Corrected - January 19, 2016*

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

ORDER WR 2015-0043

In the Matter of Specified License and Permits[1] of the Department of Water Resources and U.S. Bureau of Reclamation for the State Water Project and Central Valley Project regarding the Executive Director's February 3, 2015 Order and Subsequent Modifications to That Order

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ORDER DENYING IN PART AND GRANTING IN PART PETITIONS FOR RECONSIDERATION AND ADDRESSING OBJECTIONS

BY THE BOARD:

1.0 INTRODUCTION

By this Order, the State Water Resources Control Board (State Water Board) denies in part and grants in part petitions for reconsideration of the Executive Director's February 3, 2015 Order Approving in Part and Denying in Part a Temporary Urgency Change Petition (TUCP Order) to change requirements of the State Water Project (SWP) and Central Valley Project (CVP) (collectively Projects) to meet water quality objectives in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta), and subsequent modifications thereto. In large part, this Order denies the petitions for reconsideration of the TUCP Order and modified orders and finds that the Executive Director's decisions were appropriate when those decisions were made based on the information available at the time. However, this order also grants some of the petitions for reconsideration of the TUCP Order and modifications to the extent that the petitions seek to improve future planning for drought conditions. Specifically, this Order extends the TUCP Order to address actions needed for next year, if conditions continue to be dry, to preserve the public interest, prevent catastrophic impacts to fish and wildlife, and ensure

[1] The petition was filed for Permits 16478, 16479, 16481, 16482 and 16483 (Applications 5630, 14443, 14445A, 17512 and 17514A, respectively) of the Department of Water Resources for the State Water Project and License 1986 and Permits 11315, 11316, 11885, 11886, 11887, 11967, 11968, 11969, 11970, 11971, 11972, 11973, 12364, 12721, 12722, 12723, 12725, 12726, 12727, 12860, 15735, 16597, 20245, and 16600 (Applications 23, 234, 1465, 5638, 13370, 13371, 5628, 15374, 15375, 15376, 16767, 16768, 17374, 17376, 5626, 9363, 9364, 9366, 9367, 9368, 15764, 22316, 14858A, 14858B, and 19304, respectively) of the United States Bureau of Reclamation for the Central Valley Project.

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adequate water supplies are maintained in storage for minimal municipal water supplies and other critical needs. This Order also addresses petitions for reconsideration of the Executive Director's approval of the Sacramento River Temperature Management Plan (TMP) for the year 2015 and requires additional temperature management planning and related measures to respond to the issues raised in those petitions.

The following parties filed petitions for reconsideration: (1) San Luis & Delta-Mendota Water Authority, Westlands Water District, and the State Water Contractors (SLDMWA et al.); (2) Friant Water Authority (Friant); (3) Restore the Delta (RTD); (4) The Bay Institute (TBI); (5) San Joaquin River Exchange Contractors Water Authority, Central California Irrigation District, San Luis Canal Company, Columbia Canal Company, and Firebaugh Canal Water District (Exchange Contractors et al.); and (6) California Sportfishing Protection Alliance (CSPA), AquaAlliance, and California Water Impact Network (CSPA et al.). This Order addresses the major issues in those petitions. This Order also addresses some of the major objections to the TUCP Order and subsequent modifications. Although a formal response to petitions and objections to the TUCP Orders has not been provided until now, the Executive Director reviewed and considered all of the incoming petitions and objections on a continual basis and in some instances modified the TUCP Order in response to the issues raised in the petitions and objections.

On February 3, 2015, the Executive Director conditionally approved in part, subject to conditions, a temporary urgency change petition to modify the conditions of the water right permits for the Department of Water Resources' (DWR) SWP and the water right license and permits for the United States Bureau of Reclamation's (Reclamation) CVP. The approval temporarily modified water right requirements included in State Water Board Decision 1641 (D-1641) to implement flow-dependent and operational water quality objectives included in the Bay-Delta Water Quality Control Plan (Bay-Delta Plan) that were designed to protect fish and wildlife beneficial uses to address critically dry conditions associated with California's ongoing drought. The Order acknowledged further modifications may be made based on public input or changed circumstances. As a result of changed circumstances and subsequent requests from DWR and Reclamation, the Executive Director modified the TUCP Order on March 5, 2015, April 6, 2015, and July 3, 2015. The April 6 and July 3 modifications approved changes to a requirement to meet an objective designed to protect agricultural beneficial uses, in addition to changes to requirements to meet objectives designed to protect fish and wildlife beneficial uses.

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In the July 3, 2015 modification, the Executive Director renewed and modified the TUCP Order, which is now effective until December 30, 2015.

The TUCP Orders allowed the Projects to reduce the quantity of water provided for Delta outflow and inflows from February through November, by over 800 thousand acre-feet (TAF), and allowed the Projects to continue exporting up to 1,500 cubic-feet per second (cfs), with higher export rates allowed under specified circumstances, even when unchanged Delta outflow and inflow requirements were not met. This allowed the Projects to continue Delta exports, though exports were not always maintained at authorized levels due to salinity concerns, and to maintain water in upstream reservoirs for multiple uses throughout the year, including water deliveries to senior water right holders upstream of the Delta, temperature control to protect winter-run Chinook salmon, Delta salinity control, and south of Delta water deliveries and water transfers. Since temperature control releases are non-consumptive uses of water, those flows were also available for water supply and salinity control purposes downstream after they were released this summer and fall.

One of the primary purposes of the TUCP Order was to allow for storage to be conserved in upstream reservoirs for fisheries protection, specifically to provide for cold water storage in Shasta Reservoir to protect endangered winter-run Chinook salmon from temperature impacts while minimizing water supply impacts to Sacramento River settlement contractors. Protection of winter-run Chinook salmon with a 3-year lifecycle was, and is, of particular concern because the species experienced almost total mortality in 2014. As such, repeated high mortality in 2015 would likely cause significant harm to this species by affecting two years of winter-run Chinook salmon cohorts. The need to provide water for human uses was also a significant concern given the hardships reduced supplies have caused to local communities after a fourth year of a significant drought, the prolonged depleted nature of reservoirs, and the already depleted groundwater supplies throughout the State. The Executive Director acknowledged that the changes to Delta outflows, inflows and the other changes would likely result in less favorable conditions for Delta smelt, longfin smelt, migrating salmonids and other species. However, at the time the changes were approved, the tradeoff appeared to be reasonable based on the information available at the time, including biological reviews from DWR and Reclamation and concurrence from the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (DFW) (collectively fisheries agencies)

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with the changes. For these reasons, the petitions for reconsideration of the past Executive Director actions are denied.

Despite the efforts to protect winter-run Chinook salmon in 2015, the run appears to have experienced even higher mortality rates than in 2014. This likely occurred in part due to inadequate temperature management actions and other operational issues associated with incomplete information, untimely information exchange, misinterpretation of available data, and inadequate planning and responses. While the 2015 TUCP Order, TUCP Order modifications and TMP attempted to address these issues, which also existed in 2014, they were unsuccessful, establishing the need for more rigorous requirements going forward.

At the same time winter-run Chinook salmon experienced high mortality rates, numerous other threatened, endangered and commercially important species, including longfin smelt, Delta smelt, fall-run Chinook salmon, spring-run Chinook salmon and steelhead, also experienced significant population declines in 2015. The severity and duration of the decline of these species during the drought is a significant concern. In particular, no longfin smelt have been caught in surveys this fall and nearly no Delta smelt have been caught, leading to real concern that these species may be at the brink of extinction.

While fish populations are declining, Project storage levels are at critically and historically low levels. Shasta, Trinity, Oroville, Folsom and New Melones Reservoirs are at 29, 19, 26, 14, and 11 percent of capacity (at the beginning of December), respectively. Of particular concern in 2015 and going into 2016 is Folsom Reservoir, where storage levels have dropped to all-time low levels, which presents the possibility that diversion works for municipal water supplies for hundreds of thousands of people and other industrial needs could cease to function without the use of extraordinary methods such as the installation and operation of new pumping facilities. Storage levels in New Melones Reservoir are also at very low levels, less than 270 TAF, much less than half the amount of water contracted for out of the reservoir. This circumstance could result in the Stanislaus River running dry some time in 2016, as well as the San Joaquin River, which depends largely on inflows from the Stanislaus River, especially since other San Joaquin River reservoirs are similarly very low.

Delta salinity control also is tenuous, which has been the case throughout most of 2015. Violations of water quality and flow objectives have occurred, including violations of the changed

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requirements and for the less protective Sacramento River temperature target and TMP flow levels. Storm events thus far this year have yielded very little runoff into Project reservoirs or Delta waterways due to abnormally dry soil conditions and depleted storage in reservoirs upstream of Project reservoirs.

If very significant storm events do not occur this winter and spring, conditions for water supplies and fish and wildlife will be very poor and potentially disastrous. While El Niño storm events may bring much needed precipitation to California, it is not certain that will occur, especially in Northern California, where the Projects' major storage reservoirs are located. For the past several years, water supplies for fish and wildlife have been reduced substantially, with flows significantly lower than called for in D-1641 and the associated Bay-Delta Plan, and numerous species experienced significant and devastating declines that may lead to extinction. In the State Water Board's May 2015 Workshop on the TUCP and TMP, several Board members indicated that a margin of safety was needed to protect fish and wildlife. At that time, the options for adding that margin of safety were limited. The time for doing so for 2016 is in the next several months when planning and allocation decisions are being made. This Order is meant to put those actions in motion.

Based on the above concerns with the conditions that occurred last year and the current condition of species and water supplies, the State Water Board finds in this Order that it is appropriate to grant reconsideration of the TUCP Order in part to ensure protection of the public interest, fish and wildlife, and minimal water supplies for various uses going forward into 2016. This Order requires planning and implementation activities next year to prevent further catastrophic species declines and to ensure that minimal water supplies are conserved in storage for other critical needs if drought conditions continue. Specifically, this Order requires:

- Appropriate representatives from DWR and Reclamation with necessary information on current and potential future operations and necessary decision making authority to consult with the State Water Board and fisheries agencies on a regular basis regarding Project operations during the drought to protect all beneficial uses of water;
- Overall drought contingency planning, including: a margin of safety for fish and wildlife protection informed by the fisheries agencies to prevent continued catastrophic fisheries declines, provisions for salinity control and minimal health and safety water supply needs; specific modeling, monitoring, evaluation and reporting to assess and document

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the effects of drought operations; and evaluation of operations under 2014 and 2015 hydrologies to determine what water quality and flows measures could have been maintained with minimum storage levels;

- Provisions to address Sacramento River temperature management concerns, including: measures that maintain average daily maximum temperatures of 56° Fahrenheit at the designated compliance point downstream of Shasta Dam as required by Order 90-5 to ensure the protection of winter-run in 2016; a rigorous plan for conducting and evaluating temperature monitoring and modeling that ensures timely, accurate and consistent information; and evaluation of temperature control issues that occurred in 2015;
- A plan for operations of Folsom Reservoir that provides for the protection of municipal water supplies for hundreds of thousands of municipal users in the greater Sacramento area and fisheries dependent on Folsom Reservoir, including a minimum end of October 2016 storage level of at least 200 TAF to ensure adequate supplies for municipal uses going into the 2017 water year; and
- A plan to reasonably protect fish and wildlife on the Stanislaus River in 2016, including identification of needed storage and flow levels for the protection of fish and wildlife and how those conditions will be achieved.

