

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
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Web: <http://www.waterboards.ca.gov/waterrights>

PETITION TO RECONSIDER

We have carefully read the following:

July 3, 2015, Order conditionally approving a Petition for Temporary Urgency Changes in license and permit terms and conditions requiring compliance with Delta water quality objectives in response to drought conditions, *and*

July 7, 2015, letter from Thomas Howard, State Water Resources Control Board, to Ron Milligan, U.S. Bureau of Reclamation, re: Approval of the June 25, 2015, Sacramento River Temperature Management Plan

Address, email address and phone number of petitioners:

Gary Bobker, Program Director, The Bay Institute, Pier 35, The Embarcadero at Beach Street, San Francisco, CA 94133, bobker@bay.org, 415-272-6616

Petition to reconsider based on ENVIRONMENTAL OR PUBLIC INTEREST CONSIDERATIONS

- not best serve the public interest
- have an adverse environmental impact

State facts which support the foregoing allegations:

- see attached

Under what conditions may this protest be disregarded and dismissed? (Conditions should be of a nature that the petitioner can address and may include mitigation measures.):

- see attached

All protests must be signed by the protestant or authorized representative:

Signed:

A handwritten signature in black ink, appearing to read "Gary Bobker". The signature is fluid and cursive, with the first name "Gary" written in a larger, more prominent script than the last name "Bobker".

Gary Bobker
The Bay Institute

Date: August 1, 2015

Provide the date served and method of service used:

Email transmitting this form and appendix sent to tom.howard@waterboards.ca.gov, cc'd to diane.riddle@waterboards.ca.gov and rmilligan@mp.usbr.gov.



**ENVIRONMENTAL AND PUBLIC INTEREST CONSIDERATIONS
REGARDING THE BAY INSTITUTE'S PETITION TO RECONSIDER
THE JULY 3, 2015, ORDER CONDITIONALLY APPROVING
A PETITION FOR TEMPORARY URGENCY CHANGES
IN LICENSE AND PERMIT TERMS AND CONDITIONS REQUIRING
COMPLIANCE WITH DELTA WATER QUALITY OBJECTIVES
IN RESPONSE TO DROUGHT CONDITIONS, AND
THE JULY 7, 2015, LETTER FROM
THOMAS HOWARD, STATE WATER RESOURCES CONTROL BOARD,
TO RON MILLIGAN, U.S. BUREAU OF RECLAMATION,
RE: APPROVAL OF THE JUNE 25, 2015,
SACRAMENTO RIVER TEMPERATURE MANAGEMENT PLAN**

This petition by the Bay Institute (TBI) to reconsider the July 3, 2015, order and the July 7, 2015, approval letter is based on the following environmental and public interest considerations:

1. Operations pursuant to the [Revised Sacramento River Water Temperature Management Plan](#) (Temperature Plan) are failing and will likely continue to fail to protect endangered winter-run Chinook salmon and other salmonids.
2. Changes in summer Delta outflow and summer-fall Sacramento River inflow will further exacerbate unreasonably poor conditions for both migrating salmonids and endangered estuarine fish species.

These considerations are addressed in greater detail below.

1. Operations pursuant to the Temperature Plan are failing and will likely continue to fail to protect endangered winter-run Chinook salmon and other salmonids.

In our February 13, 2015, protest to the SWRCB of proposed relaxations of Delta flow requirements in the Bay-Delta Water Quality Plan, we warned that:

Part of the stated basis for relaxing Delta outflow requirements is to preserve storage to provide adequate upstream habitat conditions for salmonids, but there

is little assurance or likelihood that such storage can or will be used to provide for the needs of salmonids spawning in 2015 and migrating downstream in subsequent years. Failure to protect either 2014 outmigrating salmonids or the 2015 year class throughout the freshwater stages of their life history could very well result in the extinction of winter-run Chinook salmon and severe impacts to other runs. Maintaining required outflows, on the other hand, will reduce extinction risk for both imperiled pelagic species and migratory species by minimizing the degradation of habitat conditions in the Delta. (February 13, 2015, TBI Appendix: Environmental and Public Interest Considerations Re TBI Protest of January 23, 2015 TUCP and Objections to February 3, 2015 SWRCB Executive Director's Order, p. 1).

