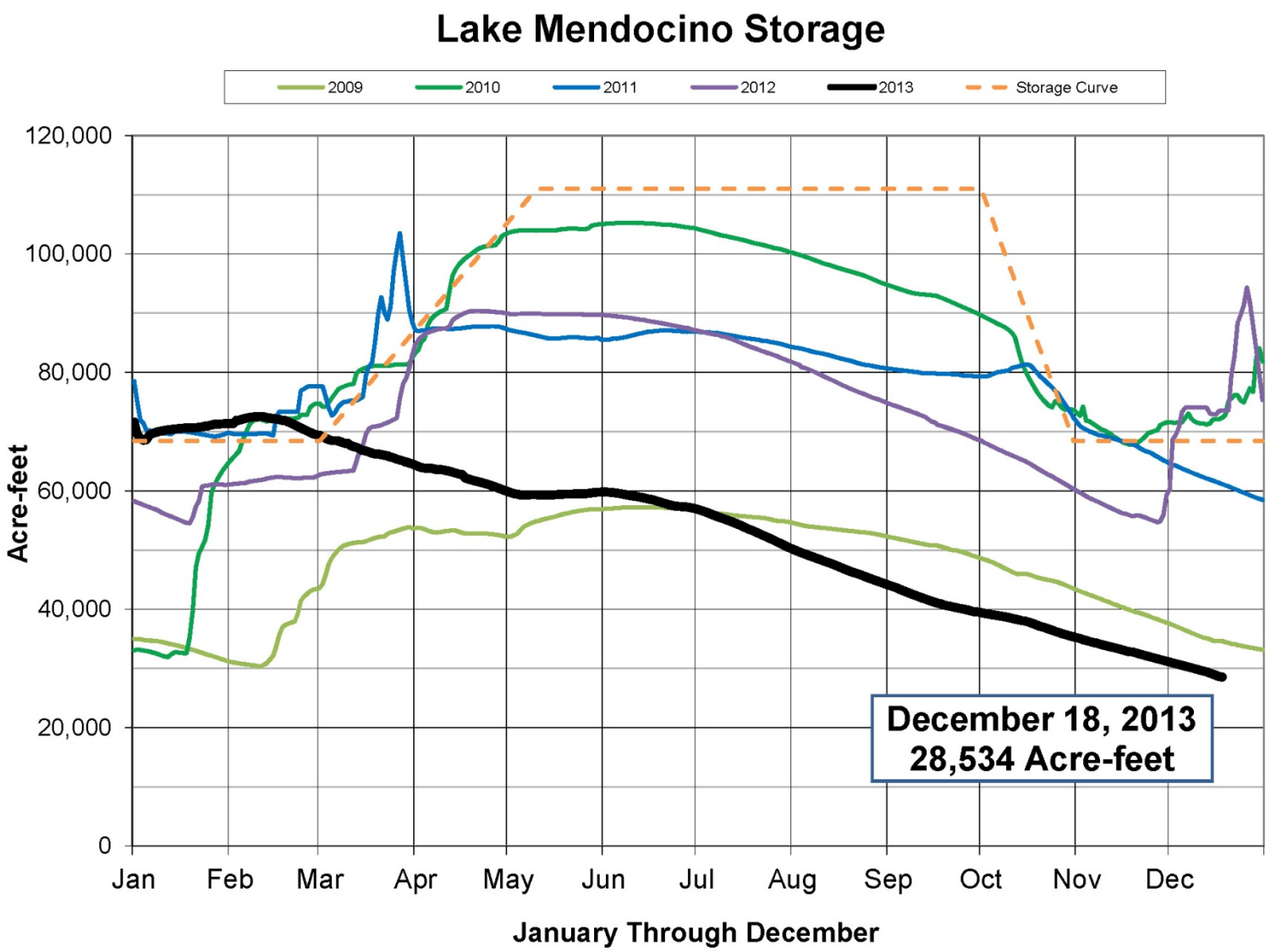
In response to the Order approving the Water Agency's April 2013 2013 TUCP, the Water Agency and the Partnership created a public awareness campaign called the 20-Gallon Challenge to reduce water use. The 20-Gallon Challenge called on the public to save 20 gallons per person per day to benefit local reservoir storage levels. Due to the 20-Gallon Challenge and other water conservation efforts, water demand did not increase from June through October compared to the same period the prior year. Additionally, the Partnership was recognized in October with a 2013 WaterSense Excellence award from the U.S. Environmental Protection Agency for promoting water efficient irrigation practices through implementation of the Qualified Water Efficient Landscaper Program.

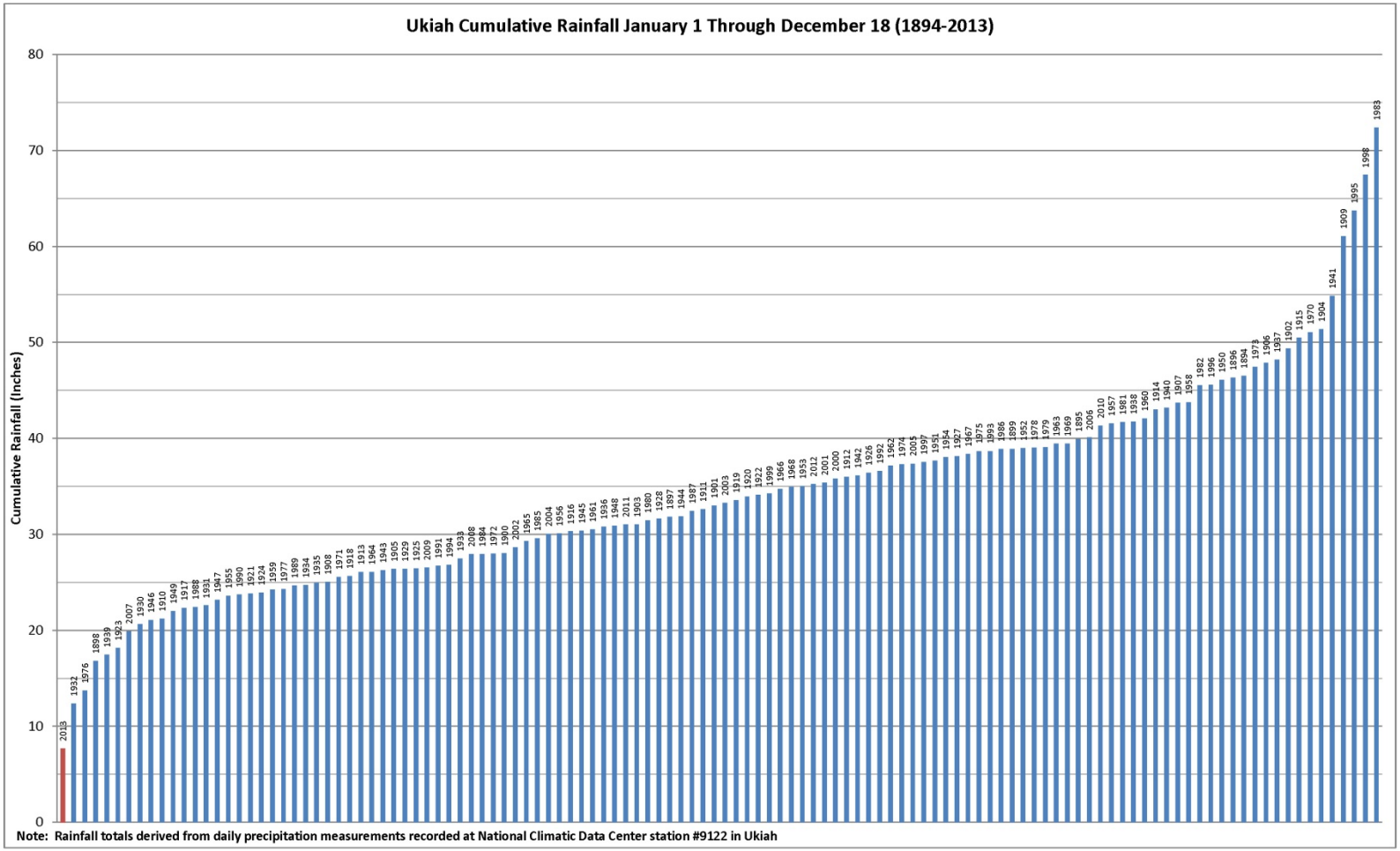
Also, as required by the Order approving the 2013 TUCP, the Water Agency was tasked with preparing a long-term reliability evaluation of the Lake Mendocino water supply (Term 17). The evaluation requires coordination with the water users and land use planners in the Upper Russian River from Lake Mendocino to the confluence of the Russian River with Dry Creek. To date, preliminary meetings and interviews have been conducted with the entities specified in the Order and available information sources and relevant documents have been identified. The final evaluation report will include an analysis of potential impacts to reservoir storage from future potential changes in land use as well as climate change. The report is due to the State Board by December 31, 2014. Currently, the Water Agency is preparing the interim status report that is due on December 31, 2013.