2.0 FACTUAL AND LEGAL BACKGROUND

2.1 State Water Board Revised Decision 1641

In D-1641, the State Water Board amended the water right license and permits for the SWP and CVP to require the Projects to meet specified water quality objectives set forth in the Bay-Delta Plan. The flow and water quality requirements established in D-1641 are summarized in the tables and figures contained in Attachment 1 to this Order: Table 1 (Municipal and Industrial Beneficial Uses), Table 2 (Water Quality Objectives for Agricultural Beneficial Uses), and Table 3 (Water Quality Objectives for Fish and Wildlife Beneficial Uses). Included in Attachment 1 are the footnotes to Table 3 and Figure 1 (Sacramento Valley Water Year Hydrologic Classification), Figure 2 (San Joaquin Valley Water Year Hydrologic Classification), Figure 3 (Formulas for Net Delta outflow Index and Percent Inflow Diverted), and Table 4 (Chipps Island and Port Chicago Maximum Daily Average Electrical Conductivity).

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2.2 Drought Conditions

At the beginning of December, over 70 percent of the state was experiencing at least an Extreme Drought, with over 44 percent experiencing an Exceptional Drought (National Drought Mitigation Center, U.S. Drought Monitor). The water year began anew in October, along with monitoring of the precipitation indices which reset to zero. Several relatively minor precipitation events have occurred since October. However, reservoir storage remains very low throughout California as of the beginning of December. In the Sacramento River watershed, as of December 2, 2015, the Northern Sierra 8-Station Precipitation Index was at 4.9 inches, 50 percent of average. Storage in Shasta Reservoir peaked at 2,722,000 acre-feet on April 16, 2015, which was 60 percent of capacity (69 percent of normal for April). It has since been drawn down to 29 percent of capacity (1,325,026 acre-feet). Storage in Oroville Reservoir peaked at 1,812,641 acre-feet on April 17, 2015, which was 51 percent of capacity (63 percent of normal for April). It has since been drawn down to 26 percent of capacity (927,294 acre-feet). Folsom Reservoir peaked at 577,381 acre-feet on April 28, 2015, which was 59 percent of capacity (79 percent of normal for April). It has since been drawn down to 14 percent of capacity reaching the lowest storage levels recorded this year (136,472 acre-feet). Trinity Lake peaked at 1,202,000 acre-feet on April 18, 2015, which was 49 percent of capacity (60 percent of normal for April). It has since been drawn down to 19 percent of capacity (477,194 acre-feet).

In the San Joaquin River watershed, as of December 2, 2015, the San Joaquin Valley 5-Station Precipitation Index was at 7.0 inches, 97 percent of average for that time of year. Storage in New Don Pedro Reservoir peaked at 894,000 acre-feet on March 29, 2015, which was 44 percent of capacity (60 percent of normal for March). Reservoir storage in New Don Pedro reached its lowest point on October 8, 2015 at 31 percent of capacity. As of December 1, 2015, it was slightly above that at 32 percent (648,877 acre-feet). Storage in New Melones Reservoir peaked at 607,235 acre-feet on March 3, 2015, which was 25 percent of capacity (40 percent of normal for March). It has since been drawn down to 11 percent of capacity (267,121 acre-feet). Storage in New Exchequer Reservoir peaked at 112,040 acre-feet on July 24, 2015, which was 11 percent of capacity (18 percent of normal for July). It has since been drawn down to 6 percent of capacity (65,898 acre-feet). Storage in Millerton Reservoir peaked at 204,760 acre-feet on March 30, 2015, which was 39 percent of capacity (56 percent of normal for March) and reached its lowest point on August 28, 2015, at 155,849 acre-feet which is 30 percent of capacity.

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2.3 SWP and CVP Water Supplies

With respect to water supplies, in 2015, DWR allocated 20 percent (840 TAF) of its long-term contractor delivery requests and 50 percent (585 TAF) to its Feather River senior settlement contractors. In 2015, Reclamation allocated no water to its (non-settlement) agricultural contractors and 25 percent to municipal and industrial contractors. Reclamation also allocated 75 percent (1,587 TAF) to its settlement contractors and 75 percent (661 TAF) to the exchange contractors on the San Joaquin River. For 2015, wildlife refuges were allocated 75 percent (317 TAF) of their Level 2 refuge deliveries. Actual delivery amounts are not yet available and may differ from allocations.

2.4 Governor's Drought Proclamations

On January 17, 2014, Governor Brown proclaimed a State of Emergency due to severe drought conditions and directed the State Water Board, among other things, to consider modifying requirements for reservoir releases or diversion limitations that were established to implement a water quality control plan. The Proclamation stated that such modifications may be necessary to conserve cold water stored in upstream reservoirs that may be needed later in the year to protect salmon and steelhead, to maintain water supply, and to improve water quality.

Ordinarily, the State Water Board must comply with any applicable requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) prior to issuance of a temporary urgency change order pursuant to Water Code section 1435. (See Cal. Code Regs., tit. 23, § 805.) The Governor's Proclamation concluded, however, that strict compliance with CEQA would "prevent, hinder, or delay the mitigation of the effects of the emergency." Accordingly, as authorized by Government Code section 8571, ordering paragraph 9 of the Governor's Proclamation suspended CEQA, and the regulations adopted pursuant to it, to the extent that CEQA otherwise would have applied to specified actions necessary to mitigate the effects of the drought, including the State Water Board's action on the TUCP.[2]

The Governor's Proclamation also suspended Water Code section 13247 to the extent that it otherwise would have applied to specified activities, including action on the TUCP. Section 13247 requires state agencies, including the State Water Board, to comply with water quality control plans unless otherwise directed or authorized by statute. Absent suspension of section

[2] For this reason, South Delta Water Agency's argument that the changes proposed in the TUCP had not been subject to any CEQA review, and therefore could not be granted, lacks merit.

13247, the State Water Board could not approve a petition to modify water right permits and licenses in a way that does not provide for full attainment of the water quality objectives as specified in the Bay-Delta Plan, even during a drought emergency.

On April 25, 2014, Governor Brown issued a Proclamation of a Continued State of Emergency related to the drought. The Proclamation ordered that the provisions of the January 17, 2014 Proclamation remain in full force and also added several new provisions. Among other things, the Proclamation: directed the State Water Board and DWR to expedite requests to move water to areas of need (including water transfers); called on Californians to refrain from wasting water; required the Department of Fish and Wildlife (DFW) to conduct monitoring and work with agencies and landowners to implement actions to minimize impacts to Endangered Species Act (ESA) listed fish; directed various state agencies to take actions to address water supply and drinking water shortages; and directed the State Water Board to adopt and implement emergency regulations as appropriate to promote water recycling and curtail diversions when water is not available. On December 22, 2014, Governor Brown issued Executive Order B-28-14, which extended the waiver of CEQA and Water Code section 13247 contained in the January 17, 2014 and April 25, 2014 Proclamations, through May 31, 2016.

Dry conditions have persisted, and on April 1, 2015, Governor Brown acknowledged the continuing magnitude of the drought and issued Executive Order B-29-15, which requires the orders and provisions of the prior proclamations and executive orders to remain in full force and effect unless otherwise modified.

On November 13, 2015, Governor Brown issued Executive Order B-36-15, which requires the orders and provisions contained in the January 17, 2014 Proclamation, the April 25, 2014 Proclamation, and Executive Orders B-28-14 and B-29-15 to remain in full force and effect. The Governor acknowledged that the ongoing drought continues to affect water supplies, agriculture, businesses, and communities, and is further stressing California's fish and wildlife.

2.5 Status of Fish Species

The extreme drought conditions that have been occurring for the last four years are having significant impacts on fish and wildlife. Below is a summary of the status of some of the threatened and endangered and commercially important fish species of particular concern.

Delta Smelt

Recent population indices for Delta smelt, which is listed as threatened under both the federal ESA and California Endangered Species Act (CESA), are at record low numbers. Delta smelt field surveys this past water year indicate that relative abundance is at an historical low. The historically low Fall Midwater Trawl (FMWT) index of 9 in 2014 was followed by historically low abundance indices for all field surveys in 2015; the Spring Kodak Trawl index was 13.8 and the 20 Millimeter survey index was 0.3. The 2015 Summer Tow Net Survey (STN) index was 0.0, the lowest index reported in the history of the STN, with fish only being caught in the Cache Slough-Sacramento Deepwater Ship Channel area and lower Sacramento River. The 2015 FMWT, which is conducted in September, October, November, and December, appears to be following the same trend of historical lows. The 2015 FMWT has collected Delta smelt in the lower Sacramento River and in the Sacramento Deep Water Ship Channel. The resulting 2015 September-October index is five, the second lowest in the history of the FMWT. No Delta smelt were found in the central and south Delta in either survey.

Longfin Smelt

The 2014 FMWT survey for longfin smelt was 16, the second lowest on record. The 2015 FMWT collected no longfin smelt during the months of September or October, resulting in an index of zero, the lowest index in FMWT history to date. Previous surveys conducted in the early summer of 2015 detected longfin smelt in the Western Delta and the San Francisco Bay with lower densities in Suisun Bay, and in the lower Sacramento River.

Salmonids

The endangered winter-run Chinook salmon is especially vulnerable during drought years. After holding and spawning in the Sacramento River, it is important for winter-run to have appropriate temperature conditions and limited flow fluctuations during the egg development period, which is typically late May through early fall. Temperature control was lost several weeks before the end of the egg incubation life stage in 2014, resulting in almost total mortality to the 2014 winter-run brood year. In 2015, adult winter-run returns surpassed the return in 2014. However, preliminary passage estimates of unmarked juveniles indicate passage of 252,675 brood year 2015 winter-run Chinook by the rotary screw traps at Red Bluff Diversion Dam (RBDD) (Delta

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Operations for Salmonids and Sturgeon,[3] (DOSS); November 24 notes). For comparison, estimated passage at RBDD screw traps for juvenile winter-run Chinook brood year 2014 was 354,875 at the same time last year. This is an indication that substantial mortality occurred in the Upper Sacramento River during the egg incubation and emergence periods for brood year 2015. Similar concerns for spring-run, fall-run and steelhead exist this year as for winter-run. The 2014 spawning runs of fall- and spring-run Chinook returning to the upper Sacramento River system also experienced significant impacts due to drought conditions as well as elevated temperatures on the Sacramento River.[4] Extremely few juvenile spring-run Chinook were observed migrating downstream of the Sacramento River into the Delta earlier this year during high winter flows, indicating that the population was significantly impacted. To date, young-of-year spring-run Chinook are assumed to be still scarce based on recent monitoring; some young-of-year spring-run Chinook juveniles have likely not emerged yet from redds (DOSS; November 24 notes).

Central Valley fall-run Chinook are heavily influenced by hatchery production. Naturally spawned fall-run faced adverse spawning, rearing, and migration conditions similar to those seen by winter- and spring-run fish during 2014 and 2015, and large hatchery production releases were made at downstream locations. Thus, effects of the drought will likely be observed in greater straying and genetic homogenization when brood year 2014 and 2015 fall-run Chinook return to spawn. On the San Joaquin River, total juvenile Chinook outmigration is indexed by the Mossdale trawl. During WY 2015, this trawl caught only 70 unmarked Chinook salmon, the lowest number observed in the available record (USFWS Delta Juvenile Fish Monitoring Program (DJFMP) data[5]). Likewise, Sacramento and Chipps trawl unmarked Chinook catches were at or near record lows during WY 2015 (DJFMP data).