In our May 19, 2015 letter requesting the SWRCB to modify Shasta Reservoir water operations to prevent temperature impacts to salmonids, we wrote that:

In light of the agencies' modeled temperature projections, the known error rate in that model, and the substantial and recognized flaws in Reclamation's temperature model, the proposed plan is likely to lead to substantial mortality of both winter run Chinook salmon and fall run Chinook salmon – an avoidable and unreasonably harmful impact in light of 2014's disastrous loss of temperature control. Inexplicably, the Board and other agencies have failed to limit reservoir releases in April and May of this year as proposed in the 2015 Drought Contingency Plan (which stated on page 17 that "flow releases at Keswick will be maintained at the minimum of 3,250 cfs this winter and spring," until "late May, [when] flow releases will increase at Keswick to facilitate temperature management along the upper reach of the Sacramento River"). This will substantially and adversely affect temperature control this year and is a major cause for the likely mortality of salmon later in the year. However, the Board can still improve temperature conditions and likely survival of Chinook salmon by reducing reservoir releases during the summer months to levels that are necessary for temperature control only, shifting the timing of some releases and downstream diversions until the fall months when the water is needed to maintain temperature control and provide habitat conditions for juvenile salmon, or will not adversely affect salmon. ([May 19, 2015](#), Letter from NRDC and TBI to Felicia Marcus Re: Request for the Board to Revise 2015 Drought Operations to Avoid Unreasonable Water Temperature Impacts to Salmon Fisheries and other Fish and Wildlife, p. 1).

Unfortunately, the July 3 order and July 7 approval letter authorize water quality conditions that are harmful to and will continue to harm incubating winter-run and fall-run Chinook salmon eggs, adult fall-run as they prepare to spawn, and, potentially, rearing juvenile salmon as well. These conditions result in part from operations that released too much water during April and May of 2015 (see above). However, the volume of water being released from Shasta and Keswick dams is still too high, to the detriment of temperature control efforts upstream. Large volumes of this

flow are being diverted by water districts along the Sacramento River corridor, which in turn jeopardizes the CVP and SWP's ability to maintain salinity control in the Delta.

High river temperatures caused by operations authorized in the Temperature Plan will result in avoidable and unreasonable mortality to winter-run and fall-run Chinook salmon eggs, larvae, and juveniles and may harm fall-run adults prior to spawning. Furthermore, given the well-known inadequacies of Reclamation's temperature model, water released from Shasta Reservoir beyond that which is needed for temperature control increases the likelihood that Reclamation will not be able to maintain even these inadequate temperatures in the late summer and fall – the result of such a complete loss of temperature control would be a repeat of conditions and outcomes witnessed in 2014 when the entire cohort of wild-spawned winter and fall-run salmon on the Sacramento River died due to the direct or indirect negative effects of exposure to high temperatures.

Operations and Water Quality Conditions under Temperature Plan: The Temperature Plan anticipates conditions that risk repeating last year's disastrous outcomes for winter-run and fall-run Chinook salmon. It targets average daily river temperatures “as close to 57°F as possible” at the Clear Creek (CCR) gage location (RM 288) but sanctions average temperatures as high as 58°F for an undefined duration (Temperature Plan at 1 and see [Reclamation's presentation to the SWRCB on 6/24/2015](#)). These temperatures are well above the (already insufficiently protective) 56°F daily average required under WR 90-5 and the 2009 NMFS Biological Opinion. There is no evidence to suggest that daily average water temperatures of 57-58°F and above will adequately protect incubating Chinook salmon eggs. The relevant metric for incubation temperatures is the 7-day average of daily maxima (7DADM). US EPA (2003) sets a threshold for a 7DADM of 55°F (see Table 4 page 25). Daily average temperatures will always be lower than the average of daily maxima, so a daily *average* temperature standard must be lower than 55°F to maintain this level of protection. A 7DADM of 58°F would result in unacceptable mortality to Chinook salmon eggs (either in the egg stage, or post-hatching, as larval or juvenile fish); but because 58°F is being applied as a *daily average*, even higher mortalities should be expected. This April, NMFS provided the SWRCB with guidance regarding the difference between average daily temperatures of 56°F temperatures and 58°F. That [memo](#) correctly rejected the notion of applying a higher daily average temperature standard stating:

...winter-run Chinook salmon cumulative mortality through rearing nearly doubled from 13.3°C (56oF) to 14.4°C (58oF).”

The NMFS memo also correctly identifies that negative effects of high incubation temperatures extend beyond the egg stage, causing higher rates of mortality later in life. This “sublethal” negative effect (actually: lethal in a subsequent life stage) is not accounted for in Reclamation's estimate of negative impacts from the Temperature Plan.