6.0 CONCLUSION

The Water Agency is submitting this Temporary Urgency Change Petition to address the unprecedented dry conditions that have occurred since January 1 of this year. Under these conditions and considering the uncertainty of how much precipitation the region will receive during the next few months, the Water Agency believes the applicable instream flow requirements for the Upper Russian River should be determined using the hydrologic index that best measures water supply conditions in the Russian River System. This index is the proposed monthly storage thresholds in Lake Mendocino.

Figures


Lake Mendocino Storage
2009
2010
2011
2012
2013
Storage Curve
120,000
100,000
80,000
60,000
40,000
20,000
0
Acre-feet
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
January Through December
December 18, 2013
28,534 Acre-feet


Ukiah Cumulative Rainfall January 1 Through December 18 (1894-2013)
Cumulative Rainfall (Inches)
0
10
20
30
40
50
60
70
80
2013 1932 1976 1898 1939 1923 2007 1930 1946 1910 1949 1917 1988 1931 1947 1955 1990 1921 1924 1959 1977 1999 1934 1935 1908 1971 1918 1913 1964 1943 1905 1939 1925 2009 1991 1994 1938 2008 1984 1972 1900 2002 1965 1985 2004 1956 1916 1945 1961 1936 1948 2011 1903 1980 1928 1897 1944 1987 1911 1901 2003 1919 1920 1922 1999 1966 1968 1953 2012 2001 2000 1912 1942 1926 1992 1962 1974 2005 1907 1951 1934 1927 1967 1975 1993 1986 1899 1952 1978 1979 1963 1969 1895 2006 2010 1957 1981 1918 1960 1914 1940 1907 1958 1982 1996 1950 1896 1994 1973 1996 1937 1902 1915 1970 1904 1941 1909 1995 1998 1983
Note: Rainfall totals derived from daily precipitation measurements recorded at National Climatic Data Center station #9122 in Ukiah

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

See attached supplement

Insert the attachment number here, if applicable: 1

Coordination with Regional Water Quality Control Board

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: 12/17/2013

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ◉ No

Will a waste discharge permit be required for the project? ○ Yes ◉ No

If necessary, provide additional information below:

Consultation was held with Matt St. John, the Executive Director, and Rich Fadness of the North Coast Regional Water Quality Control Board regarding the filing of the December 2013 Temporary Urgency Change Petition.

Insert the attachment number here, if applicable:

Local Permits

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: Date of Contact:

Department: Phone Number:

County Zoning Designation:

Are any county permits required for your project? If yes, indicate type below. ○ Yes ◉ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

- ☐ Regional Water Quality Control Board
- ☐ Department of Fish and Game
- ☐ Dept of Water Resources, Division of Safety of Dams
- ☐ California Coastal Commission
- ☐ State Reclamation Board
- ☐ U.S. Army Corps of Engineers
- ☐ U.S. Forest Service
- ☐ Bureau of Land Management
- ☐ Federal Energy Regulatory Commission
- ☐ Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

Agency	Permit Type	Person(s) Contacted	Contact Date	Phone Number

If necessary, provide additional information below:

Consultations with NOAA National Marine Fisheries Service and CA Department of Fish & Wildlife have been ongoing since the beginning of December with the most recent meeting on December 16, 2013.

Insert the attachment number here, if applicable: ☐

Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable: ☐

Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☐ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☐ At the place where water subject to this water right will be used

Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

All Water Right Holders Must Sign This Form:

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated December 19, 2013 at Santa Rosa, CA .

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

NOTE:

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**


Coyote Valley Dam, Lake Mendocino
Ukiah, CA
December 13, 2013


East Fork Russian River, Lake Mendocino
Calpella, CA
December 13, 2013

This notice was posted on DEC 18 2013
and will remain posted for a period of thirty days
through 01/19/2014

WILLIAM F ROUSSEAU, Co. Clerk

BY: Alma Roman
DEPUTY CLERK

NOTICE OF EXEMPTION

To: X Office of Planning & Research
1400 Tenth Street
Sacramento, CA 95814

X County Clerk
County of Sonoma
Santa Rosa, CA 95401

13-1218-1

X County Clerk
County of Mendocino
Ukiah, CA 95482

From: Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

Project Title: Petition Requesting Approval of a Temporary Urgency Change in Water Right Permit 12947A in Mendocino and Sonoma counties

Project Location-Specific: The proposed action would occur in Mendocino and Sonoma counties at Lake Mendocino and in the Upper Russian River from Coyote Valley Dam/Lake Mendocino to the confluence with Dry Creek. Figure 1 shows the streamflow requirements for the Russian River system. Communities and cities along the Russian River include Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Forestville, Mirabel Park, Rio Nido, Guerneville, Monte Rio, Duncans Mills, and Jenner.