2.6 2014 Temporary Urgency Change Petition and Drought Contingency Plans

Last year, DWR and Reclamation filed a TUCP seeking changes to their water right permits for the SWP and the water right license and permits for the CVP that were similar to the changes sought this year. The Executive Director conditionally approved the 2014 TUCP on January 31,

[3] Delta Operations for Salmonids and Sturgeon (DOSS) is a technical advisory team that provides recommendations on measures to reduce adverse effects of Delta operations of the CVP and SWP to salmonids and green sturgeon. http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html.

[4] DFW 2015, Drought Monitoring of Water Quality for Spawning Chinook Salmon in the Upper Sacramento River in 2014, http://www.calfish.org/ProgramsData/ConservationandManagement/CDFWUpperSacRiverBasinSalmonidMonitoring.aspx.

[5] http://www.fws.gov/lodi/jfmp/.

2014. The approval temporarily modified Delta flow and water quality requirements to address critically dry conditions associated with California's ongoing drought. As the result of changed circumstances and subsequent requests from DWR and Reclamation, and in response to objections to the 2014 TUCP Order, the Executive Director modified the 2014 TUCP Order on February 7, 2014, February 28, 2014, March 18, 2014, April 9, 2014, April 11, 2014, April 18, 2014, May 2, 2014, and October 7, 2014 to extend and change the conditions of the TUCP Order. In the May 2, 2014 TUCP Order, the Executive Director renewed the TUCP Order, which subsequently expired on January 27, 2015.

On September 24, 2014, the State Water Board adopted Order WR 2014-0029, which addressed objections to and denied petitions for reconsideration of the Executive Director's January 31, 2014 TUCP Order and subsequent modifications thereto. While Order WR 2014-0029 denied the petitions for reconsideration, the Order did make some modifications to the TUCP Order in response to issues raised by some of the petitioners and other commenters in order to improve planning and coordination if dry conditions were to continue. Specifically, the Order required the preparation of a Water Year 2015 Drought Contingency Plan (DCP) in the event of continued drought conditions. The Order required the DCP to identify planned minimum monthly flow and storage conditions that consider Delta salinity control, fishery protection, and supplies for municipal water users related to projected flow and storage conditions. The Order required the Petitioners to submit a plan for the beginning of the 2014-2015 water year by October 15, 2014, and to submit a plan for the remainder of the water year by January 15, 2015, with updates as needed. Both DCP's were submitted as required. The January 15, 2015 DCP identified likely 2015 TUCP requests by the Petitioners by month for the 50 percent, 90 percent, and 99 percent exceedance hydrologic scenarios. Each of these forecasts projected monthly storage levels, reservoir releases, Delta pumping rates, and Delta outflow through the end of September 30, 2015.

2.7 2015 Temporary Urgency Change Petition

In response to the unprecedented critically dry conditions, on January 23, 2015, DWR and Reclamation submitted another TUCP that requested temporary modification of certain D-1641 requirements to allow management of reservoir releases on a pattern that would conserve upstream storage for fish and wildlife protection and Delta salinity control later in the year while providing critical water supply needs. Specifically, the Petitioners requested modifications, in February and March, to the requirement to meet objectives for protection of fish and wildlife,

including the Delta outflow objective, the Delta Cross Channel Gate (DCC) Closure objective, the San Joaquin River flow at Vernalis objective, and the export limits objective corresponding to varying levels of Delta outflow. The requested modifications for February and March were consistent with the January 15, 2015 DCP, with the exception of a new request to increase the maximum export rate during low Delta outflow conditions. In addition, potential changes during April through September 30, 2015, were referenced in the TUCP.

2.8 Executive Director TUCP Orders in 2015

2.8.1 February 3, 2015 TUCO Order

The Executive Director's February 3, 2015 TUCP Order allowed DWR and Reclamation, in February and March, to meet a lower Delta outflow level of 4,000 cubic feet per second (cfs), to open the DCC Gates under certain circumstances, and to meet a lower flow level of 500 cfs at Vernalis. During that period, D-1641 otherwise would have required the Projects to meet a minimum daily average net Delta outflow of 7,100 cfs or equivalent salinity, plus higher flows of 11,400 cfs or equivalent salinity at Chipps Island for a certain number of days as specified in Table 4 of D-1641. The Projects would have been required to keep the DCC gates closed, and to meet a minimum monthly average flow at Vernalis of 710 cfs or 1,140 cfs, depending on hydrology. The TUCP Order limited the maximum rate of export from the Delta to (a) 1,500 cfs when Delta outflow was between 4,000 cfs and 7,100 cfs or the DCC Gates were open, or (b) up to the D-1641 limits when the DCC Gates were closed and Delta outflow was above 7,100 cfs, but the additional requirements included in Table 4 of D-1641 were not being met, provided that those diversions were limited to natural and abandoned flows. The TUCP Order did not approve a requested intermediate export level of 3,500 cfs when Delta outflow was at least 5,500 cfs.

The TUCP Order required DWR and Reclamation to calculate and maintain a record of the amount of water conserved by the changes and keep that water in storage for use later in the year for purposes of maintaining water supplies, improving water quality, or protecting flows for fisheries. The TUCP Order required DWR and Reclamation to develop a water balance and to conduct necessary modeling and monitoring to inform real-time operational decisions. The TUCP also required DWR and Reclamation, in consultation with the fisheries agencies,[6] to

[6] The fisheries agencies include the Department of Fish and Wildlife, the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service, and the U.S. Fish and Wildlife Service.

conduct hindcast temperature modeling of Water Year 2014, and to provide a Temperature Management Plan (TMP) for the Sacramento River, described further below.

2.8.2 March 5, 2015 TUCP Order Modification

The March 5, 2015 modification to the TUCP Order conditionally approved the intermediate export level of 3,500 cfs when Delta outflow was between 5,500 cfs and 7,100 cfs and the DCC Gates were closed if DWR and Reclamation were to determine that additional water was necessary to meet minimum public health and safety needs. The March 5 modification to the TUCP Order clarified that the export limits did not apply to transfers and required specific information about proposed actual transfers be provided on a monthly basis so that the effects of the transfers could be considered on a real-time basis. The March 5 modification to the TUCP Order also modified a provision concerning the use of conserved water to specify that it must be used in accordance with the 2015 DCP and TMP for the Sacramento River. All other provisions of the TUCP Order continued to be in effect.

2.8.3 April 6, 2015 TUCP Order Modification

The April 6 modification to the TUCP Order extended the changes to Delta outflow and export requirements described above through June, and extended the change to DCC Gate requirements through May 20. The TUCP Order approved exports at the intermediate rate for purposes other than health and safety, provided that any unmet health and safety needs were met first, and the Executive Director and the fisheries agencies agreed that the increase in the export rate would not cause unreasonable harm to fish and wildlife. The Order also approved a shift in the time period for the San Joaquin River at Vernalis pulse flow requirement from April 15 through May 15 to March 25 through April 25, and reduced the required volume during this period to 710 cfs. After the spring pulse and until May 31, the Order reduced the minimum flow requirement at Vernalis from 710 cfs or 1,140 cfs, depending on hydrology, to 300 cfs. In June, the requirement was reduced to 200 cfs. The April 6 modification to the TUCP Order also moved the compliance point for the Western Delta agricultural salinity requirement from Emmaton to Threemile Slough[7] on the Sacramento River from April through June. The Order did not act on requested changes after June 30 since it was anticipated that a further request would be submitted for additional changes starting in mid-June if conditions continued to be dry. Further, DWR and Reclamation were required to submit a request to renew the TUCP for changes that would be needed after August 3.

[7] Threemile Slough is approximately three miles upstream of the existing compliance point at Emmaton.

The Order also required Reclamation to develop and implement a plan to reasonably protect fish and wildlife on the Stanislaus River during water year 2014-1015 and going into the next water year. In addition, the Order required DWR and Reclamation to provide additional information as part of monthly water balance estimates indicating actual and proposed operations through the end of the water year. Finally, the TUCP Order accelerated the deadline to submit a final TMP for the Sacramento River in order to have the plan in place in time to inform earlier operational decisions.

2.8.4 July 3, 2015 TUCP Order Modification

The July 3 modification to the TUCP Order renewed the order for up to 180 days, and approved requests for changes during the July 1 to November 30 period on which the Executive Director had not yet taken action. For July, the Order reduced the minimum Delta outflow requirement from a monthly average of 4,000 cfs, with a seven-day running average of no-less-than 3,000 cfs, to 3,000 cfs, with a seven-day running average of no less than 2,000 cfs. The TUCP Order also reduced the minimum Sacramento River flow requirement at Rio Vista from a monthly average of 3,000 cfs in September and October, and 3,500 cfs in November, to 2,500 cfs for September through November, with a seven-day running average of no less than 2,000 cfs. The Order extended through August 15, the change of the compliance point for the Western Delta agricultural salinity requirement. The Order also continued export constraints when the requirements described above were not being met.

In addition to the changes described above, the Order continued and modified consultation, monitoring, modeling, reporting, and planning requirements to: improve temperature management on the Sacramento and Stanislaus Rivers; ensure municipal water supply reliability from Folsom Reservoir and critical grid reliability; provide CVP refuge managers information to plan for water allocations in the summer and fall; and facilitate better understanding of the effects of reduced Delta outflows with a temporary drought barrier at False River in place.

2.9 2015 Sacramento River Temperature Management Plan Approval

A major emphasis of drought planning decisions this year was to ensure that winter-run Chinook salmon would be protected given significant risk of extinction due to unfavorable conditions for fish the past three years. Winter-run, for the most part, have a three-year life cycle, meaning that adults return three years after emerging from eggs of returning salmon. The total

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population is therefore split between three different years or cohorts depending on the year the salmon emerged. In 2014, temperature control was lost on the Sacramento River resulting in almost complete mortality to the 2014 winter-run Chinook salmon cohort. Maintaining temperature control in 2015 was very important to avoid losing a second cohort of the species, thus putting the population only one more cohort away from extinction. To ensure that temperature control was maintained throughout 2015, pursuant to the February 3 TUCP Order and State Water Board Order 90-5, Reclamation was required to: (1) perform hindcast temperature modeling of the water year 2014 temperature control season to evaluate and document inaccuracies with Reclamation's temperature model; (2) develop a 2015 Sacramento TMP, in coordination with the fisheries agencies, that considers other fishery needs and evaluates specific modeling scenarios; and (3) update the plan as conditions change or upon the request of the fisheries agencies or Executive Director or his designee. The April 6, 2015 TUCP Order moved the submittal date for the TMP from June to April to ensure that decisions were made sufficiently early in the irrigation season to avoid the temperature impacts that occurred in 2014.

Reclamation submitted the hindcast on March 17, 2015, indicating that the primary issue with the Bureau's temperature model is its ability to model temperatures when outlets referred to as the "side gates" are in use to attempt to extract the last remaining cold water from the reservoir. The hindcast also identified that there was a bias in the model that resulted in cooler predicted temperatures than actually occurred.

Reclamation provided the Sacramento River Temperature Task Group (SRTTG) with a Shasta Reservoir temperature profile on March 10, 2015, comparing conditions between 2014 and 2015 (see Figure 1). The profile shows that there was less cold water available in 2015 than in 2014, and that the coldest water in the reservoir was one degree warmer than last year. However, there was additional water overall in the reservoir.