The Temperature Plan assumes that most salmon will spawn upstream of the Highway 44 bridge (SAC gage, RM 296; Temperature Plan at 1) where temperatures should be slightly cooler than those at the CCR control point. In fact, at this time, 99% of winter-run redds (175 of 177) are

located upstream of the Highway 44 bridge¹. However, Reclamation has failed to maintain adequate temperature conditions at this location either (Figure 1). From June 11 through July 30, 2015, mean temperatures at the SAC gage exceeded 56°F every day and equaled or exceeded 57°F on 17 days. Daily maximum temperatures exceeded 58°F nearly every day and exceeded 59°F for 18 days. Thus, we expect that lethal and irreversible negative sub-lethal effects have already accrued to a significant fraction of the 2015 cohort of wild-spawned winter-run Chinook salmon eggs.

Reclamation has already failed to provide minimal temperature protections for winter-run Chinook salmon eggs despite the Board's waiver of numerous environmental protections that were intended to enable Reclamation to retain adequate cold water reserves to protect winter-run Chinook salmon incubation in 2015 (including, reduction in Delta outflows for most of 2015²; reduction by almost 50 miles (or almost 90%) of the length of river in which winter-run incubation was supposed to be able to occur; and "flexibility" regarding the upper limit of daily average temperatures). This failure is egregious (especially given Reclamation's failure to protect the 2014 cohort of winter-run and fall-run Chinook salmon eggs due to inadequate cold water reserves stored behind Shasta Dam), but by no means surprising. In its April 2015 memo, NMFS identified the persistent nature of temperature exceedences during the winter-run Chinook salmon incubation period:

Even though State Water Resources Control Board Orders 90-5 and 91-1 require Reclamation to operate Keswick and Shasta dams to meet a daily average temperature of 56°F at Red Bluff Diversion Dam (RBDD) [or at a temperature compliance point (TCP) modified when the objective cannot be met at RBDD based on Reclamation's other operational commitments including those to water contractors, D-1641 regulations and criteria, and projected end of September storage volume], nearly every year, Reclamation has exceeded the TCP at some point throughout the temperature control season.

If these high water temperatures persist through the remainder of the winter-run incubation season, a very large fraction of the 2015 cohort of wild spawned eggs will die before they hatch

¹ The stretch of river between Keswick Dam and the Highway 44 Bridge is ~6 miles; so the entire global range for winter-run Chinook salmon reproduction is located in just 6 miles of habitat. Forcing this endangered species to put all its eggs in such an incredibly small area represents an extreme threat to the species' viability because the opportunity for random events (e.g., chemical spills, riparian fires, disease outbreaks, etc.) to wipe out the entire population is much higher in such a small area (McElhany et al 2003). By contrast WR 90-5 calls for maintenance of temperature control all the way to Red Bluff Diversion Dam (RM 242), a distance of 56 miles. Reclamation's repeated failure to store enough water behind Shasta Dam to allow temperature control throughout the incubation season over this range (forcing the winter-run to spawn in a smaller range) and the Board's practice of granting requests to move the temperature compliance point upstream, threatens the viability of winter-run to a degree comparable to this population's persistent low abundance.

² The July 3, 2015, Order identifies "temperature control to benefit salmon" as one of the beneficial uses that will be served by approving another Temporary Urgency Change to Delta salinity and outflow requirements. This same assertion was made in other TUC orders issued earlier this year and in 2014.

and any juveniles that do survive incubation will be severely compromised. In short, on the current trajectory, it is likely that we will lose most, if not all, of this year's winter-run Chinook salmon cohort before they reach the ocean.

Fall Run: In addition to ongoing negative impacts to winter-run Chinook salmon, operations under the Temperature Plan will have negative effects on fall-run Chinook salmon. The Temperature Plan does not address impacts of elevated temperatures to wild spawning fall run Chinook salmon at all; however, negative effects of temperature are highly likely under current operations. The impacts begin with the July 3 Order relaxing summer-fall Delta inflow, outflow, and salinity requirements and with associated elevation of river temperatures through November of this year (see below).

Under the Temperature Plan, water released into the Sacramento River from Keswick is expected to be above 56°F on an average daily basis in parts of each month from August to November; temperatures at Clear Creek will be above 57°F on average in parts of each of these months (Figure 2). Exposure of mature female Chinook salmon to high temperatures produces lower egg viability (higher egg, larval and juvenile mortality). USEPA (1999 at 19) states:

Even before eggs are deposited in gravels, exposure of adult females holding ripe eggs to temperatures above 14°C [57.2°F] can cause egg mortality and delayed inhibition of alevin development (Rice 1960, Leitritz and Lewis 1976).