Project Location – City: N/A **Project Location – County:** Mendocino and Sonoma

Description of Nature, Purpose and Beneficiaries of Project: The Sonoma County Water Agency (Water Agency) controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of Decision 1610, which the State Water Resources Control Board (SWRCB) adopted on April 17, 1986. Decision 1610 specifies the minimum instream flow requirements for the Upper Russian River, Dry Creek and the Lower Russian River, which vary based on water supply conditions. The requirements for the Upper Russian River have been incorporated into Term 20 of the Water Agency's water right Permit 12947A (Application 12919A). These minimum flow requirements vary based on water supply conditions, which are also specified by Decision 1610 and the above permit term. The water supply conditions defined in Decision 1610 and the above permit term are based on terms which set the minimum instream flow requirements in the Russian River System. These water supply conditions are determined based on criteria for the calculated cumulative inflow into Lake Pillsbury from October 1 to the first day of each month from January to June. Specifically, cumulative inflow for Lake Pillsbury is defined as the algebraic sum of releases from Lake Pillsbury, change in storage and lake evaporation. The Water Agency's operations are also subject to the Russian River Biological Opinion issued by the National Marine Fisheries Service on September 24, 2008.

The Water Agency is requesting that the SWRCB make the following temporary urgency change to Term 20 of the Water Agency's water right Permit 12947A. Starting January 1, 2014, the minimum instream flow requirements for the Upper Russian River will be established using an index based on water storage in Lake Mendocino, rather than using the current index, which is based on cumulative inflow into Lake Pillsbury. This temporary change is requested to preserve the Lake Mendocino water supply in case below normal rainfall and hydrologic conditions continue. Specifically, the Water Agency proposes that the monthly storage values listed below be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply condition that will be used to determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the Upper Russian River: (a) *Dry* water supply conditions will exist when storage in Lake Mendocino is less than

49130156

40,000 acre-feet (ac-ft) as of January 1, 59,000 ac-ft as of February 1, 68,000 ac-ft as of March 1, 69,500 ac-ft as of March 16, 71,000 ac-ft as of April 1, 70,000 ac-ft as of April 16, 69,000 ac-ft as of May 1, 67,500 ac-ft as of May 16, and 65,000 ac-ft as of June 1; (b) *Critical* water supply conditions exist when storage in Lake Mendocino is less than 31,000 ac-ft as of January 1, 36,000 ac-ft as of February 1, 52,000 ac-ft as of March 1, 53,000 ac-ft as of March 16, 54,000 ac-ft as of April 1, 53,000 ac-ft as of April 16, 52,000 ac-ft as of May 1, 51,000 ac-ft as of May 16, 50,000 ac-ft as of June 1; and (c) *Normal* water supply conditions as defined in Decision 1610 will exist in the absence of defined *Dry* or *Critical* water supply conditions.

Without significant storm events before December 31, Lake Mendocino storage will decline to approximately 25,000 ac-ft by the end of the year due to releases required to meet downstream water demands and minimum instream flow requirements on the Russian River. Furthermore, on December 9, 2013, Pacific Gas & Electric (PG&E) filed an application for a flow variance for the Potter Valley Project (PVP) with the Federal Energy Regulatory Commission (FERC). PG&E requested the variance due to extremely low storage levels in Lake Pillsbury and concern that they can no longer meet minimum flow requirements while also ensuring the safe operation of PVP. On December 12, 2013, FERC approved PG&E's flow variance request. This will reduce minimum instreams flows from the PVP into the East Branch of the Russian River from 35 cubic feet per second (cfs) to 5 cfs.

Water Agency staff is concerned that cumulative inflow into Lake Pillsbury since October 1, 2013, does not accurately reflect water supply conditions in the Russian River System. These cumulative inflows to date are 3,695 ac-ft and could exceed 4,000 ac-ft on January 1 or the thresholds for *Dry* conditions on the 1st day of some subsequent month, while hydrological conditions in the Russian River System remain very dry. If this were to occur, then Decision 1610 and Term 20 of Permit 12947A would require higher minimum instream flows in the Upper Russian River than Lake Mendocino could reliably sustain. Specifically, if there are no significant storms before the end of the year, coupled with FERC allowing PG&E to substantially reduce the amounts of water that are released from the PVP into the East Branch of the Russian River, then the higher minimum instream flow requirements for the Upper Russian River that are specified by Decision 1610 and Term 20 of Permit 12947A to begin on January 1, 2014, could cause storage levels in Lake Mendocino to rapidly decline to unsafe levels. If storage in Lake Mendocino is depleted, then water will not be available to maintain the Upper Russian River flows during the spring, summer, and fall of 2014 that will be necessary to support downstream beneficial uses, including habitat for threatened and endangered species, agriculture, and domestic/municipal water supplies.

An urgent need for the requested temporary changes exists because of the extremely low storage levels in Lake Mendocino and the fact, with the changes in PVP operations since 2004, cumulative inflow into Lake Pillsbury is no longer a good metric to determine the water supply conditions in the Russian River System. Without the proposed changes, the applicable minimum instream flow requirements may require releases of water from Lake Mendocino at levels that would risk significant depletions of storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the spring, summer, and fall of 2014. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protection and stable flows in the Upper Russian River.

Name of Public Agency Approving Project: State Water Resources Control Board - Division of Water Rights

Name of Person or Agency Carrying Out Project: Sonoma County Water Agency

Exempt Status: (check one)

	Ministerial (Sec. 21080(b)(1); 15268)	
	Declared Emergency (Sec. 21080(b)(3); 15269(a))	
X	Emergency Project (Sec.21080 (b)(4); 15269(b)(c)):	Section 21080(b)(4): Specific actions necessary to prevent or mitigate an emergency
X	Categorical Exemption. State type and section number:	State CEQA Guidelines 15307: Actions by Regulatory Agencies for Protection of Natural Resources State CEQA Guidelines 15308: Actions by Regulatory Agencies for Protection of the Environment State CEQA Guidelines 15301(i): Existing Facilities
	Statutory Exemptions. State code number:	

Reasons why project is exempt: The proposed action is statutorily exempt under California Environmental Quality Act (CEQA) Statute 21080(b)(4) and categorically exempt from CEQA under the State CEQA Guidelines Sections 15307, 15308, and 15301(i).

A. Actions to Prevent or Mitigate an Emergency

California Public Resources Code, Division 13, Section 21080(b)(4) provides that specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. As of December 12, 2013, the water supply storage level in Lake Mendocino was approximately 29,500 acre-feet. This storage level is 43 percent of the available winter water supply pool and 27 percent of the summer water supply pool. The current low storage level is the result of severely low rainfall in the region since January 1 of this year. Only 7.67 inches of rainfall has fallen in the Ukiah area since January 1, 2013, which is just 23 percent of the average 33.01 inches for this period based on precipitation records dating back to 1893. This is the lowest rainfall year on record in 120 years.

Without significant storm events before December 31, Lake Mendocino storage will decline to approximately 25,000 ac-ft by the end of the year due to releases required to meet downstream water demands and minimum instream flow requirements on the Russian River. Furthermore, on December 9, 2013, PG&E filed an application for a flow variance for the PVP with the FERC. PG&E requested the variance due to extremely low storage levels in Lake Pillsbury and concern that they can no longer meet minimum flow requirements while also ensuring the safe operation of PVP. On December 12, 2013, FERC approved PG&E's flow variance request. This will reduce minimum instreams flows from the PVP into the East Branch of the Russian River from 35 cfs to 5 cfs.