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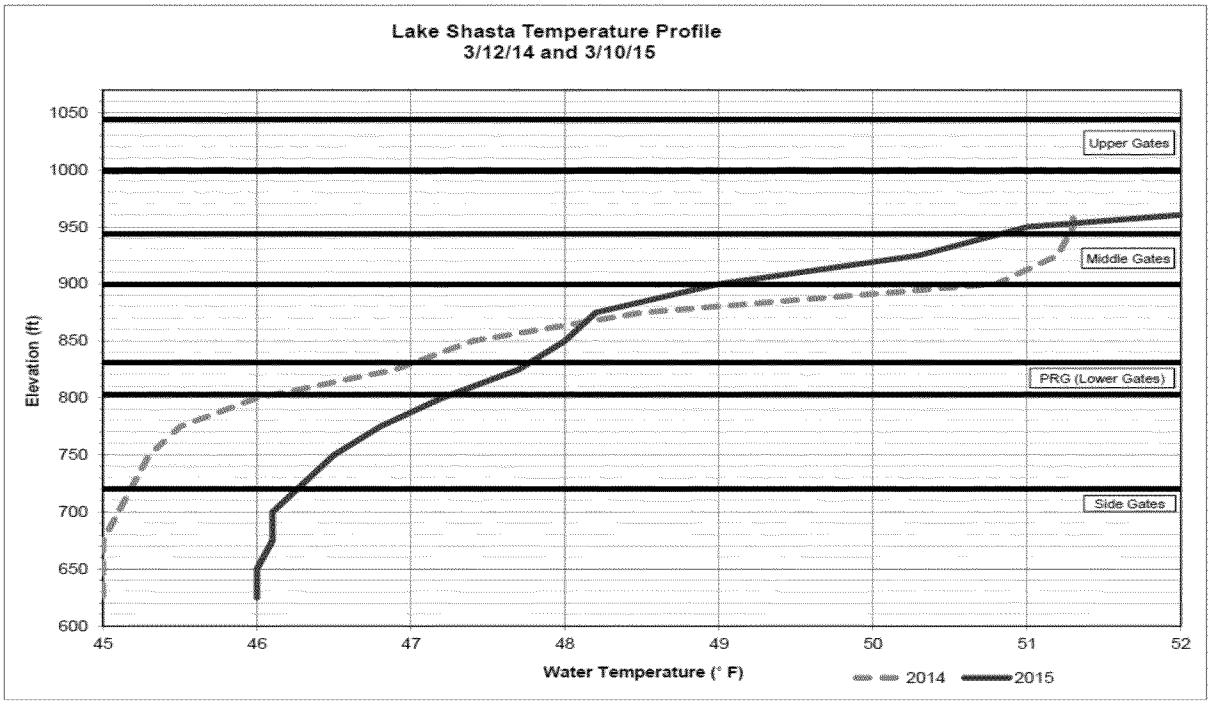
Corrected - January 19, 2016*



Reclamation submitted a draft TMP on March 26, 2015, with associated modeling indicating that a 56 degree Fahrenheit temperature target could be maintained at Clear Creek throughout the season, but that side gate operations would be needed in early September with Reclamation's preferred operations. Reclamation evaluated additional operation scenarios that resulted in draining of Folsom Reservoir. State Water Board staff responded by requesting evaluation of additional scenarios that did not drain Folsom Reservoir, avoided side gate operations until as late as possible, and factored in that the model underestimated temperatures in 2014. State Water Board staff also requested information to support Reclamation's assertion that temperatures could be maintained even though there was less cold water available in the reservoir in 2015 than in 2014.

On April 14 and 15, 2015, Reclamation submitted additional temperature modeling information and a revised proposed TMP using an April 8, 2015 temperature profile in Shasta Lake that continued to show less of the coldest water in the reservoir than the same time in 2014, but more water overall. Reclamation submitted updated operational information on May 4, 2015. Reclamation continued to indicate that the combination of more overall storage, compared to 2014, and more water colder than 52 and 56 degrees, created better conditions in 2015 than in 2014. The plan called for nearly the same end of water year 2015 storage levels as in 2014—1.164 MAF proposed for end of September in 2015 versus 1.157 MAF at the end of September in 2014. Reclamation indicated that despite the same end of year storage levels as last year,

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temperatures could be maintained because there was more cold water overall, and full side gate operations could be delayed until October 10.

The Executive Director and fisheries agencies met with Reclamation on April 15 to discuss the plan. Reclamation staff indicated that they had confidence that temperatures could be met throughout the temperature control season with the proposed plan. Accordingly, the Executive Director (and fisheries agencies) provisionally approved the plan in order to allow water delivery decisions to be made to inform CVP contractor crop planting decisions. The Executive Director issued a letter formally approving the TMP on May 14, 2015. The letter required that the TMP be updated to ensure temperature control throughout the season, and required a final plan to be submitted by June 1, 2015. The letter also required Reclamation to submit information on the technical basis for Reclamation's finding that there is more cold water than last year.

On May 20 the State Water Board held a workshop on the TMP and other drought issues. At that workshop, Reclamation staff again indicated that they believed temperatures could be maintained throughout the season. At the workshop, the Board heard significant concerns with the TMP and, as a result, several Board members requested that a margin of safety be added to the TMP. On May 29 Reclamation informed the State Water Board that Shasta Lake temperatures were warmer than expected and that modeling results showed that it would be highly unlikely that Reclamation could meet the temperature requirements throughout the season. The model results were supported by the bi-weekly reservoir profiles that, since early in the year, had shown less of the coldest water in storage compared to last year. Reclamation stated that they believed that the profiles taken in April and May, which showed much less cold water than anticipated, were the result of a faulty temperature probe. Reclamation stated that those results were later confirmed to be correct when another probe confirmed the same limited cold water supplies. Reclamation did not inform the State Water Board of the April and May temperature profile results, or the subsequent confirmation that they were accurate, until May 29, 2015.

Based on this May 29 update, the Executive Director immediately suspended the TMP that was submitted on April 14 and 15, and updated on May 4, 2015, and required Reclamation to work with the State Water Board staff and fisheries agency staff to develop a revised plan. The major provisions of the revised plan were released on June 16, and the Executive Director sent a letter to Reclamation with interim requirements based on those provisions, to maintain Keswick

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Reservoir releases at 7,250 cfs and target 57 degrees Fahrenheit at Clear Creek, not to exceed 58 degrees Fahrenheit.

While targeting a temperature of 57 degrees was not optimal, it was determined to be the best way to extend limited cold water supplies throughout the temperature control season, while reducing water supply impacts to users that had already planted crops. Modeling done to evaluate various temperature control scenarios showed that sufficient cold water was no longer available to meet and maintain a 56 degree Fahrenheit target for the duration of the temperature control season, and that a lower target would result in the need for full side gate operation, resulting in the loss of temperature control, before the end of the temperature control season. These temperature control scenarios included analysis of the highest 10th percentile air temperatures in the latest 3-month temperature outlook (L3MTO) for the area as reported by the National Oceanic and Atmospheric Association (NOAA). This was done to account for the possibility of higher than normal air temperatures.

On June 25, Reclamation submitted a Revised TMP to the State Water Board. As a margin of safety, the Revised TMP was based on the highest 10th percentile L3MTO. The plan carried forward the June 16 interim requirements. The Plan also committed to forming a model review technical group to identify shortcomings with the existing temperature model and make recommendations for model updates or model replacement.

On July 7, NMFS submitted a concurrence letter to Reclamation regarding the revised Plan. NMFS stated in their letter that "[i]t is now very clear through evaluating operations in both 2014 and 2015 that the volume of cold water available for real-time management in June through October is highly dependent on Keswick [Reservoir] releases in April through early June. In 2016, should drought conditions persist, these releases in April through early June will need to be held to minimal levels to achieve adequate temperatures only."

On July 7, the State Water Board also approved the revised TMP. Among other things, the revised TMP requires Reclamation to maintain a minimum 2015 end-of-September carryover storage in Folsom Reservoir of 120,000 TAF to ensure that Folsom Reservoir was not further drained to support the plan. In addition, the revised TMP required Reclamation to meet with State Water Board and fisheries agency staff before August 7, 2015, to develop a plan for providing information and tools needed to independently run the Sacramento River Temperature Model.

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During the temperature control season, there were several excursions above 57 and 58 degrees and other flow fluctuations, but Reclamation otherwise complied with the TMP and was able to largely maintain temperatures below 58 degrees during the temperature control season. However, these measures appear to have been inadequate to protect winter-run in 2015. As discussed above, the latest sampling data indicates that survival of juveniles is much less than last year despite higher adult returns in 2015. Final survival estimates will not be available until late winter or early spring, but at this point are not expected to improve.

2.10 Compliance with Changed and Unchanged Requirements

During 2015, DWR and Reclamation failed to meet various changed and unchanged requirements to achieve water quality and flow objectives and comply with the revised TMP. Specifically, the Sacramento River salinity requirement at Threemile Slough (modified from Emmaton) was exceeded in July and the reduced Sacramento River flow requirement approved in the TUCP Orders was not achieved at the end of November. In addition, unchanged salinity requirements at Jersey Point, Suisun Marsh and in the southern Delta were not achieved on various instances. At the same time, there were several instances when Reclamation failed to comply with the revised TMP by exceeding the temperature target and either not maintaining or exceeding the required flow levels.

2.11 Water Code Section 1435

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 temporary urgency changes. (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;

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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).)

The Water Code defines "urgent need" to mean "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 . . . ." (Wat. Code, § 1435, subd. (c).) The Water Code also provides, however, that the State Water Board shall not find a petitioner's need to be urgent if the Board in its judgment concludes, if applicable, that the petitioner has not exercised due diligence in petitioning for or pursuing a change pursuant to other provisions of the Water Code governing non-urgent changes. (*Ibid.*)

The State Water Board may issue a temporary urgency change order in advance of public notice. (Wat. Code, § 1438, subd. (a).) Public notice must be provided as soon as practicable, unless the change will be in effect less than 10 days. (*Id.*, § 1438, subds. (a), (b) & (c).) Any interested person may file an objection to a temporary urgency change. (*Id.*, subd. (d).) The Board must promptly consider and may hold a hearing on any objection. (*Id.*, subd. (e).) State Water Board Resolution 2012-0029 delegates to the Board Members individually and to the Executive Director the authority to hold a hearing, if necessary, and act on a temporary urgency change petition. (Resolution 2012-0029, ¶¶ 2.2, 4.4.1.)[8] The authority to act on temporary urgency change petitions is also included in the delegation of authority to the Executive Director in State Water Board Resolution 2012-0061.

The State Water Board exercises continuing supervision over temporary urgency change orders and may modify or revoke temporary urgency change orders at any time. (Wat. Code, §§ 1439, 1440.) Temporary urgency change orders expire automatically 180 days after issuance, unless they are revoked or an earlier expiration date is specified. (*Id.*, § 1440.) The State Water Board may renew temporary urgency change orders for a period not to exceed 180 days. (*Id.*, § 1441.)

[8] The Deputy Director for Water Rights may act on a temporary urgency change petition if there are no objections to the petition. (Resolution 2012-0029, ¶ 4.4.1.)