Thus, Reclamation's modeling reveals that migrating fall-run Chinook salmon adults and their eggs will be exposed to temperatures (before and after spawning) that lead to mortality and sub-lethal negative effects.

There is every reason to expect that these temperature projections will underestimate actual temperatures because Reclamation's temperature model underestimates average temperatures (especially towards the end of the summer and early fall). For example, according to a hindcast analysis of Sacramento River temperatures and operations in 2014 (USBR 2014; available [here](#)), the temperature model significantly underestimated temperatures for three months, often by more than 4°F. This is not the first study to indicate that Reclamation's temperature model is inaccurate and biased towards underestimating late summer temperatures.

All of the above impacts were or are avoidable. They cannot be blamed on the drought because they result solely from human decisions about how to allocate water. SWRCB Executive Director Tom Howard has acknowledged that operational decisions made in 2014 caused unreasonable harm to Chinook salmon. Yet, many of the same operational decisions made in 2014 are being repeated in 2015. For example, despite the miserable performance of Reclamation's temperature model in 2014 and projections earlier this year that indicated that Reclamation would barely be able to maintain required temperatures at Clear Creek, Reclamation proceeded to deliver large volumes of water in April and May (even though it earlier provided assurances that Shasta releases would be held to a low level in order to conserve cold water resources; see our May 19, 2015 letter, cited above). Release of water above what

was needed to maintain temperature and other required water quality conditions during the spring unquestionably reduced the volume of cold water allowed for use later in the year. This error became particularly important when Reclamation discovered, at the end of May, that it had vastly underestimated the volume of cold water stored behind Shasta Dam (see slide 4 in [Reclamation's presentation to the State Water Board, 6/24/2015](#)).

Reclamation's own modeling reveals that lower release volumes would lead to more favorable temperatures for winter-run Chinook salmon eggs and fall-run Chinook salmon adults and eggs between August and November. Comparison of two scenarios (7250 cfs releases vs 6000 cfs releases) indicates that lower reservoir releases would result in slightly higher temperatures (about 0.5°F) early in the incubation season but lower temperatures (about 1°F lower) for a long period beginning in August (Figure 3). Given the well-known flaws in Reclamation's temperature model, the actual temperature projections are not likely to be accurate, but the relative comparison shows that conserving water in storage is expected to produce better temperature conditions for both winter-run and fall-run Chinook salmon. Furthermore, by releasing less water from storage, Reclamation would improve its chances of avoiding loss of temperature control entirely, as occurred in 2014. Complete loss of temperature control would guarantee extreme mortality rates of the winter-run and fall-run Chinook salmon cohorts for the second year in a row.

Indeed, Reclamation's modeling and current operations show that its decision to request releases of 7250 cfs in the Temperature Plan (rather than a lower release volume that would be both more conservative and more protective of Chinook salmon in the Sacramento River) is based on its prioritization of maintaining deliveries to senior water rights holders in the Sacramento River basin. Reclamation's releases from Shasta Dam blend water from upper (warmer) and lower (colder) levels of the reservoir. If less water is released from the upper levels of the reservoir, the water entering the Sacramento River will be colder. Of course, if Reclamation released additional cold water to replace the volume of water not taken from the upper layers of the reservoir, coldwater resources would be drained more quickly. However, from a fish incubation/rearing perspective, there is no need to release additional cold water to replace water from upper layers of the reservoir (warm water) that is not blended into the overall release.

The additional warm water that Reclamation is blending into its Shasta Reservoir releases is for delivery to senior water rights holders along the Sacramento River. For the month of July 2015, roughly 13,000 cfs was released from Keswick, Nimbus, and Oroville dams (see [DWR daily operations summaries](#)). The week of July 27th, 2,000 cfs of Feather River water was diverted from the Thermalito Afterbay that was not included in the reported Oroville release (see [SWP dispatchers daily water report](#)). Adding that brings total releases from those three dams to about 15,000 cfs. The roughly 15,000 cfs total release in July resulted in a 10,000 cfs reduction in Shasta, Oroville, and Folsom reservoir storage (see [DWR daily operations summaries](#)) -- about 5,000 cfs of releases from these reservoirs was replaced by inflow to the reservoirs. Only about half (7,000 to 8,000 cfs) of the released water reached the Delta--about 3,000 cfs of Sacramento River flow was diverted between Bend Bridge and Colusa (see [USGS gages](#)).