The Water Agency is concerned that cumulative inflow into Lake Pillsbury since October 1, 2013, does not accurately reflect water supply conditions in the Russian River System. These cumulative inflows to date are 3,695 ac-ft and could exceed 4,000 ac-ft on January 1 or the thresholds for *Dry* conditions on the 1st day of some subsequent month, while hydrological conditions in the Russian River System remain very dry. If this were to occur, then Decision 1610 and Term 20 of Permit 12947A would require higher minimum instream flows in the Upper Russian River than Lake Mendocino could reliably sustain. Specifically, if there are no significant storms before the end of the year, coupled with FERC allowing PG&E to substantially reduce the amounts of water that are released from the PVP into the East Branch of the Russian River, then the higher minimum instream flow requirements for the Upper Russian River that are specified by Decision 1610 and Term 20 of Permit 12947A to begin on January 1, 2014, could cause storage levels in Lake Mendocino to rapidly decline to unsafe levels. If storage in Lake Mendocino is depleted, then water will not be available to maintain the Upper Russian River flows

during the spring, summer, and fall of 2014 that will be necessary to support downstream beneficial uses, including habitat for threatened and endangered species, agriculture, and domestic/municipal water supplies.

B. Actions by Regulatory Agencies for Protection of Natural Resources and the Environment
CEQA Guidelines Sections 15307 and 15308 provide that actions taken by regulatory agencies to assure the maintenance, restoration or enhancement of a natural resource and the environment are categorically exempt. The proposed temporary urgency change to the Water Agency's water right Permit 12947A would conserve water in Lake Mendocino to support beneficial uses downstream of Lake Mendocino, including habitat for listed Russian River salmonid fisheries, agricultural and municipal use, and recreation.

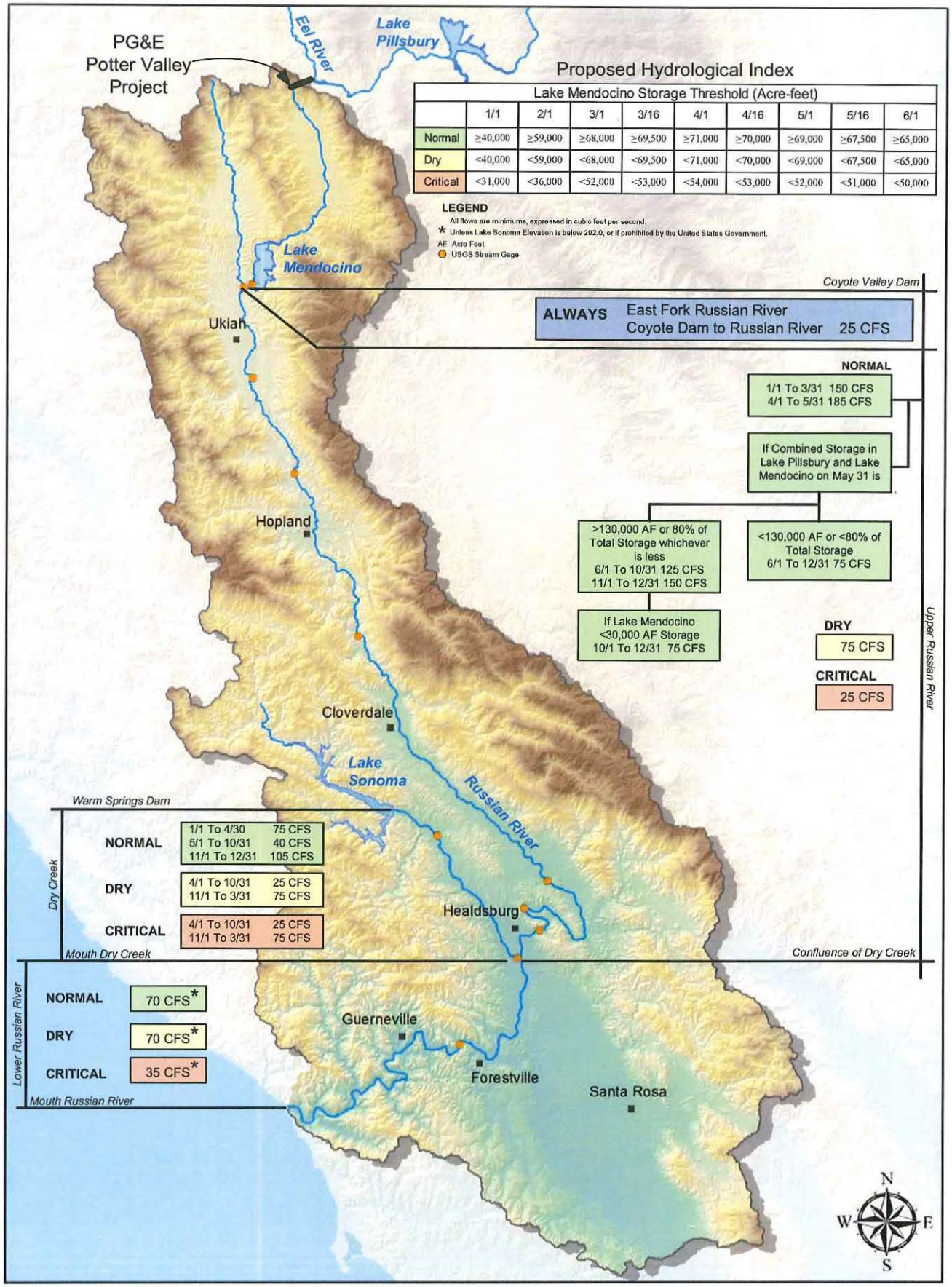
C. Existing Facilities
CEQA Guidelines Section 15301(i) provides, generally, that the operation of existing facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination is categorically exempt from CEQA. The examples in subdivision (i) of Section 15301(i) specifically provide that the maintenance of streamflows to protect fish and wildlife resources is exempt. The Water Agency's request to would not expand the Water Agency's use or increase the water diversions available to the Water Agency for consumptive purposes. The proposed change in would still be within the existing minimum instream flows established by SWRCB Decision 1610.