2.12 Findings of the State Water Board's Executive Director

The Executive Director's February 3, 2015 TUCP Order and subsequent modifications to that Order included all the findings necessary to approve the TUCP and subsequent requests. The Executive Director found that there was an urgent need for the proposed changes in light of critically dry conditions, and low reservoir levels in Project reservoirs leading to low storage and inflow conditions. The Executive Director relaxed the Delta outflow, Sacramento and San Joaquin River flow requirements, DCC Gate closure requirement, and moved the Western Delta salinity requirement upstream in order to conserve stored water to protect fishery resources, prevent salt water intrusion into the Delta, and ensure that adequate supplies were available in the future to meet minimal water supply needs. The Executive Director balanced the need for export restrictions to protect fish and wildlife and conserve Project storage against the need for exports to lessen significant water supply shortages to municipal, industrial, and agricultural water users south of the Delta. Specifically, the limited approval of the intermediate export rate was made to ensure DWR and Reclamation were able to meet the minimum health and safety needs of their contractors.

The Executive Director found that the temporary urgency changes would not injure other lawful users of water. The Executive Director reasoned that other water right holders were not entitled to divert water previously stored or imported by the Projects that is released for use downstream, and therefore no water right holders would be injured to the extent that the changes would cause a reduction in storage releases, but not a reduction in natural and abandoned flows. To the extent that the changes could cause a reduction in natural and abandoned flows, the Executive Director found that other lawful users would not be injured because DWR and Reclamation would continue to meet changed flow requirements, and adequate flows were expected to remain in the system to meet the demands of other lawful users of water.

To the extent that the change in the salinity compliance location from Emmaton to Threemile Slough approved in the April 6, 2015 and July 3, 2015 TUCP Orders could increase salinity in the Delta, the Executive Director reasoned that any lawful users would not be injured because salinity levels would still be less than the levels that would exist without the Projects, which prevent salinity intrusion into the Delta in very dry conditions by supplementing natural inflow with storage releases. Further, the TUCP Order required DWR and Reclamation to bypass

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natural and abandoned flows when they were not meeting the Sacramento River at Emmaton agricultural salinity requirement in order to ensure the protection of other water right holders and reduce the impact of the change on fish and wildlife and water quality.

The Executive Director found that the TUCP Order would not unreasonably affect fish, wildlife, or other beneficial uses. The Executive Director found that although fish and wildlife could be affected by the changes, these effects were not unreasonable given the consequences of not approving the changes and depleting stored water supplies needed to prevent sea water intrusion into the Delta, protect fish and wildlife, and satisfy other demands for water, including health and safety now and in the future if conditions remained dry. The Executive Director relied on the fact that the fisheries agencies had been consulted and did not object to the proposed changes. Further, the Executive Director relied on the fact that additional measures would be implemented to reduce impacts to fish and wildlife, including specific rules for operations of the DCC Gates, shifting exports to the Jones Pumping Plant, fish rescue provisions, and provisions for flows in future years. To ensure unreasonable impacts on fish and wildlife would not occur, the Executive Director required development of a Sacramento TMP and a Stanislaus River Operations Plan and additional consultation, modeling, monitoring, and reporting to update the plans and inform operational decisions.

Drought conditions have severely impacted water supply availability in the Sacramento and San Joaquin basins such that there was an inadequate amount of water to meet all demands in 2015. Considering the drought conditions, the Executive Director found the changes made the best use of limited water supplies and were in the public interest. Further, the Executive Director required planning, reporting, consulting and monitoring requirements, and retained authority to modify the Order, if needed, to ensure that it remained in the public interest.

2.13 Petitions for Reconsideration

The State Water Board received ten petitions for reconsideration. The State Water Board also received numerous comments and objections to the Executive Director's February 3, 2015 TUCP Order and subsequent modifications to that Order. The petitions are listed in the table below.

Petitioners	Orders Petitioned	Filing Date
California Sportfishing Protection Alliance, AquaAlliance, & California Water Impact Network	February 3, 2015	February 13, 2015
Friant Water Authority	February 3, 2015	February 13, 2015
Restore the Delta	February 3, 2015	February 13, 2015
San Joaquin River Exchange Contractors et al.	February 3, 2015	February 13, 2015
San Luis & Delta-Mendota Water Authority, Westlands Water District, and State Water Contractors	February 3, 2015	February 27, 2015
Restore the Delta	April 6, 2015	May 5, 2015
California Sportfishing Protection Alliance, AquaAlliance, & California Water Impact Network	April 6, 2015	May 6, 2015
Restore the Delta	July 3, 2015	July 22, 2015
The Bay Institute	July 3, 2015	August 1, 2015
California Sportfishing Protection Alliance, AquaAlliance, & California Water Impact Network	July 3, 2015	August 3, 2015
California Sportfishing Protection Alliance, AquaAlliance, & California Water Impact Network	July 7, 2015	August 6, 2015

Note: No petitions for reconsideration were submitted requesting reconsideration of the March 5, 2015 TUCP Order. CSPA et al.'s August 6, 2015 petition seeks reconsideration of the Executive Director's July 7, 2015 approval of a revised temperature management plan for the Sacramento River and TBI's August 1, 2015 petition seeks both reconsideration of the TUCP Order and the revised temperature management plan. While it is unclear whether the Executive Director's approval of the temperature management plan is subject to reconsideration, this order nonetheless largely responds to the petitions related to the temperature management plan.

3.0 GROUNDS FOR RECONSIDERATION

Any interested person may file a petition for reconsideration of an order or decision made under authority delegated to an office or employee of the State Water Board pursuant to Water Code section 1122 and California Code of Regulations, title 23, sections 768 -770. Section 768 of the Board's regulations provides that an interested person may petition for reconsideration upon any of the following causes:

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(a) Irregularity in the proceedings, or any ruling, or abuse of discretion, by which the person was prevented from having a fair hearing;
(b) The decision or order is not supported by substantial evidence;
(c) There is relevant evidence which, in the exercise of reasonable diligence, could not have been produced; or
(d) Error in law.

On reconsideration, the Board may:

(a) Refuse to reconsider the decision or order if the petition fails to raise substantial issues related to the causes for reconsideration;
(b) Deny the petition upon a finding that the decision or order was appropriate and proper;
(c) Set aside or modify the decision or order; or
(d) Take other appropriate action.

(Cal. Code Regs., tit. 23, § 770.)

4.0 DISCUSSION

As discussed above, there were numerous and detailed comments submitted on the TUCP Order and its subsequent modifications. All of those comments have been thoroughly reviewed and considered. However, this Order does not provide a point by point discussion of each issue raised in the comments, nor is that necessary to determine whether reconsideration should be granted, particularly since all of the changes are no longer in effect. Instead, this Order addresses the major substantive issues that were raised to determine if approval of the changes that were made at the time, given the information available at that time, merits reconsideration. For the reasons set forth below, the Board finds that the TUCP Order, and subsequent modifications thereto, was appropriate and proper, and therefore the petitions for reconsideration should largely be denied. However, in consideration of the issues raised by petitioners and objectors, the Board does find that the petitions should also be granted in part to include measures needed going into 2016 if the drought continues in order to ensure the protection of the public interest and the reasonable protection of other beneficial uses of water, including fisheries protection on the Sacramento River related to temperature management.

The main contentions raised in the petitions, protests, and objections are addressed below. In addition, this Order incorporates by reference Order WR 2014-0029, which took action on the petitions for reconsideration of and objections to the 2014 TUCP Order and subsequent modifications, and does not necessarily respond to all of the issues that were raised in 2015 that

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were previously addressed in 2014. To the extent that any issue raised is not addressed in this Order or Order WR 2014-0029, we conclude that the issue is not a substantial issue that merits review. (Cal. Code Regs., tit. 23, § 770, subd. (a)(1).)

4.1 Findings Regarding the Public Interest

Numerous commenters addressed the issue of whether the changes approved by the TUCP Order were in the public interest. Many of the specific comments are now moot but were considered and, in some cases, acted upon in the various modifications to the TUCP Order. Primarily, commenters stated that the changes approved by the TUCP Order were not in the public interest because (1) they did not constrain Project operations enough and caused unreasonable impacts to fish and wildlife and other beneficial uses of water or (2) the conditions of approval caused (or might cause) impacts to water supplies, including associated economic impacts and impacts to communities, that were (or would be) unreasonable in light of the perceived environmental benefits. The public interest aspects of these issues are discussed below and may be discussed elsewhere in this Order if the substance of the comment was more closely aligned with another issue.

RTD and CSPA et al. argued that the TUCP Order was not in the public interest because it allowed the Projects to deplete storage and continue to make contract deliveries without conserving adequate supplies in the event of continued drought conditions, which should be considered the new normal given climate change predictions. RTD requested a hindcast of operations during the drought to determine how Project operations are affecting hydrology. CSPA et al. further argued that the TUCP Orders during the drought have inappropriately focused on protecting agriculture, which uses a large amount of the State's water but is a small part of the economy. CSPA et al. further argued that agriculture has internal resiliency to address limited supplies during drought, while fish do not.

TBI, CSPA et al. and others argued that the TUCP Order and Sacramento River TMP were not in the public interest because they failed to protect fish and wildlife. Specifically, they argued that the measures that were taken to protect winter-run Chinook salmon at the expense of Delta outflows and inflows were inadequate and that impacts to fish from reductions in outflows and inflows will exacerbate already poor conditions for various threatened, endangered and commercially important estuarine and migratory fish species, potentially leading some species to extinction. These issues are discussed in greater detail in the fish and wildlife section. TBI

indicated that reservoir releases should be limited during droughts, that a more protective temperature target should be used on the Sacramento River further downstream, and that there should be a carryover storage requirement in Shasta Reservoir consistent with the NMFS 2009 Biological Opinion and Conference Opinion on the Long-term Operations of the CVP and the SWP (NMFS BO) (between 1.9 and 2.2 MAF at the end of September). CSPA et al. identified numerous measures they believe should have been implemented and should be implemented to address the concerns they identify in their petition.

The changes approved in the TUCP Order allowed the Projects to reduce the quantity of water directed towards Delta outflow and inflows and salinity requirements, from February through November, by over 800 TAF, and allowed the Projects to continue exporting at least 1,500 cfs[9] when unmodified D- 1641 requirements were not met. This allowed the Projects to continue Delta exports and to maintain water in upstream reservoirs for multiple uses throughout the year, including water deliveries to senior water right holders upstream of the Delta and south of the Delta, south of Delta water contract deliveries, water transfers, wildlife refuge supplies, temperature control on the Sacramento River, fisheries flows on the Stanislaus River, and salinity control in the Delta.

As described in more detail in section 4.4 below, when the TUCP Order was approved it was expected that it would improve not only water supply conditions, but also conditions for winter-run Chinook salmon and salmonids on the Stanislaus River. The Executive Director acknowledged that the changes to Delta outflows and inflows would have impacts to fish and wildlife, particularly Delta smelt and longfin smelt. However, it was reasonable based on the information available at the time to assume that the tradeoffs would be in the public interest based on the biological reviews, the concurrence of the fisheries agencies with the changes, and the expected benefits to temperatures, as well as the water supply considerations during the fourth year of a drought. When Reclamation revealed that the original TMP was not adequate, it was also reasonable for the Executive Director to suspend his approval and direct that a new TMP be developed. The approval of the revised TMP was also reasonable given the information available at the time and the limited temperature control options available when the original TMP was suspended. While it was reasonable to make those decisions at the time they were made, it is also clear that additional measures are needed to ensure that species do not go extinct and that adequate water supplies are maintained in storage for minimum health and safety needs.