Conserving cold water in Shasta now could prevent loss of temperature control later in the summer and fall and could provide lower temperatures for incubating salmon eggs now as well (i.e., if less warm water was blended into releases). Such operations need not conflict with Reclamation's obligations to meet flow or salinity standards downstream (as modified by TUC orders this year). Current reservoir releases would exceed those needed to maintain water quality conditions downstream, but water diversions below the reservoirs reduce the amount of flow entering and leaving the Delta. Total Delta inflow in July ranged from 7,800 to 9,500 cfs, with less than 200 cfs (about 20% of the unimpaired flow—see [DWR daily FNF calculation](#)) coming from the San Joaquin River (see [DWR daily operations summaries](#)). Combined exports were less than 700 cfs and net Delta consumptive use further reduced Delta outflow to San Francisco Bay by more than 4,000 cfs. The estimated Net Delta Outflow Index in July ranged from 2,700 to 4,400 cfs (see DWR daily operations summaries)³.

Thus, extremely low Delta inflows and outflows resulted from high rates of water diversion between the reservoirs and the western Delta. At times, Delta outflow was insufficient to maintain required salinity levels (even at the reduced levels allowed by various TUC orders this year); however, these low Delta flows were not the result of insufficient storage behind or releases from dams in the Sacramento watershed. Reservoir release volumes are higher than those needed to maintain temperature control now (excessive release of warm waters is thwarting temperature control efforts, see above) – yet, despite these high releases, too little freshwater made it through the Delta, jeopardizing water quality conditions there (e.g., [here](#) and [here](#) and as reported [here](#)).

The Temperature Plan should be modified to ensure higher standards of protection, both in terms of temperature and the length of the river protected by adequate temperature protections. More conservative management will allow adjustments to potential "surprises" (e.g. model error, error in cold water pool storage, high temperatures). The fact is that aggressive management of cold water pool in year x leads to less cold water pool in year x+1 (Nickel et al. 2004).

In the future, more appropriate temperature management can be accomplished by:

- Limiting reservoir releases during extreme drought conditions to levels that do not exceed the minimum necessary to maintain temperature control, protect public health and safety, and comply with downstream water quality objectives and other regulatory requirements.

³ Sources: Daily Delta Operations Summary emails -

<http://www.water.ca.gov/swp/operationscontrol/docs/delta/deltaops.pdf>

SWP Dispatchers Daily Water Reports for the week of July 27th -

<http://www.water.ca.gov/swp/operationscontrol/projectwide.cfm>

Sacramento River USGS gages - <http://maps.waterdata.usgs.gov/mapper/index.html?state=ca>

USBR Delta Outflow Computation-

<http://www.usbr.gov/mp/cvo/pmdoc.html> and <http://www.usbr.gov/mp/cvo/vungvari/doutdly.pdf>

DWR daily FNF calculation -<http://cdec.water.ca.gov/cgi-progs/selectFNF>

- Managing to the 55°F standard USEPA recommends based on the best available science.
- Using a 7DADM metric, not a daily average, as USEPA recommends based on the best available science.
- Establishing and maintaining temperature compliance points that are further downstream (the current practice of moving the TCP upstream every year represents a severe impact to critical habitat and has effectively shrunk the geographic extent and viability of winter-run Chinook salmon).
- Requiring reservoir carryover storages as described in the 2009 NMFS biological opinion RPA for salmon and steelhead.

2. Changes in summer Delta outflow and summer-fall Sacramento River inflow will further exacerbate unreasonably poor conditions for both migrating salmonids and endangered estuarine fish species.