Lead Agency Contact Person: Jessica Martini-Lamb Area Code/Telephone: (707) 547-1903

Signature: _____ Date: 12/18/2013 Title: General Manager

X Lead Agency ___ Applicant Date Received for filing at OPR: _____

Proposed Hydrological Index



Russian River Basin
Streamflow Requirements

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

2013 ENVIRONMENTAL FILING FEE CASH RECEIPT

PRINT CLEAR

RECEIPT# 49130156

STATE CLEARING HOUSE # *(if applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY			DATE
Sonoma County Water Agency			12/18/2013
COUNTY/STATE AGENCY OF FILING			DOCUMENT NUMBER
Sonoma			13-1218-1

PROJECT TITLE
Petition Requesting approval of a temporary urgency change in water right permit 12947a in Mendocino and Sonoma Counties

PROJECT APPLICANT NAME			PHONE NUMBER
Sonoma County Water Agency			(707) 547-1900
PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
404 Aviation Blvd	Santa Rosa	Ca	95403

PROJECT APPLICANT *(Check appropriate box):*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$2,995.25	$ 0.00
☐ Negative Declaration (ND)(MND)	$2,156.25	$ 0.00
☐ Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$ 0.00
☐ Projects Subject to Certified Regulatory Programs (CRP)	$1,018.50	$ 0.00
☐ County Administrative Fee	$50.00	$ 0.00
☒ Project that is exempt from fees		
☒ Notice of Exemption		
☐ CDFW No Effect Determination (Form Attached)		
☐ Other _____		$ _____

PAYMENT METHOD:

☐ Cash ☐ Credit ☐ Check ☐ Other _____ TOTAL RECEIVED $ 0.00

SIGNATURE	TITLE
X [signature]	Deputy Clerk

ORIGINAL - PROJECT APPLICANT COPY - CDFW/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK FG 753.5a (Rev. 11/12)

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS WARRANT
REVOLVING FUND 10-052-000

WARRANT NO.
1388335

11-35
1210

DATE 12/16/2013
VOID AFTER SIX MONTHS

PAY THIS AMOUNT
******$850.00

PAY *Eight hundred fifty and 00/100 Dollars*

VOID

To The Order Of
CALIFORNIA DEPT OF FISH & WILDLIFE
P O BOX 944209
SACRAMENTO CA 94244-2090

DAVID SUNDSTROM
AUDITOR-CONTROLLER

⑈0001388335⑈ ⑆121000358⑆ 00439⑈8005O⑈

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS WARRANT
REVOLVING FUND 10-052-000

WARRANT NO.
1388334

11-35
1210

DATE 12/16/2013
VOID AFTER SIX MONTHS

PAY THIS AMOUNT
*****$5,932.00

PAY *Five thousand nine hundred thirty two and 00/100 Dollars*

VOID

To The Order Of
ST WATER RESOURCES CONTROL BOARD
ATTN: SWRCB ACCTG OFFICE
PO BOX 1888
SACRAMENTO CA 95812-1888

DAVID SUNDSTROM
AUDITOR-CONTROLLER

⑈0001388334⑈ ⑆121000358⑆ 00439⑈8005O⑈

Appendix A-6

Dec 31, 2013 State Water Resources Control Board Order

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

DEC 3 1 2013

In Reply Refer to:
EKH:A012919A

Mr. Grant Davis
General Manager
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-9019

Dear Mr. Davis:

ORDER APPROVING SONOMA COUNTY WATER AGENCY'S PETITION FOR TEMPORARY URGENCY CHANGE OF PERMIT 12947A (APPLICATION 12919A)

The enclosed Order approves the petition for temporary urgency change in Permit 12947A. Please review the conditions of the Order and retain the Order with your permit.

If you have any questions, please contact Emily Hyland at (916) 341-5803 or by email at Emily.Hyland@waterboards.ca.gov. Written correspondence should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Emily Hyland, P.O. Box 2000, Sacramento, CA 95812-2000.

Sincerely,

Katherine Mrowka

for Amanda Montgomery, Manager
Permitting and Licensing Section
Division of Water Rights

Enclosure

cc: See next page.

DEC 3 1 2013

cc: North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

National Marine Fisheries Service
Southwest Region
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

California Department of Fish and Wildlife
Region 3: Bay Delta Region
P.O. Box 47
Yountville, CA 94599

United States Geological Survey
California Water Science Center
6000 J Street, Placer Hall
Sacramento, CA 95819

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

In the Matter of Permit 12947A
(Application 12919A)

Sonoma County Water Agency

ORDER APPROVING TEMPORARY URGENCY CHANGE

SOURCE: East Fork Russian River

COUNTIES: Sonoma and Mendocino Counties

BY THE DEPUTY DIRECTOR FOR WATER RIGHTS:

1.0 SUBSTANCE OF TEMPORARY URGENCY CHANGE PETITION

On December 20, 2013, Sonoma County Water Agency (SCWA) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division) requesting approval of a change pursuant to California Water Code section 1435. The TUCP requests implementation of a hydrologic index based on Lake Mendocino storage values starting January 1, 2014 (proposed hydrologic index). The proposed hydrologic index is requested in lieu of the hydrologic index based on cumulative Lake Pillsbury inflow (current hydrologic index) to define the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek). The proposed hydrologic index is as follows:

a. Dry water supply conditions will exist when storage in Lake Mendocino is less than:

40,000 acre-feet as of January 1
59,000 acre-feet as of February 1
68,000 acre-feet as of March 1
69,500 acre-feet as of March 16
71,000 acre-feet as of April 1
70,000 acre-feet as of April 16
69,000 acre-feet as of May 1
67,500 acre-feet as of May 16
65,000 acre-feet as of June 1

b. Critical water supply conditions exist when storage in Lake Mendocino is less than:

31,000 acre-feet as of January 1
36,000 acre-feet as of February 1
52,000 acre-feet as of March 1
53,000 acre-feet as of March 16
54,000 acre-feet as of April 1
53,000 acre-feet as of April 16

52,000 acre-feet as of May 1
51,000 acre-feet as of May 16
50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

No changes to the current hydrologic index definitions as they apply to the lower Russian River (Russian River between its confluence with Dry Creek and the Pacific Ocean) or Dry Creek are requested.

The request is made to prevent significant depletions of storage in Lake Mendocino and potential elimination of water supplies for spring, summer, and fall of 2014. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare and reduce water supplies needed for fishery protection and stable flows in the upper Russian River.

2.0 BACKGROUND

SCWA's TUCP involves Permit 12947A. Permit 12947A is for direct diversion of 92 cubic feet per second (cfs) from the East Fork Russian River and storage of 122,500 acre-feet per annum (afa) in Lake Mendocino from January 1 through December 31 of each year.

Following is the language contained in Term 20 of SCWA's Permit 12947A:

For the protection of fish and wildlife, and for the maintenance of recreation in the Russian River, permittee shall pass through or release from storage at Lake Mendocino sufficient water to maintain:

(A) A continuous streamflow in the East Fork Russian River from Coyote Dam to its confluence with the Russian River of 25 cfs at all times.