[9] Exports were reduced below that level due to salinity concerns.

Based on these considerations, the State Water Board grants in part the petitions for reconsideration to ensure that water resources are allocated in the public interest if drought conditions continue. Specifically, as summarized above and discussed further below, the Order requires:

- Appropriate representatives from DWR and Reclamation to continue to consult on SWP and CVP operations with the fisheries agencies and the State Water Board on protection of all beneficial uses during the drought;
- DWR and Reclamation in consultation with the fisheries agencies and State Water Board to develop a 2016 DCP that includes: a margin of safety for fish and wildlife protection with specific input from the fisheries agencies regarding needed measures for the reasonable protection of fish and wildlife; provisions for salinity control and minimum health and safety needs; specific monitoring, reporting and assessment activities;
- Sacramento River temperature management planning and implementation activities, including measures to ensure that there is adequate storage throughout the season for temperature control and minimum critical supplies if dry conditions continue; and
- Folsom and New Melones Reservoir planning and implementation activities, including a minimum carryover storage requirement in Folsom Reservoir of 200 TAF to protect municipal supplies as well as fish and wildlife.

In addition to the above fish and wildlife public interest comments, various comments and petitions for reconsideration objected on public interest grounds to the Executive Director's disapproval of the intermediate export rate, limitations on the use of conserved water under the TUCP Order and the application of export restriction to transfers included in the February 3, 2015 Order. Those provisions were later changed in subsequent TUCP orders to allow some use of the intermediate export rate, to allow the use of conserved water in accordance with the DCP and TMP, and to exclude transfers from the export restrictions. As such, these comments were largely made moot by the subsequent changes. However, the State Water Board disagrees with the overarching argument that was made in many of the comment letters that it was not in the public interest to place additional conditions on Project operations to reduce to some extent the environmental impacts of the changes and conserve storage for use later in the year for critical needs.

In approving the TUCP, the Executive Director must balance water supply considerations of the SWP and CVP with Delta needs, the needs of fish and wildlife and the public interest of

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maintaining critical supplies throughout the year. As discussed above, the changes approved by the TUCP Order allowed the Projects to conserve over 800 TAF of water and to continue exports when water quality standards were not being met. While some of the conserved water was used for temperature control for fish, temperature control releases are not consumptively used and are all available for other uses. All of the temperature releases this summer had a water supply benefit, including CVP agricultural settlement contract deliveries, salinity control and export. At the same time, the reductions in Delta outflows and inflows exacerbated already poor conditions for numerous threatened, endangered and commercially important species that may be at the verge of extinction. Further, storage levels have been depleted in an attempt to maximize contract deliveries. To help ensure the public interest and fish and wildlife needs for water are appropriately balanced against the need for water for consumptive uses, this Order includes the additional conditions discussed above on Project operations related to planning and carryover storage that the State Water Board believes are necessary based on the past several years of drought in which storage levels were seriously depleted and fish and wildlife were significantly impacted.

In addition to the above water supply related public interest comments, Friant raised similar issues to those it raised last year in reference to the DCP's indication that water supplies to Friant contractors would be limited. Friant argued that the DCP was not in the public interest because it failed to provide for the municipal water supply needs of Friant contractors that are dependent on groundwater supplies that are recharged through application of surface water for agriculture. Friant further argued that the catastrophic economic impacts and impacts to communities and individuals who run out of water due to the lack of supplies is not in the public interest. As was the case last year, the orders modifying the TUCP Order that were issued after DWR and Reclamation developed their DCP made some changes to D-1641 requirements consistent with the DCP, but those orders did not approve the DCP itself. Moreover, the TUCP Order does not specify how exports are to be allocated between DWR and Reclamation, or address the relative priorities of CVP contractors. For this reason, it is unnecessary to address the merits of Friant's arguments further.

In summary, with the above conditions, the State Water Board determines that the TUCP Orders were in the public interest.

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4.2 Findings Regarding Urgent Need for the Changes

Another issue raised in the petitions for reconsideration and comment letters is whether an urgent need existed for the changes approved by the TUCP Orders. The Water Code defines "urgent need" to mean "the existence of circumstances from which the [B]oard 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 . . . ." (Wat. Code, § 1435, subd. (c).) RTD contended the "existence of circumstances," as defined in Water Code section 1435, subdivision (c), is not limited to natural conditions that contribute to low water supplies in state and federal reservoirs, and the State Water Board should investigate the role of Project operations in contributing to the depletion of water supplies. RTD is correct that the "existence of circumstances," is not limited to circumstances due to natural conditions. Accordingly, the Board may determine that an urgent need for temporary changes exists based on circumstances resulting from either natural conditions or operational decisions, some combination of the two, or other factors. Similarly, the Executive Director was not required to investigate the extent to which Project operations contributed to critically low water supplies that necessitated approval of the TUCP. The Executive Director properly determined that an urgent need existed for the proposed changes to address critically low water supplies and the associated severe economic impacts in some communities, as well as impacts to fish, wildlife (discussed in section 4.4).

Although the investigation mentioned above was not required, the monitoring and reporting conditions incorporated into the TUCP Order have contributed to evaluating and understanding the impacts of Project operations on water supplies, and how they can be improved in the future. The July 3 Order and previous Orders required DWR and Reclamation to: 1) calculate and maintain a record of the amount of water conserved in storage or exported from the Delta due to the changes authorized in the TUCP Order, and use the water conserved in the most current CVP and SWP operations plan; 2) develop monthly water balance estimates indicating actual and proposed operations; and 3) conduct necessary modeling and monitoring and prepare other necessary technical information to inform operational decisions.

RTD also argued that Water Code section 1435, subdivision (c) required the State Water Board to evaluate whether DWR and Reclamation exercised due diligence in managing the Projects.

*Corrects a version prematurely certified, that did not include changes adopted by the board at its December 15, 2015 board meeting.

Water Code section 1435, subdivision (c) provides that the State Water Board shall not find a petitioner's need to be urgent "if the board in its judgment concludes, if applicable, that the petitioner has not exercised due diligence either (1) in petitioning for a change pursuant to provisions of [division 2 of the Water Code (commencing with section 1000)] other than [chapter 6.6 (commencing with section 1435)], or (2) in pursuing that petition for change." In other words, petitioners must exercise due diligence in pursuing non-urgent changes. Contrary to RTD's argument, section 1435, subdivision (c) did not require DWR and Reclamation to exercise due diligence in managing the Projects to minimize the effects of the drought.

In a protest dated February 13, 2015, South Delta Water Agency (SDWA) advanced a related argument that the TUCP Order was contrary to section 1435, subdivision (c) because DWR and Reclamation had not exercised due diligence in pursuing changes to their permits through the "normal" petition process. SDWA argued that instead of following the normal process, which would have allowed for public participation and an evidentiary hearing, DWR and Reclamation waited until the last minute before filing a TUCP, even though they knew that supplies would be insufficient to meet minimum water quality obligations in 2015.

SDWA advanced a similar argument last year, which was addressed in the order denying reconsideration of the 2014 TUCP Orders. (Order WR 2014-0029, pp. 18-20.) The reasoning in Order WR 2014-0029 is incorporated by reference. In summary, the decision whether to find a lack of diligence is discretionary. Given the extraordinary circumstances presented by the current drought, it was appropriate for the Executive Director to find an urgent need for the changes existed, and not to address whether DWR and Reclamation had been diligent in filing a non-urgent change petition. More importantly, variable hydrology in the beginning of water year 2014-2015 made it difficult to predict with certainty exactly what changes might be needed, or precisely when they would be needed. SDWA is correct that it was possible to predict that drought conditions would continue in 2015. Accordingly, the State Water Board required DWR and Reclamation to prepare a DCP that identified the different changes to Project operations and regulatory requirements that might be required in 2015, depending on different hydrologic forecasts. The uncertainty regarding the hydrology that would occur in December, January, and February, however, and the need to adjust Project operations on a real-time basis in response to that hydrology, would have made it difficult if not impossible for DWR and Reclamation to seek and the State Water Board to process all of the changes that ultimately were needed pursuant to a non-urgent change petition.

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4.3 Findings Regarding Injury to Lawful Users of Water

Several petitions for reconsideration and comment letters raised issues associated with injury to legal users of water based on arguments that the changes themselves were injurious or the conditions placed on those changes, or lack thereof, were injurious.

As discussed above, Friant's petition for reconsideration was not centered on the TUCP Order but instead on the January 2015 DCP required by the September 24, 2014 Order on Reconsideration of the 2014 TUCP actions. Friant argued that the provisions of the DPC allowing for transfers outside of the July through September transfer window could injure their interests as a legal user of water because the DPC did not specify that the movement of transfer water cannot displace movement of Project supplies. Friant also argued that the DCP suggests Reclamation will not adhere to water rights priority. As discussed above, although the State Water Board required the DCP to be prepared, and the Executive Director approved some of the changes to regulatory requirements identified in the DCP, none of the TUCP Orders approved the DCP itself. In particular, the TUCP Orders did not approve any transfers that may have been implemented in accordance with the DCP. Therefore, the potential effect of any transfers on Friant has no bearing on the validity of the TUCP Orders.

The Exchange Contractors et al. argued that any restrictions on exports or the use of water conserved as a result of the TUCP Order constituted changes to the Projects' water rights that cannot be made without notice and an opportunity for an evidentiary hearing consistent with due process requirements under the federal and state Constitutions. The Exchange Contractors et al. also contended the no injury rule protects them from injury due to those changes. As discussed in section 4.5.8, below, an evidentiary hearing on the TUCP was not required by statute or by the federal and state Constitutions, and under the circumstances it was appropriate not to hold an evidentiary hearing. Moreover, as discussed in section 4.5.2, below, the restrictions on exports and the use of conserved water were not changes in their own right, but lawful conditions of approval of changes to Delta outflow and other water quality requirements. Those changes allowed the Projects to retain in Project storage and export significantly more water than would have been available if D-1641 requirements had been met. The Projects and their contractors benefited from the changes, notwithstanding the conditions of approval; therefore, they were not injured.

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The North Delta Water Agency (NDWA) argued that their 1981 contract with DWR[10] requires DWR to operate the SWP to meet specified water quality criteria while providing enough water to satisfy all reasonable and beneficial uses of water within NDWA's boundaries. NDWA contended it is critical that DWR continue to meet the water quality criteria contained in the 1981 contract, and that the State Water Board not interfere with the contractual requirements of the 1981 contract through the TUCP process. According to NDWA, the changes to the Emmaton compliance point and Rio Vista flows would result in an injury to NDWA to the extent that they caused water quality to be worse than the criteria defined in the 1981 contract. This argument is misplaced because the TUCP Orders did not purport to relieve DWR of its contractual obligations to NDWA.

SDWA argued that the decrease in outflows and inflows that were allowed by the TUCP Order would prolong or increase the degree of violations of southern Delta salinity objectives and adversely affect agricultural users. Additionally, SDWA argued that the relaxation of the San Joaquin River flow requirements would increase salt concentrations and adversely affect agricultural users.