Relaxing summer-fall Delta inflow, outflow, and salinity requirements will add to the litany of problems facing salmonids in 2015. Fall-run Chinook salmon migration into the Sacramento River occurs throughout the summer and fall, with peak migration occurring in September and October. Reduced flows and elevated temperatures in the Sacramento River during this period may delay migration significantly or lead to migration failure for adult salmon attempting to locate their spawning grounds, and will expose migrating fish to stressful water quality conditions, including but not limited to higher water temperatures. Negative effects of reduced river flows on migrating San Joaquin fall-run Chinook adult salmon have been documented by Marston et al, 2012.⁴

Highly endangered estuarine pelagic species such as Delta smelt may also be adversely affected by the relaxations. Numerous studies have suggested that summer habitat for Delta smelt is increasingly constrained by water quality conditions associated with reduced Delta inflow and outflow (e.g., increased salinity, increased water clarity, and elevated temperatures), rendering much or all of the Delta during the summer months unsuitable habitat for this species (see Nobriga et al, 2008; Feyrer et al, 2007; and Bennett, 2005). Given that recent surveys have found the lowest abundance levels of Delta smelt in recorded history, and near record low population levels for other species, and given the near-total loss of the 2014 year class of Sacramento River Chinook salmon, relaxing Delta inflows and outflows from July through November may be the straw that breaks the camel's back for Delta smelt, migrating salmonids, and other species.

The native aquatic fauna of the San Francisco Bay-Delta estuary were in poor condition entering the drought, as a result of decades of unsustainable water management. The combination of extreme drought and extremely poor management decisions has created the real possibility that one or more runs of Chinook salmon and one or more estuarine pelagic fish species may go

⁴ The severely reduced river flows anticipated for late summer and fall will also negatively impact any juvenile winter-run that survive the high temperatures anticipated for the upper river because winter-run Chinook salmon juveniles are rearing and beginning their migrations around this time.

*Environmental and Public Interest Considerations Re TBI Protest of July 3, 2015 TUCP Order
and July 7 SRTP Approval Letter*

August 1, 2015

Page 9

extinct within the next year or two. Along with public health and safety, these fish and wildlife resources are the most sensitive beneficial use the SWRCB is charged with protecting. If the Board continues to relax critical ecosystem protections and approve operations that are grossly insufficient to maintain minimally acceptable environmental conditions, these beneficial uses will not be degraded – they will disappear forever. We urge you to act before it is too late.

Literature Cited

Bennett, W.A. 2005. Critical assessment of the delta smelt population in the San Francisco Estuary, California. *San Francisco Estuary and Watershed Science* 3: http://escholarship.org/uc/jmie_sfews

Feyrer F, Nobriga, ML, Sommer, TR. 2007. Multidecadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA. *Canadian Journal of Fisheries and Aquatic Sciences* 64(4): 723–734.

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USEPA, 2003. *EPA Region 10 guidance for Pacific Northwest state and tribal temperature water quality standards*. EPA 910-B-03-002. Environmental Protection Agency, Seattle, Washington.