(B) The following minimum flows in the Russian River between the East Fork Russian River and Dry Creek:

(1) During normal water supply conditions when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through August 31	185 cfs
From September 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

(2) During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 af or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 af or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through March 31	150 cfs
From April 1 through May 31	185 cfs
If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet	75 cfs

(3) During normal water supply conditions and when the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 af or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through December 31	75 cfs
From January 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

(4) During dry water supply conditions 75 cfs

(5) During critical water supply conditions 25 cfs

(C) The following minimum flows in the Russian River between its confluence with Dry Creek and the Pacific Ocean to the extent that such flows cannot be met by releases from storage at Lake Sonoma under Permit 16596 issued on Application 19351:

(1) During normal water supply conditions	125 cfs
(2) During dry water supply conditions	85 cfs
(3) During critical water supply conditions	35 cfs

For the purposes of the requirements in this term, the following definitions shall apply:

(1) Dry water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year is less than:

8,000 acre-feet as of January 1
39,200 acre-feet as of February 1
65,700 acre-feet as of March 1
114,500 acre-feet as of April 1
145,600 acre-feet as of May 1
160,000 acre-feet as of June 1

(2) Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year is less than:

4,000 acre-feet as of January 1
20,000 acre-feet as of February 1
45,000 acre-feet as of March 1
50,000 acre-feet as of April 1
70,000 acre-feet as of May 1
75,000 acre-feet as of June 1

(3) Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

(4) The water supply condition designation for the months of July through December shall be the same as the designation for the previous June. Water supply conditions for January through June shall be predetermined monthly.

(5) Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.

(6) Estimated water supply storage space is the calculated reservoir volume below elevation 1,828.3 feet in Lake Pillsbury and below elevation 749.0 feet in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U. S. Geological Survey, U. S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.

SCWA submitted with the TUCP a document prepared by its staff titled, "Supplement to the December 2013 Temporary Urgency Change Petition," (Supplement) dated December 2013. The Supplement indicates that on December 18, 2013 the water supply storage level in Lake Mendocino was 28,457 af. This storage level was 42 percent of the available winter water supply pool and 26 percent of the summer water supply pool. The low storage level is the result of severely low rainfall in the region since January 1 of this year.

According to the Supplement, without significant storm events between December 19 and December 31, 2013, Lake Mendocino storage will decline to approximately 26,000 af by December 31, 2013 due to releases required to meet downstream water demands and minimum instream flow requirements on the Russian River. This estimated amount is significantly lower than the December 31 levels that occurred in 1977 and 2009.

SCWA is concerned that the current hydrologic index, identified in Decision 1610 and included in Permit 12947A, does not accurately reflect water supply conditions in the Russian River System and, if current weather patterns persist, could cause storage levels in Lake Mendocino to rapidly decline to unsafe levels. The cumulative inflow to Lake Pillsbury, as of December 18 was 4,010 af, which exceeds the January 1 threshold for *Dry* conditions in the current hydrologic index (identified in Decision 1610 and Term 20 of Permit 12947A). Accordingly, the current hydrologic index will require SCWA to maintain minimum instream flows in the upper Russian River beyond levels which Lake Mendocino storage could reliably and safely sustain.

Furthermore, on December 9, 2013, Pacific Gas & Electric (PG&E) filed an application for a flow variance for the Potter Valley Project (PVP) with the Federal Energy Regulatory Commission (FERC). PG&E requested the variance due to extremely low storage levels in Lake Pillsbury and concern that they could no longer meet minimum flow requirements while also ensuring the safe operation of PVP. On December 12, 2013, FERC approved PG&E's flow variance request. This variance diminishes the reliability of the Lake Pillsbury cumulative inflow index as an accurate metric under current conditions and additionally, has resulted in a substantial reduction in required minimum flows in the East Fork of the Russian River and correspondingly reduced inflow into Lake Mendocino. Consequently, Lake Mendocino storage levels have begun to drop at a higher rate.

As described above, in lieu of the current hydrologic index, SCWA proposes Lake Mendocino monthly storage thresholds be used to define the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the upper Russian River. As described in the Supplement submitted by SCWA, the Lake Mendocino storage thresholds were developed using SCWA's Russian River System Model to approximately replicate the statistical occurrence of the water supply conditions under Decision 1610 from January through June, with an 86% occurrence of Normal conditions, an 11% occurrence of Dry conditions, and a 4% occurrence of Critical conditions.

As of December 18, 2013 the water supply storage level in Lake Sonoma was 170,091 af. This storage level is 69 percent of the available water conservation pool. This storage level is not significantly below normal for this time of year. In addition, the much larger water supply pool of Lake Sonoma provides multiple years of carry over storage. Consequently, no changes to the hydrologic index definitions as they apply to the lower Russian River (Russian River between its confluence with Dry Creek and the Pacific Ocean) or Dry Creek are requested at this time.

3.0 COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT

SCWA has determined that the requested temporary urgency change is statutorily and categorically exempt under the California Environmental Quality Act (CEQA). SCWA found that the change is consistent with the statutory exemption criteria for an emergency project as well as the Class 1, 7, and 8 categorical exemption criteria. The State Water Board has reviewed the information submitted by SCWA and has made its own independent finding that the temporary urgency change is statutorily and categorically exempt under CEQA for the following reasons:

- As of December 18, 2013, the storage level in Lake Mendocino was 42 percent of the available winter water supply pool and 26 percent of the summer water supply pool. Information provided by SCWA demonstrates that, without significant storm events before December 31, continued releases of water pursuant to the current hydrologic index in term 20 of Permit 12947A as it applies to the upper Russian River could cause storage levels in Lake Mendocino to rapidly decline to unsafe levels. If storage in Lake Mendocino is depleted, there will be serious impacts to human health and welfare and water will not be available to protect aquatic life, including threatened and endangered species, in the upper Russian River. Approval of the TUCP is therefore necessary to prevent and mitigate loss of, or damage to, the environment, fishery resources, property, public health, and essential public services. Accordingly the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency (Pub. Resources Code, § 21080, subd. (b)(4), Cal. Code Regs., tit. 14, § 15269, subd. (c).)

- The proposed action consists of the operation of existing facilities involving negligible or no expansion of use beyond that existing, and accordingly is categorically exempt from CEQA under a Class 1 exemption. (Cal. Code Regs., tit. 14, § 15301.) The proposed action will be within the existing minimum instream flows established by Decision 1610. The proposed action does not request and will not expand the water supply available to SCWA for consumptive purposes.

- The proposed action will assure the maintenance of a natural resource, i.e., the instream resources of the Russian River, by reserving water in Lake Mendocino to prevent harm to, and protect, habitat for listed Russian River salmonid fisheries, and accordingly is categorically exempt from CEQA pursuant to a Class 7 exemption. A Class 7 exemption "consists of actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment." (Cal. Code Regs, tit. 14, § 15307.)

- A Class 8 exemption "consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment." (Cal. Code Regs., tit. 14, § 15308.) The proposed action will assure the maintenance of the environment, i.e., the instream environment of the Russian River, in the same way as stated for the Class 7 exemption.

4.0 PUBLIC NOTICE OF THE TEMPORARY URGENCY CHANGE PETITION

The State Water Board will issue and deliver to SCWA as soon as practicable, a notice of the temporary urgency change order pursuant to Water Code section 1438(a). Pursuant to Water Code section 1438(b)(1), SCWA is required to publish the notice in a newspaper having a general circulation, and that is published within the counties where the points of diversion lie. The State Water Board will post the notice of the temporary urgency change and the TUCP (and accompanying materials) on its website. The State Water Board also will distribute the notice through an electronic notification system. Pursuant to Water Code section 1438, the State Water Board may issue a temporary urgency change order in advance of the required notice.