As used in Water Code section 1435, the term "injury" means invasion of a legally protected interest. (*State Water Resources Control Board Cases* (2006) 136 Cal.App.4th 674, 738-743.) Riparian and appropriative water right holders with rights to divert water below Project reservoirs only are entitled to divert natural and abandoned flows and, in the case of riparians, only natural flows; they are not entitled to divert water previously stored or imported by the Projects that is released for use downstream, including stored water that is released for purposes of meeting water quality objectives. (See *id.* at pp. 738, 743, 771.) Similarly, water right holders only are entitled to the natural flows necessary to provide adequate water quality for their purposes of use; they are not entitled to have water released from upstream storage in order to provide better water quality than would exist under natural conditions, and they are not entitled to better water quality than necessary to allow them to use the water to which they are entitled. (See *Wright v. Best* (1942) 19 Cal.2d 368, 378-379; see also *Deetz v. Carter* (1965) 232 Cal.App.2d 851, 856.) Accordingly, legal users of water are not injured to the extent that the Projects released less previously stored water due to the changes.

To the extent that the Projects diverted natural or abandoned flows during the effective period of the Orders, other lawful users were not injured by the changes because the Projects continued,

[10] NDWA and DWR are parties to a 1981 "Contract for the Assurance of a Dependable Water Supply of Suitable Water Quality."

by and large, to meet modified Delta outflow and Sacramento River flow and salinity requirements, and adequate flows remained in the system to meet the demands of other lawful users of water. Moreover, approval of the changes did not affect the Projects' obligation to curtail their diversions of natural and abandoned flows to the extent necessary to protect senior water right holders, or to meet any independent contractual obligations that they may have. Further, the Order required that the Projects bypass natural and abandoned flows when they were not meeting the Sacramento River at Emmaton agricultural salinity requirement to prevent injury to other lawful users of water.

Delta salinity measurements indicated that salinity in the Western Delta increased as a result of the reduced Delta outflow; however, the increases were less than what would have occurred without the Projects because the Projects ensure that salinity does not intrude upstream into the Delta by supplementing natural inflow with storage releases in very dry conditions like the year 2015. Based on the information provided, and as conditioned therein, the TUCP Orders did not injure agricultural users due to changes in water quality.

In addition to alleging injury, SDWA argued that increases in salinity as a result of the changes approved by the TUCP Order would adversely affect Delta water users in violation of the Delta Protection Act of 1959 (Wat. Code, §§ 12200-12205). CSPA et al. advanced a similar argument. In addition, both CSPA et al. and RTD argued that the TUCP Orders violated the Delta Protection Act because they did not include a finding that no water would be exported to which Delta users were entitled.

The requirements of the Delta Protection Act are discussed at length in the *State Water Resources Control Board Cases*, *supra*, 136 Cal.App.4th at pp. 767-772. In summary, the Act precludes the export of water from the Delta that is necessary for salinity control in the Delta or to provide an adequate water supply for users within the Delta, but affords the State Water Board discretion to decide what level of salinity control should be provided and what is an adequate water supply for Delta water users. (*Id.* at pp. 771-772.) The Act does not give Delta water right holders the right to previously stored Project water. (*Id.* at p. 771.) For the reasons described above, we find that that the changes approved by the TUCP Orders did not result in an inadequate level of salinity control or deprive Delta water users of water to which they were entitled, and therefore the TUCP Orders did not violate the Delta Protection Act.

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4.4 Findings Regarding Fish and Wildlife and Other Instream Beneficial Uses

Various petitioners and commenters argued that the TUCP Orders and TMP approval would have, or have had, unreasonable effects on fish and wildlife. Petitions for reconsideration of the Orders were received from CSPA et al., TBI and RTD and petitions for reconsideration of the Executive Director's approval of the TMP were submitted by CSPA et al. and TBI. CSPA et al. also filed a complaint related to this matter. Numerous comments were also received on fish and wildlife issues that are similar to the petitions. The Executive Director considered all of those comments as they were received, even though a formal response has not been provided until this time. Since the changes are no longer effective, the following discussion focuses on major issues raised in the petitions and comments concerning the effects of the changes on fish and wildlife, and does not respond to every issue. The major issues are discussed in more detail below.

General Fish and Wildlife Comments

Petitioners argued that given the poor condition of fish species before the drought and the present condition of species, changes to D-1641 requirements that were developed and implemented through extensive evidentiary proceedings would unreasonably affect fish and wildlife and could lead to extinctions. They further argued that the D-1641 requirements themselves have proven to be inadequate resulting in the continued declines of fishery populations since D-1641 was implemented. Petitioners argued that fishery resources have been disproportionally impacted by the drought, and that fisheries dependent on Delta outflow have experienced flow conditions equivalent to super critical droughts in half of all years since 1975 because of increased consumptive use of water. Petitioners also argued that existing conditions are the result of poor water management decisions prior to and during the drought and that the changes to D-1641 requirements would further exacerbate the situation and facilitate unreasonable impacts to fish and wildlife, including extinction. They argued that existing and historic practices of depleting reservoirs and maximizing deliveries without a margin of safety in the event of dry conditions in the future is detrimental to species, and that the Projects should begin managing for multi-year droughts. Following are comments that were raised related to specific changes.

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Delta Inflow, Outflow and Export Constraint Comments

Petitioners argued that the existing Delta outflow objective and implementation of that objective through D-1641 is already inadequate for protecting both listed resident and migratory fishes using the Delta as habitat and a migration corridor, including Delta smelt, longfin smelt, winter-run Chinook salmon, steelhead and sturgeon. As such, petitioners argued that relaxation of already inadequate Delta outflows was unreasonable and would have irreversible impacts on threatened, endangered and commercially important fish species. Specifically, petitioners argued that the current Delta outflow index used to measure compliance with required Delta outflows overestimates actual Delta outflows and as such that the relaxations would likely lead to actual negative Delta outflows which would unreasonably affect fish and wildlife. Petitioners argued that the State Water Board must develop Delta outflow standards that accurately reflect actual Delta outflow. Petitioners further argued that reducing requirements for Delta outflow saves little or none of the cold water pool in Shasta, and causes severe stresses to the Bay-Delta ecosystem and all the listed fish species.

Petitioners specifically argued that the reduction in Delta outflow allowed for this summer, coupled with the relocation of the Western Delta agricultural salinity compliance point to Threemile Slough, would likely lead to adverse temperature conditions for Delta Smelt in the Central Delta. Petitioners contended that the changes would move the Low Salinity Zone (LSZ) and X2[11] further upstream where, based upon examination of temperature, salinity, and flow data from previous years, temperatures were likely to reach lethal levels for Delta Smelt and jeopardize the continued existence of the species. Petitioners also expressed concerns with the installation of a temporary rock barrier at False River[12] in the Delta that allowed for reductions in Delta outflows. Petitioners expressed concern regarding the reduction in Delta outflows in combination with the installation of the False River barrier leading to increasing salinity in the western and central Delta, and movement of the LSZ that could significantly impact Delta smelt and other listed fish species in the Delta.

[11] The location of the 2 parts per thousand salinity contour (isohaline), one meter off the bottom of the estuary, as measured in kilometers upstream from the Golden Gate Bridge. The abundance of several estuarine species has been correlated with X2. In D-1641, an electrical conductivity value of 2.64 mmhos/cm is used to represent the X2 location.

[12] The False River barrier, approved through a process separate from the TUCP, was an emergency drought barrier placed at West False River to help preserve water quality in the Delta. The barrier was designed to be temporary, and prevent tide-driven saltwater from pushing too deeply into the Delta and allow water managers to retain additional water in upstream reservoirs for release later in the year for fishery flows and other purposes. Although the State Water Board approved the emergency drought barrier at West False River separately, installation of the barrier, together with the changes approved in the TUCP Order, affected water quality and flows in the Delta.

With respect to the export constraints, petitioners and commenters argued that exports should be limited when Delta outflow requirement are not being met because exports further reduce Delta outflows and because entrainment risk at the export facilities is elevated when outflows are reduced. Specifically, petitioners and commenters objected to allowance of the intermediate export rate and allowance of any transfers when D-1641 requirements are not being met because of the elevated entrainment risk under those circumstances. Similarly, petitioners argued that transfers should be subject to the same constraints and mitigation requirements as Project exports because of these concerns.

DCC Gate Closure Comments

Petitioners argued that opening the DCC gates would not save reservoir storage as stated in the TUCP Order, but would enable higher exports without at the same time pulling saltwater into the West Delta. Petitioners argued that maintaining low exports should alleviate the need to open the DCC. Petitioners further argued that the impacts of DCC gate opening would not be mitigated by implementing gate closure criteria because fish that have already moved through the gates will be trapped in the interior Delta and monitoring is insufficient to assess any real risks to the populations from DCC openings. Petitioners further argued that sudden opening and closure of the gates causes large scale shifts in Delta hydrodynamics that affect fish survival and migration success.

San Joaquin River Flow Comments

Petitioners argued that the relaxation of the San Joaquin River inflow objective at Vernalis would have an unreasonable impact on fish and wildlife. They argued that reducing the Vernalis flow requirement would deteriorate conditions needed for spawning and rearing for San Joaquin salmon and steelhead, as well as smolts migrating through the Delta. Petitioners contended that the existing San Joaquin River inflow objective in a critical year is already not protective of fish as evidenced by numerous studies showing the entire flow of the San Joaquin River is typically exported when D-1641 is in full effect. Petitioners further argued that lowering the San Joaquin River flow objective increased the need for fresh water flows to be released through the DCC which increased the vulnerability of salmon smolts and other resident juvenile fish to predation and entrainment in the South Delta.

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Sacramento River Temperature Comments

Petitioners argued that Project operations were not constrained enough and caused unreasonable impacts on fish and wildlife as a result of high Sacramento River temperatures. Commenters asserted that releases from Shasta and Keswick reservoirs were authorized far above necessary for temperature control to accommodate the delivery of water to the Sacramento River settlement contractors, resulting in insufficient cold water storage for protection of winter-run Chinook salmon and other species. Commenters also argued that a temperature target of 57 to 58 degrees Fahrenheit was not protective enough for incubating Chinook salmon eggs, and setting the temperature objective as far upstream as Clear Creek limits the spawning area to a small reach of the Sacramento River. Petitioners and commenters suggested minimum reservoir carryover storage targets be adopted to prevent insufficient cold water pool and subsequent reliance on weakened water quality requirements through the TUCP process, resulting in further impacts to public trust resources. Petitioners also argued that the TMP has redirected impacts to Trinity River fish species and that the import of Trinity River water further impacted cold water pool in Shasta in order to maintain Sacramento River settlement contractor deliveries.

General Response to Fish and Wildlife Issues

As discussed in the introduction, it was reasonable at the time the Executive Director made the decisions in the TUCP Order and TMP to determine that the changes would not unreasonably impact fish and wildlife based on the information available at the time. Specifically, DWR and Reclamation submitted biological reviews with each request indicating that impacts of the changes were expected to be minimal and that the primary reason for impacts to fish and wildlife was drought conditions. Further, the biological reviews also stated that there would be benefits from the changes to fish and wildlife by allowing for temperature management on the Sacramento River and preservation of storage on the San Joaquin River such that flows could be provided throughout the year. The fisheries agencies also concurred with these changes and indicated that they were consistent with Endangered Species Act requirements. The Executive Director acknowledged that the changes would likely have impacts on physical habitat and water quality for various species resulting in constrained and diminished habitat for these species. However, the Executive Director determined that the tradeoffs relative to conserved stored water for cold water supplies on the Sacramento and Stanislaus Rivers and for salinity control and various water supply needs was reasonable. The Executive Director

acknowledged that the conservation of storage would also benefit water supplies for agriculture and other uses, which would maximize the use of the water conserved. Doing so was in the public interest, particularly given the importance of agriculture to local communities and the State and the depleted condition of groundwater basins in the State after four years of drought.

