

# **March 30, 2015 Request from State Water Board to Reclamation for Refined Sacramento River Temperature Modeling Information and a Plan for New Melones Operations to Reasonably Protect Fish and Wildlife**

## **Introduction**

This document describes additional information needed to further inform drought related actions by the State Water Board this water year. In January, the U.S. Bureau of Reclamation (Reclamation) and the Department of Water Resources submitted a Drought Contingency Plan for 2015. Since then the Board has received some updated information based on the 90 percent hydrologic exceedance level. At the 90 percent levels there appears to be concerns with reasonably protecting fish and wildlife resources, specifically cold water pool resources for salmonids. Conditions are currently tracking closer to a 99 percent level heightening those concerns. The following information request is being made to further evaluate and plan for expected conditions. Specifically, this request is for: 1) additional information to be included in a revised draft Sacramento River Temperature Management Plan for submittal to the Executive Director of the State Water Board and the Sacramento River Temperature Task Group (SRTTG) by April 3, 2015; and 2) a request for Reclamation to complete a draft plan by April 15, 2015, for operations of New Melones Reservoir that reasonably protects fish and wildlife resources on the Stanislaus River. The final temperature plan will be required to be submitted to the Executive Director and SRTTG by April 10, 2015 in order to inform decisions in the next several months. The final New Melones Plan should be submitted by April 24, 2015. Before proceeding with the analyses identified in this document, Reclamation staff should consult with State Water Board staff and other key fisheries agency staff, to the extent possible, to discuss this request and ensure that the intent and assumptions for this request are clear. The primary purpose of this request regarding the Sacramento River is to refine the modeling results provided with the draft Temperature Management Plan that was submitted on March 26, 2015, to meet the intent of condition 6 of the March 5, 2015 Executive Director Order acting on a Temporary Urgency Change Petition (TUCP) and to evaluate potential alternative operations that both reduce temperature impacts and water supply impacts of operations to control temperatures and eliminate redirected impacts. The primary purpose of this request regarding New Melones is to develop proposed operations that reasonably protect fish and wildlife in a way that minimizes water supply effects.

## **Sacramento River Temperature**

### **Background**

On February 3, 2015, the Executive Director of the State Water Board issued an Order approving, in part, a TUCP for the State Water Project and Central Valley Project. The Order was revised on March 5, 2015.

Pursuant to the requirements of the March 5 Order and Order WR90-5, Reclamation, in consultation with the fisheries agencies, must take the following actions, among other things:

- a) Perform hindcast temperature modeling of the water year 2014 temperature control season to verify Reclamation's temperature model accuracy. Model inputs will reflect observed water year 2014 conditions, including, but not limited to, observed air temperatures, inflows, inter-basin transfers, and all other relevant operations. Reclamation will perform further analysis to identify the source of any significant discrepancies between modeled and observed temperatures. Reclamation shall prepare a report comparing the results of the aforementioned hindcast model run(s) to the observed Sacramento River temperatures during the water year 2014 temperature control season. This report will include the full model input and output files used in the hindcast. The report shall be submitted to the State Water Board and Sacramento River Temperature Task Group by March 13, 2015.
- b) Reclamation, in coordination with the fisheries agencies, shall update the Temperature Management Plan for the Sacramento River for the 2015 winter-run Chinook salmon spawning and rearing period that considers other fisheries needs, including spring- and fall-run Chinook salmon. That plan shall identify and evaluate all available options for reducing temperature and redd dewatering impacts to winter-run Chinook salmon on the Sacramento River for the remainder of the 2015 Water Year. As part of the development of the Temperature Management Plan, Reclamation shall include three temperature model run scenarios: (a) Reclamation's preferred operations, (b) the fisheries agencies' preferred operations and (c) an optimal operation for which temperature control pursuant to Order 90-5 is the primary objective for operations in Water Year 2015 without consideration for contract deliveries and other demands for water from Shasta Reservoir. Reclamation shall follow direction from the fisheries agencies for the assumptions that should be made for model run scenario (b) and shall follow direction from State Water Board staff to determine the assumptions that shall be made for model run scenario (c). The 2015 temperature management plan shall be submitted to the Sacramento River Temperature Task Group (SRTTG) for review no later than March 25, 2015, with updates as necessary to reflect changing conditions. The final Temperature Management Control Plan shall be submitted to the State Water Board by June 1, 2015. Temperature model input and output files for all scenarios shall be included as an appendix to the Temperature Management Plan.
- c) Reclamation shall update the plan as conditions change or upon the request of the fisheries agencies or Executive Director or his designee. Any updates to the Temperature Control Plan shall include updated model results for all three scenarios. For the remainder of the drought, Reclamation shall meet weekly with the SRTTG to discuss operations and options for reducing or avoiding red dewatering, stranding and temperature impacts to winter-run Chinook salmon. Reclamation shall confer on recommendations from the SRTTG during the consultation process and other applicable CVP and SWP operational decision-making meetings. Reclamation shall immediately make available technical information requested by the Executive Director or his designee through the consultation process. Reclamation shall report monthly to the State Water Board during its Board meeting on actions that have been or will be taken to reduce impacts to winter-run Chinook salmon, through the remainder of the drought.