5.0 CRITERIA FOR APPROVING THE PROPOSED TEMPORARY URGENCY CHANGE

Water Code section 1435 provides that a permittee or licensee who has an urgent need to change the point of diversion, place of use, or purpose of use from that specified in the permit or license may petition for a conditional temporary change order. The State Water Board's regulations set forth the filing and other procedural requirements applicable to TUCPs. (Cal. Code Regs., tit. 23, §§ 805, 806.) The State Water Board's regulations also clarify that requests for changes to permits or licenses other than changes in point of diversion, place of use, or purpose of use may be filed, subject to the same filing and procedural requirements that apply to changes in point of diversion, place of use, or purpose of use. (*Id.*, § 791, subd. (e).)

Before approving a temporary urgency change, the State Water Board must make the following findings:

1. the permittee or licensee has an urgent need to make the proposed change;
2. the proposed change may be made without injury to any other lawful user of water;
3. the proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. the proposed change is in the public interest.

(Wat. Code, § 1435, subd. (b)(1-4).)

5.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an "urgent need" means "the existence of circumstances from which the board may in its judgment conclude that the proposed temporary change is necessary to further the constitutional policy that the water resources of the state be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented . . . ." However, the State Water Board shall not find the need urgent if it concludes that the petitioner has failed to exercise due diligence in petitioning for a change pursuant to other appropriate provisions of the Water Code.

In this case, an urgent need exists for the proposed change in the hydrologic index for determining minimum instream flow requirements on the upper Russian River because, as described in the Supplement, cumulative inflow into Lake Pillsbury is no longer a good metric to determine water supply conditions in the Russian River system due to the extremely low storage levels in Lake Mendocino, the changes in PVP operations since 2004, and the recent FERC order authorizing reduced imports into the East Branch of the Russian River. Without the proposed changes, the current hydrologic index may require releases of water from Lake Mendocino at levels that would risk significant depletions of storage and potential elimination of water supplies for water users in Mendocino County and northern Sonoma County (above the confluence with Dry Creek) during the spring, summer and fall of 2014. Such depletions in storage and reductions or eliminations of water supplies would cause serious impacts to human health and welfare, and reduce water supplies needed for fishery protections and stable flows in the upper Russian River.

5.2 No Injury to Any Other Lawful User of Water

Under this Order, SCWA will be required to maintain specific flows in the Russian River from its most upstream point of diversion to the river's confluence with the ocean. Therefore, because these minimum flows will be present, it is anticipated that all other lawful users of water will still be able to divert and use the amounts of water to which they are legally entitled during the period specified in this Order. Moreover, failure to implement the proposed hydrologic index could result in severe depletion of Lake Mendocino, which in turn could result in serious impacts to entitled users of water downstream of Lake Mendocino later in the year. Accordingly, granting this TUCP will not result in any injury to any other lawful user of water. Pursuant to Water Code section 1439, the State Water Board shall supervise diversion and use of water under this temporary change order for the protection of all other lawful users of water and instream beneficial uses.

5.3 No Unreasonable Effect upon Fish, Wildlife, or Other Instream Beneficial Uses

Using Lake Mendocino storage thresholds to determine the water supply conditions that will be used to determine upper Russian River minimum instream flow requirements is likely to result in lower instream flows in the upper Russian River after January 1, 2014 than might otherwise occur under the current hydrologic index. It is possible that such reduced flows may impair some instream beneficial uses in the upper Russian River. However, any effects associated with such flow reductions would not be unreasonable, considering the potential catastrophic impacts to fish, wildlife and other instream beneficial uses that could occur with the current hydrologic index, if the current hydrologic index led to the draining of Lake Mendocino and the dewatering of the upper Russian River. SCWA has consulted with the California Department of Fish and Wildlife (CDFW), the National Marine Fisheries Services (NMFS), and the Regional Water Quality Control Board (Regional Board) regarding filing the TUCP and the effects of the proposed change. All three agencies support the petition and concur that storage thresholds in Lake Mendocino would most accurately reflect the water supply condition in the upper Russian River system. CDFW and NMFS also concurred that the flow reductions that might occur as a result of the proposed index are prudent measures to protect aquatic resources (in particular threatened Chinook salmon egg incubation) as they will support conservation of Lake Mendocino's water supply and avoid dewatering of the upper Russian River.

To inform the review and approval of the TUCP and the State Water Board's continuing supervision of the diversion and use of water under this temporary change order pursuant to Water Code section 1439, this order requires SCWA to report on consultations with CDFW, NMFS, and the Regional Board during periods of reduced flow (should they occur). In addition, to ensure beneficial use of water resources to the fullest extent possible and to prevent waste of water, SCWA is required to provide a weekly update to the Deputy Director regarding the current hydrologic conditions of the Russian River watershed. This information will assist the State Water Board in determining whether additional actions are necessary.

5.4 The Proposed Change is in the Public Interest

Approval of this TUCP will help conserve stored water in Lake Mendocino so that it can be released throughout 2014 to maintain instream flows for the benefit and protection of all uses of Russian River water, including the salmonid fisheries in the Russian River. It is in the public interest to preserve these water supplies for these beneficial uses under present hydrological conditions.

To further ensure preservation of Lake Mendocino water supplies in the public interest, SCWA was required, pursuant to a State Water Board order dated May 1, 2013, to prepare a long-term reliability evaluation of the Lake Mendocino water supply (Term 17). The evaluation requires coordination with the water users and land use planners in the upper Russian River from Lake Mendocino to the confluence of the Russian River with Dry Creek. The final evaluation report will include an analysis of potential impacts to reservoir storage from future potential changes in land use as well as climate change. The report is due to the State Water Board by December 31, 2014. Currently, SCWA is preparing the interim status report that is due on December 31, 2013. In addition and notwithstanding the fact that the TUCP does not request changes to the requirements for instream flows on the lower Russian River or Dry Creek, SCWA and its water contractors continue to implement water use efficiency programs that align with the California Urban Water Conservation Council's Best Management Practices (BMPs) and comply with SBx7-7. Imposing additional conservation requirements on SCWA and its water contractors is unnecessary at this time because SCWA's diversions during the effective period of the change will be supported primarily by water released from storage in Lake Sonoma. As described above, SCWA has requested no changes to the hydrologic index definitions as they apply to the lower Russian River or Dry Creek. Therefore, reducing SCWA's demand will not alleviate low storage conditions in Lake Mendocino.

6.0 CONCLUSIONS

The State Water Board has adequate information in its files to make the evaluation required by Water Code section 1435.