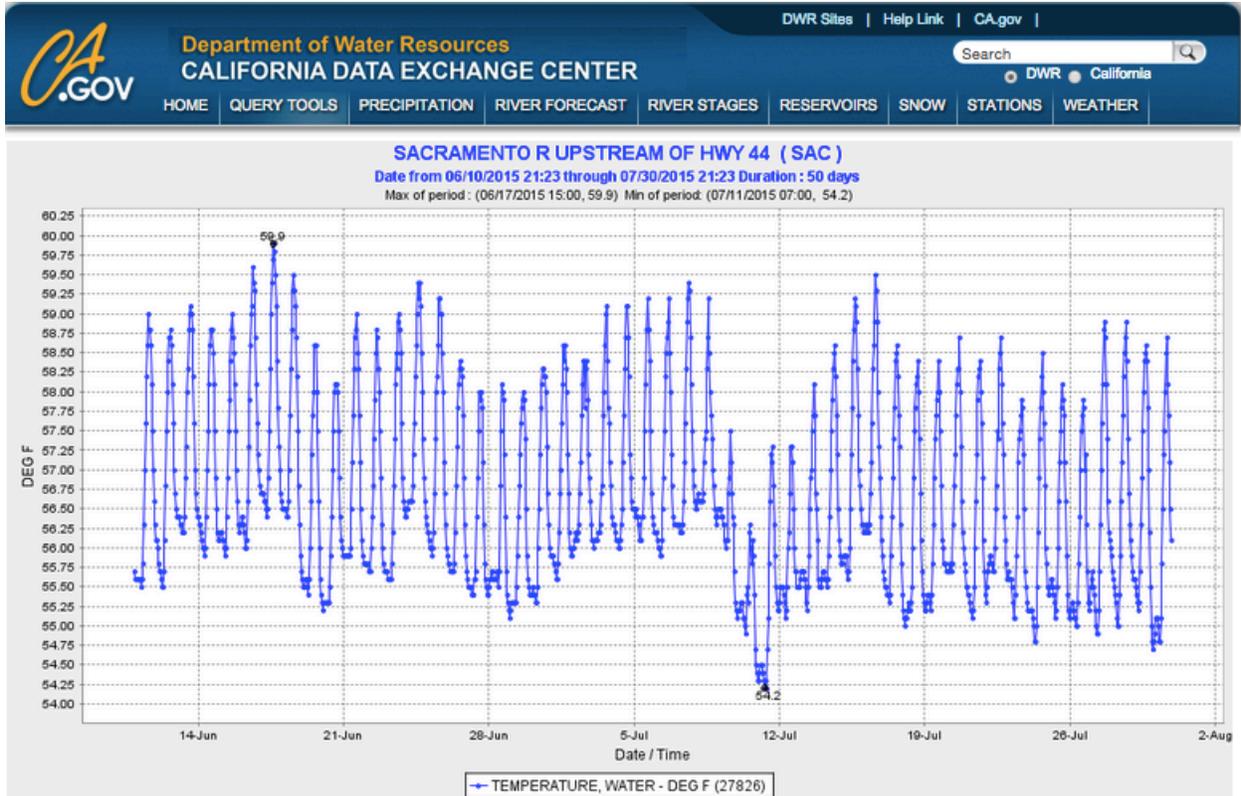


Figure 1: Temperatures measured just upstream of the Highway 44 Bridge Crossing of the Sacramento River from June 11 through July 30, 2015. Data from CDEC, available here: http://cdec.water.ca.gov/jspplot/jspPlotServlet.jsp?sensor_no=27826&end=07%2F30%2F2015+21%3A23&geom=huge&interval=50&cookies=cdec01