On March 17, 2015, Reclamation submitted a report titled "Initial Hindcast of Temperature Performance of Sacramento River 2014" pursuant to condition 6 (a) of the March 5 Order. On

March 26, 2015, Reclamation submitted results of temperature modeling runs in support of the draft 2015 Temperature Management Plan. Reclamation's temperature modeling runs for scenarios 6(b) and 6(c) did not avoid redirected fisheries impacts (and instead reduce contract deliveries) as requested. Instead, Folsom storage was reduced to zero and exports were reduced to zero at times. The following analyses are intended to result in the requested analyses, as well as investigate an alternative that reduces water supply effects.

#### Additional Information Request

The State Water Board requests the following runs to: 1) eliminate the redirected fisheries impacts to the American River resulting from scenario 6(b), and 2) evaluate alternative operations to alternative 6(a), that reduces water supply effects but maintains adequate temperatures at the Clear Creek compliance point throughout the temperature control season taking into account lessons learned from last year and the hindcast about the limitations of the Sacramento River temperature model and side-gate shutter operations. We request that Reclamation make the following modifications to the temperature modeling runs and resubmit to the Executive Director of the State Water Board and SRTTG, the runs along with the rest of the draft Temperature Management Plan, including results, model inputs and a discussion by April 3, 2015:

1. Modify the scenario labeled "Salmonid Plan," 6b (2) to distribute the impacts of reduced Shasta releases to depletions from the Sacramento River and/or exports. The scenario as submitted on March 26 assumes that all reductions in water availability as a result of reduced Shasta releases are made up by export reduction and releases from Folsom Reservoir which drives the reservoir to dead pool in July. The impacts to Folsom Reservoir as compared with the scenario labeled "Reclamation March Operations Forecast", 6b (1) should be re-distributed to Sacramento Valley gross depletions (as opposed to an increase in 106 TAF under the submitted scenario labeled "Salmonid Plan," 6b (2)) and/or export reductions up to health and safety pumping levels. State Water Board staff is available to provide further direction on these assumptions if needed. The temperature model will not likely need to be rerun for this modification, only the Reclamation operations forecast model.
2. Modify the scenario labeled "Reclamation March Operations Forecast", 6b (1) to provide an alternate iteration such that Keswick releases are reduced by 1,200 cfs for April and May as well as the value assumed for Keswick-Wilkins depletion. The distribution of the reduction in depletions between April and May may be modified in consultation with State Water Board staff to evaluate a more realistic alternative as necessary. The results for this scenario should show the same flow at Wilkins Slough as the results submitted on March 26, 2015, under the scenario labeled "Reclamation March Operations Forecast", 6b (1) and show increased end of September storage in Shasta of approximately +150 TAF or more compared to unmodified 6b (1). No other changes in Shasta releases should be made until October. Two iterations of this run should be provided- one that provides for a temperature of 56 degrees and one that provides for a temperature of 57 degrees Fahrenheit at the Clear Creek compliance location throughout the temperature control season.