I conclude that, based on the available evidence:

1. The permittee has an urgent need to make the proposed change;
2. The petitioned change will not operate to the injury of any other lawful user of water;
3. The petitioned change will not have an unreasonable effect upon fish, wildlife, or other instream beneficial uses; and,
4. The petitioned change, with the modifications described above, is in the public interest.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT: the Petition filed by Sonoma County Water Agency (SCWA) for a temporary urgency change in Permit 12947A is approved.

All existing terms and conditions of the subject permit remain in effect, except as temporarily amended by the following provision:

1. From the date of this Order until June 29, 2014, the minimum instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) will be established using a hydrologic index based on water storage in Lake Mendocino. The definitions included in term 20 of Permit 12947A shall be modified as follows as the definitions apply to the upper river:

    a. Dry water supply conditions will exist when storage in Lake Mendocino is less than:

        40,000 acre-feet as of January 1
        59,000 acre-feet as of February 1
        68,000 acre-feet as of March 1
        69,500 acre-feet as of March 16
        71,000 acre-feet as of April 1
        70,000 acre-feet as of April 16
        69,000 acre-feet as of May 1
        67,500 acre-feet as of May 16
        65,000 acre-feet as of June 1

    b. Critical water supply conditions exist when storage in Lake Mendocino is less than:

        31,000 acre-feet as of January 1
        36,000 acre-feet as of February 1
        52,000 acre-feet as of March 1
        53,000 acre-feet as of March 16
        54,000 acre-feet as of April 1
        53,000 acre-feet as of April 16
        52,000 acre-feet as of May 1
        51,000 acre-feet as of May 16
        50,000 acre-feet as of June 1

c. Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

2. During time periods when the water supply conditions pursuant to the Lake Mendocino storage level index (term 1 of this order) result in lower minimum instream flows than would have been required pursuant to the Lake Pillsbury cumulative inflow index (term 20 of Permit 12947A) SCWA shall consult with NMFS and CDFW every two weeks regarding the need for applicable fisheries monitoring activities on the Upper Russian River or changes to this temporary urgency change order. Upon approval by the Deputy Director, any necessary revisions to the terms and conditions of this order based on consultations with NMFS and CDFW shall be made. SCWA shall submit a summary report of consultation details to the Deputy Director within one week of each consultation meeting.

3. SCWA shall continue ongoing monitoring in coordination with the United States Geological Survey (USGS) at five multi-parameter water quality sonde sites on the Russian River located at Hopland, Diggers Bend in Healdsburg, SCWA river diversion facility at Mirabel, Hacienda Bridge, and Johnson's Beach. Additionally, during time periods when the water supply conditions pursuant to the Lake Mendocino storage level index (term 1 of this order) result in lower minimum instream flows than would have been required pursuant to the Lake Pillsbury cumulative inflow index (term 20 of Permit 12947A) SCWA shall consult with the Regional Board. Upon approval by the Deputy Director, any necessary revisions to the terms and conditions of this order based on Regional Board consultation shall be made. SCWA shall submit a summary report of consultation details to the Deputy Director within one week of each consultation meeting.

4. SCWA shall report to the Deputy Director and the Regional Board on a weekly basis during Dry and Critical water supply periods and a monthly basis during Normal water supply periods regarding the current hydrologic condition of the Russian River system, including current Lake Mendocino reservoir level, the rate of decline for Lake Mendocino, a 16-day cumulative rainfall forecast, current inflow from Potter Valley, and a summary of the water quality data from the five water quality sonde sites.

5. This Order does not authorize any act that results in the taking of a candidate, threatened or endangered species, or any act that is now 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). If a "take" will result from any act authorized under this Order, the permittee shall obtain authorization for an incidental take permit prior to construction or operation of the project. Permittee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the temporary urgency change authorized under this Order.

6. The State Water Board reserves jurisdiction to supervise the temporary urgency change under this Order, and to coordinate or modify terms and conditions, for the protection of vested rights, fish, wildlife, instream beneficial uses and the public interest as future conditions may warrant.

7. SCWA shall immediately notify the State Water Board if any significant change in storage conditions in Lake Mendocino occurs that warrants reconsideration of this Order.

STATE WATER RESOURCES CONTROL BOARD

James W. Kassel

for Barbara Evoy, Deputy Director
Division of Water Rights

Dated: DEC 3 1 2013

Appendix A-7

Jan 3, 2014 Temporary Urgency Change Petition 12919a Public Notice

NOTICE OF A TEMPORARY URGENCY CHANGE PETITION BY SONOMA COUNTY WATER AGENCY REGARDING PERMIT 12947A (APPLICATION 12919A)

COUNTY: MENDOCINO, SONOMA

STREAM SYSTEM: RUSSIAN RIVER
PACIFIC OCEAN

The Sonoma County Water Agency (SCWA) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (State Water Board), Division of Water Rights (Division) on December 20, 2013, pursuant to California Water Code section 1435. On December 31, 2013, the Division approved the TUCP. The TUCP requests implementation of a hydrologic index based on Lake Mendocino storage values starting January 1, 2014. This hydrologic index is requested in lieu of the current hydrologic index, which is based on cumulative Lake Pillsbury inflow, to define the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A will apply to the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek).

With the TUCP, SCWA submitted a document titled, “Supplement to the December 2013 Temporary Urgency Change Petition" (Supplement) dated December 2013. The Supplement provides: (1) a summary of the water supply conditions defined State Water Board Decision 1610; (2) an assessment of current water supply conditions of the Russian River system; (3) a description of the requested changes; and (4) a summary of the criteria for approving a TUCP. The Supplement indicates that this TUCP is necessary to prevent significant depletions of storage in Lake Mendocino and potential elimination of water supplies for spring, summer, and fall of 2014.

As described in the Supplement, on December 18, 2013, Lake Mendocino’s water supply storage level was 42 percent of the available winter water supply pool and 26 percent of the summer water supply pool. The current low storage level is the result of severely low rainfall in the region since January 1 of this year. Information provided by SCWA demonstrates that without a significant storm event Lake Mendocino storage will continue to substantially decline, due to releases required under the current hydrologic index. If storage in Lake Mendocino is depleted to extremely low storage levels there would be serious impacts to human health and welfare, and reduce water supplies needed for fishery protections and stable flows in the upper Russian River. The requested change is therefore necessary to prevent and mitigate damage to the environment, fishery resources, property, public health, and essential public services.

This notice, SCWA's TUCP, the Order approving the TUCP, and related project information can be viewed at:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/index.shtml.

Pursuant to California Water Code section 1438(d), any interested person may file an objection to the TUCP. The procedure for addressing an objection is described in Water Code section 1438. Objections filed in response to this notice should be submitted to the persons listed below and must be received by 4:30 p.m. on February 3, 2014.

Send objections to both:

Emily Hyland
Permitting Section
Division of Water Rights
State Water Resources Control Board
P. O. Box 2000
Sacramento, CA 95812

Grant Davis
General Manager
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-9019

For more information regarding this project, including procedures for filing objections, please contact Emily Hyland at (916) 341-5803 or Emily.Hyland@waterboards.ca.gov.

DATE OF NOTICE: January 3, 2014