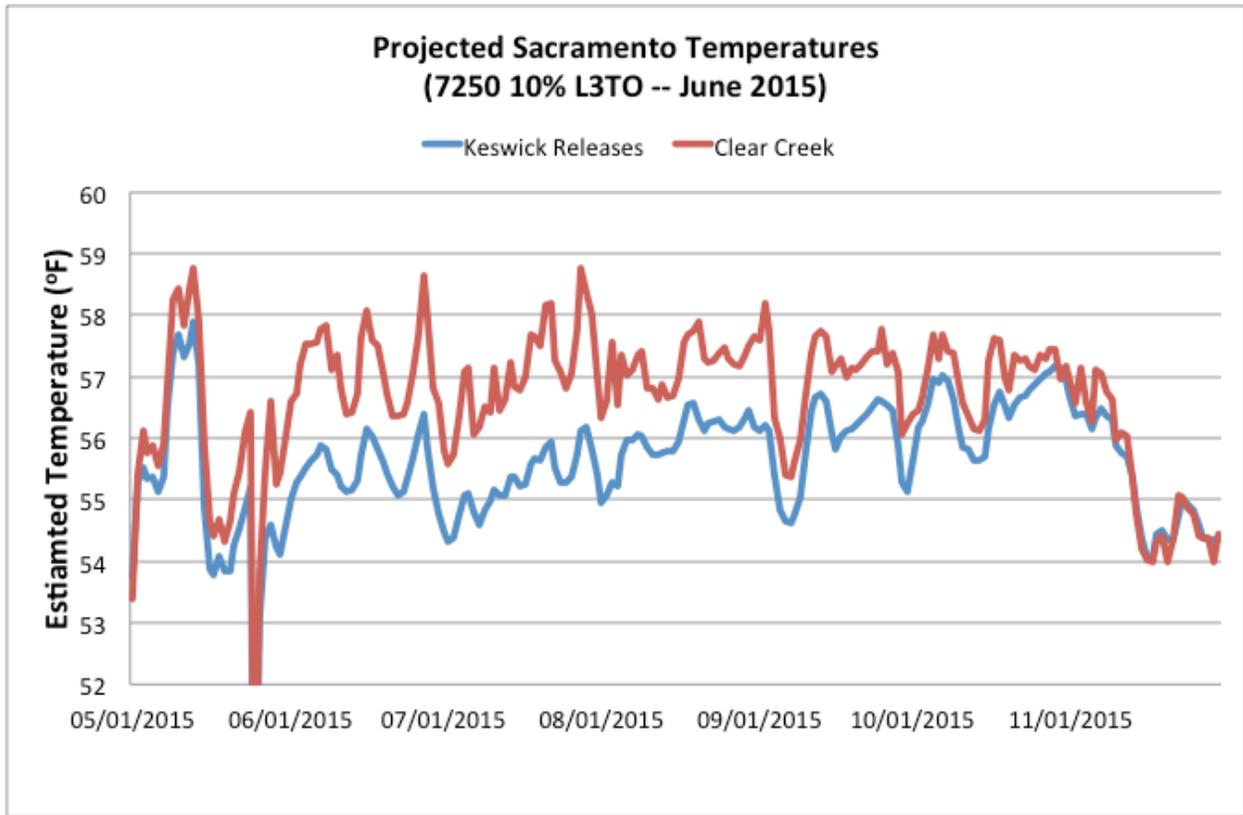


Figure 2: US Bureau of Reclamation temperature projections under its June 2015 temperature management plan, which assumes releases from Keswick Reservoir of 7250cfs and 10% temperature exceedences. Data available for download here: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/data.xlsx

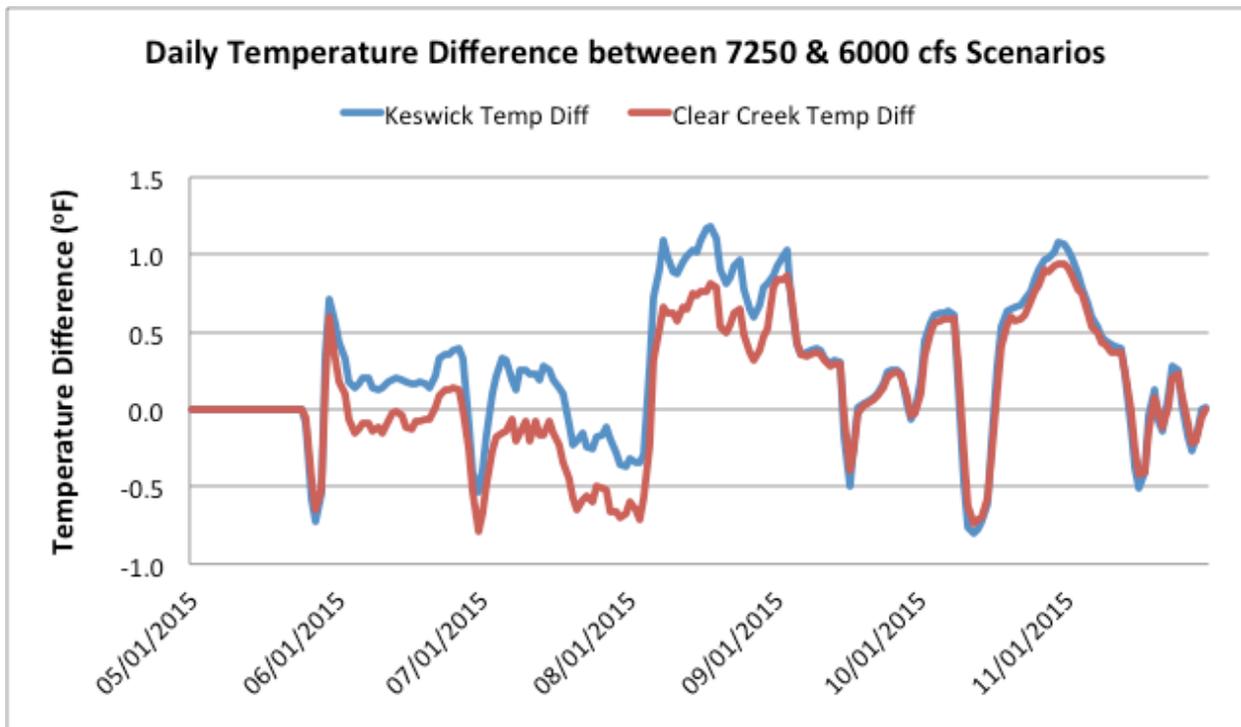


Figure 3: Projected temperature differences under two different operational strategies (7250cfs release and 6000cfs release from Keswick Reservoir) at two different locations in the Sacramento River. Negative numbers reflect lower temperatures under the 7250cfs release operations than under the 6000cfs release scenario; positive numbers indicate higher temperatures under the 7250cfs release strategy. In general, release of 7250 cfs is expected to produce lower temperatures (up to ~0.5°F lower) through early August, but higher temperatures (up to ~1°F higher) through August and parts of September, October, and November. Data from US Bureau of Reclamation temperature projections assuming 10% temperature exceedences.

Data available for download here:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/data.xlsx