3. Provide a description of the potential changes to Shasta Reservoir operations that may impact temperature under a March (or April if it is available) 2015 99 percentile exceedance scenario. This 99 percentile exceedance scenario should assume installation of drought barriers in the Delta and associated relaxations of Decision 1641 Delta requirements that would be requested with the barriers (Delta outflows of 2000-2500 cfs, reduced Rio Vista flows, relaxation of Emmaton salinity etc.). If Reclamation believes that this scenario would change Shasta Reservoir operations and may have an impact on Sacramento River temperature, provide a new modeling run to quantify this difference. The results for this analysis may be submitted by April 6 if necessary to avoid a delay in the submittal of items 1 and 2 above.
4. Provide all temperature and forecast model inputs and assumptions such as contract delivery percentages and quantities by month, accretion and depletions, meteorology, etc. and other information requested by State Water Board staff to fully evaluate temperature management options this year.
5. Please contact State Water Board staff with any questions on the necessary assumptions for the above analyses.

### **New Melones Operations**

#### **Background**

Recent information raises significant concerns regarding whether adequate storage conditions will be maintained in New Melones Reservoir in order to reasonably protect fish and wildlife resources this year. Reclamation's March 90 percent exceedance forecast indicates that New Melones storage at the end of the water year (end of September) will be about 132 thousand acre-feet (TAF). However, this appears to be an optimistic estimate given current storage levels (558 TAF), projected contract deliveries (450 TAF), limited expected inflows based on the latest Bulletin 120 update, needed storage to meet TUCP requested flows and biological opinion flows, and other system losses due to evaporation and seepage. Further, the San Joaquin River basin is tracking closer to a 99 percent exceedance level or worse, which may result in further reduced actual storage levels. Reclamation staff produced a power point presentation (ppt) that provides information about expected conditions in New Melones Reservoir at various storage levels. At storage levels between 225 and 160 TAF, the ppt indicates that all cold water coming into the reservoir will be trapped behind old Melones Dam. At storage levels between 160 and 95 TAF, there will may no cold water resources available in New Melones. At storage levels between 95 and 87 TAF, old Melones and New Melones are likely disconnected and New Melones water would warm in accordance with air temperatures. At storage levels below 95 TAF there are further significant water quality concerns, including significant temperature and sediment and debris loading issues. It also appears questionable whether water can even be released below storage levels of 87 TAF, or possibly more, because all of the water would be stored behind old Melones Dam where sediment and debris may be blocking the outlet. Of further concern is the issue of when reservoir levels would recover after dropping to such low levels. During the early 1990s drought relatively shortly after New Melones was constructed, storage levels in New Melones dropped below 100 TAF in September of 1992 and did not begin to recover until mid-January of 1993 and still stayed below 1 MAF until March of 1995. Since the early 1990s, sedimentation and debris loading have likely greatly increased as well as demands

from New Melones. All of these issues create a significant concern regarding operations of New Melones this year and the need to ensure adequate storage levels going into next year.

#### Additional Information Request

Based on the above concerns, the State Water Board requests that Reclamation develop a proposed plan for operations of New Melones Reservoir that provides reasonable protection of fish and wildlife on the Stanislaus River throughout the water year and going into next water year. Such a plan will likely be required in the April TUCP Order. The plan should provide appropriate temperature conditions for rearing steelhead and spawning steelhead and fall-run Chinook salmon and their eggs. The plan should provide a summary of projected monthly operations through the end of the calendar year at the March 99 percent exceedance level, including: projected inflows, deliveries, flow releases, system losses to seepage and evaporation and resulting storage estimates. The plan should also describe how the storage levels in the plan address the concerns identified above with storage levels below 225 TAF, including availability of cold water resources, sediment and debris issues and other water quality concerns. The draft plan should be developed with input from the Real Time Drought Operations Management Team, and specifically the Department of Fish and Game, National Marine Fisheries Service and State Water Board staff. The draft plan should then be submitted as soon as possible to the Executive Director and Real Time Drought Operations Management Team early enough to inform decisions regarding contract deliveries and no later than April 15, 2015.