In approving the TUCP Order, the Executive Director considered the critical dry hydrologic conditions in the Sacramento and San Joaquin River watersheds and the associated below average storage levels in all of the Project reservoirs and very low Project water supply allocations. The Executive Director reasoned maintaining flow and water quality requirements would reduce the storage available in Project reservoirs later in the year for cold-water flows for fish, deliveries to agriculture, municipal and industrial use, wildlife refuges and other users, for salinity control and minimal reserves going into water year 2016 should drought conditions continue. The Executive Director further reasoned that, without the changes, water supplies for various purposes would have been significantly diminished resulting in significant hardship to local communities and additional dependence on already depleted groundwater basins leading to potentially irreversible impacts to those basins from subsidence.

The State Water Board finds that the Executive Director's decisions were reasonable at the time they were made and therefore the petitions for reconsideration should be denied in large part. However, the State Water Board also determines that the status quo of the past two years is not sustainable for fish and wildlife and that changes to the drought planning and response process are needed to ensure that fish and wildlife are not unreasonably impacted in the future and to ensure that various species do not go extinct. Accordingly, as discussed above, this Order requires a DCP that includes a margin of safety for fish and wildlife that is specifically informed by information from the fisheries agencies on what measures are needed to reasonably protect fish and wildlife during another drought year, including how operations could have been conducted in 2014 and 2015 if that were the primary objective of operations. This Order also includes requirements that the DCP include specific necessary monitoring, reporting and evaluation activities to assess and document the effects of drought operations and inform planning and decision making related to protection of fish and wildlife and other uses. This Order also includes requirements for plans to protect fish and wildlife on the American and Stanislaus Rivers, including a carryover storage requirement of 200 TAF in Folsom Reservoir. Lastly, the Order includes several provisions related to Sacramento River temperature issues that are discussed in greater detail below along with specific responses to comments received on this issue.

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Response Regarding Sacramento River Temperature Issues

As discussed above and in the TUCP Order and modifications, one of the primary reasons for the changes that were approved in the TUCP Order and modifications was to conserve cold water supplies for temperature management on the Sacramento River in order to avoid extinction of that species. However, the actions taken this year to protect winter-run, while reasonable at the time, were unsuccessful. Significant changes to the temperature management process must be implemented immediately to ensure that winter-run do not go extinct, to avoid further serious indirect impacts, and to ensure that there is timely, transparent and accurate information provided to inform temperature management decisions.

Specifically, the approach taken in the revised TMP that was approved by the Executive Director in July to target a higher temperature level far upstream on the Sacramento River was not successful this year and should not be pursued as an option in the future. Accordingly, this Order requires a TMP next year that ensures the protection of winter-run.

Although it was not successful, the approach to target the higher temperatures was reasonable to take at the time the Executive Director made his decision given the limited options available for controlling temperature once it was determined in late May that there was much less cold water available than identified in the original April TMP. Further, the decision was supported by the fisheries agencies. While more cold water could have possibly been maintained in storage and a lower temperature could have been targeted by reducing flows below levels called for in the revised TMP, that would have entailed a further reduction in supplies to Sacramento River settlement contractors. By the time the reduced cold water storage supply issues were identified and the revised TMP was developed and approved, Sacramento River settlement contractors had already planted crops and had received a 25 percent reduction in their supplies. While a 25 percent reduction in supplies is much less than other contractors received, the settlement contractors voluntarily transferred much of their contract allocation to water supply contractors south of the Delta that received no allocations, many of whom did not have access to groundwater supplies, including growers with permanent crops. As such, these transfers helped to stretch limited supplies and helped to ensure that critical supplies were available to permanent crops. The economic investment in permanent crops is very significant and the risk of reduced supplies is equally high for individual farmers and their communities. Further, supplies received by settlement contractors in the fall that are used for rice-straw decomposition also provide important habitat for birds on the Pacific Flyway.

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In addition, a greater margin of safety could have been provided when the original TMP was approved, but it was reasonable at that time to attempt to allow for the maximization of water supplies given the considerations discussed above if it could be done while still protecting winter-run and other species. The information available at the time the original TMP was approved indicated that it was possible to maximize supplies in accordance with the TMP, particularly given the assurances provided by Reclamation that it would meet temperature targets throughout the temperature control season. Based on the events of the past two years though, it is no longer reasonable to operate without a margin of safety since another year of temperature impacts to winter-run is untenable for the species. Accordingly, this Order requires a margin of safety for winter-run and other species.

This Order also requires much needed improvements to the development and sharing of temperature information between Reclamation and the State Water Board and fisheries agencies. Reclamation's failure to inform the State Water Board and fisheries agencies of the reduced cold water supplies available in Shasta Reservoir for more than a month after that information was available to Reclamation was not reasonable. Even if Reclamation believed that the measurements of significantly reduced cold water pool supplies were in error, Reclamation should have immediately notified the State Water Board and fisheries agencies of the issue once the measurements became available, starting in April. Instead, Reclamation did not do so for more than a month, during which time options to address the problem without significant indirect impacts were reduced. Accordingly, this Order includes specific requirements to address the need for transparent, timely and accurate information exchange in order to avoid indirect impacts.

In particular, significant indirect impacts occurred to those who had made water supply and planting decisions and arrangements based on the original TMP. Those impacts were addressed to some extent by transfers made later in the year. However, those transfers also had indirect impacts to fall-run Chinook salmon because the transfers required the maintenance of higher flow levels longer in the fall after winter-run had emerged from their redds. After the transfers were completed, Reclamation reduced those flow levels to conserve limited supplies in Shasta Reservoir and attempt to ensure that fall-run would not spawn at the higher flows. However, many fall-run had already spawned and the reduction in flows resulted in dewatering of approximately 130 fall-run redds. In addition, indirect impacts occurred to Oroville and Folsom reservoirs from which more water was released to meet Delta outflow and salinity

conditions as a result of the revised TMP. As discussed above, this Order includes provisions to address these issues as well.

Related to comments on the impacts of Trinity River imports to the Sacramento River, the State Water Board agrees that this is an issue that merits more consideration in the future to ensure compliance with the requirement set forth in State Water Board Order 90-5 that imports from the Trinity River not have impacts to either the Sacramento or the Trinity River system. This Order requires specific measures to address these issues, including: an express requirement that next year's TMP not result in indirect impacts to the Trinity River or Clear Creek, and a requirement that Reclamation evaluate large discrepancies in temperature modeling on the Trinity River and Clear Creek.

Responses to Other Fish and Wildlife Issues

With regard to the adequacy of the existing water quality objectives and D-1641, the State Water Board agrees that the existing objectives merit review and update and as such the State Water Board is currently in the process of updating the water quality objectives to ensure the reasonable protection of fish and wildlife beneficial uses. Following that update process, the State Water Board will undertake a proceeding to implement any revised objectives. Those processes will include provisions to address drought circumstances. In addition, the adequacy of the current NDOI calculation to determine required Delta outflow will also be evaluated. In the interim, this issue will be further evaluated in the DCP process required by this Order.

With regard to the False River barrier, the barrier was considered by the Executive Director through a separate process that was subject to reconsideration, however, no petitions for reconsideration were received on that action. State Water Board staff will nonetheless consider the comments that were received related to this issue as staff considers a similar request for 2016 that was recently submitted.

With regard to transfers effectuated under water rights not held by DWR or Reclamation, those transfers were not subject to the approval of the TUCP Order. Any transfer effectuated under a third party's permitted or licensed water right would require a separate approval process. Under that process, the public and the fisheries agencies would be provided with an opportunity to protest or comment on the proposed water transfer and petition for reconsideration of any actions on the transfers. As such, comments related to those transfers should be made in the separate transfer consideration processes.

Regarding opening the DCC Gates, the TUCP Order did find that impacts may occur to Sacramento River origin salmonids due to straying and entrainment. However, the Executive Director found that the proposed DCC gate operations would not be unreasonable because they were required to be operated consistent with the DCC Gate triggers matrix and in consultation with the fisheries agencies and State Water Board to avoid unreasonable impacts. While Petitioners argued that these real-time decision making measures are not adequate to protect against entrainment and other impacts, the fisheries agencies concurred that they would be. The State Water Board agrees that keeping the DCC gates closed would likely be more protective than opening of the DCC gates, but that difficult decisions were needed given the extreme drought conditions and limited water supplies. Accordingly, the Executive Director's decisions were reasonable and supported. However, going into next year, specific evaluation of the adequacy of the real-time measures will be required as part of the DCP.

4.5 Other Topics

4.5.1 Consistency of TUCP Orders with Water Quality Law

Several petitioners, including CSPA et al., RTD and the Exchange Contractors et al., argued that the TUCP Order violated the federal Clean Water Act (33 U.S.C. § 1251 et seq.) by either failing to fully implement water quality objectives, or by impermissibly changing water quality objectives. They argued that the State Water Board lacks any authority to "suspend" or "relax" a water quality objective without conducting a rulemaking proceeding to change the Bay-Delta Plan. These arguments incorrectly conflate the State Water Board's planning authority under the Clean Water Act with its implementation authority under state law. The TUCP Order did not change water quality objectives; rather, it temporarily altered implementation requirements under state law.

A water quality objective is distinguishable from how an agency implements and enforces the objective, particularly when an agency implements an objective as applied to sources outside of the federal permitting authority of the U.S. Environmental Protection Agency (EPA). How an agency must implement a water quality objective depends on whether the activity being regulated is considered point source or nonpoint source pollution. (See *Pronsolino v. Nastri* (9th Cir. 2002) 291 F.3d 1123; *City of Arcadia v. State Water Res. Control Bd.* (2006) 135 Cal. App. 4th 1392, 1431 [Congress has chosen not to give the EPA the authority to regulate nonpoint source pollution].) As discussed in detail below, nonpoint source pollution is a broad category of controllable water quality factors not subject to the permitting requirements for point source

discharges of pollutants under the Clean Water Act, including water resource management activities such as the water supply project operations at issue here. The distinction between objectives and implementation is critical to understanding the statutory structure of the Clean Water Act that divides responsibility between the federal and state governments for controlling sources of water pollution. (See generally, U.S. Environmental Protection Agency, Agency Interpretation on Applicability of Section 402 of the Clean Water Act to Water Transfers (August 5, 2005) [Congress intended for water transfers to be subject to oversight by water resource management agencies and state nonpoint source pollution authorities].)

Under section 402 of the Clean Water Act, point source discharges of pollutants to waters of the United States are prohibited unless authorized under a National Pollutant Discharge Elimination System (NPDES) permit issued by EPA or state government if lawfully authorized to implement the Clean Water Act program. Nonpoint source pollution includes all other pollution exempted from the NPDES permitting program. This "category is defined by exclusion and includes all water quality problems not subject to [section] 402 [of the Clean Water Act]." (*National Wildlife Federation v. Gorsuch* (D.C. Cir. 1982) 693 F.2d 156, 166.) Water diversions, dams, and reservoirs fall in this category. The Clean Water Act does not provide direct authority for EPA to regulate nonpoint sources.[13] (See *id.* at p. 176 [describing separation of pollution sources amenable to NPDES technological controls as partly an "experiment" in the effectiveness of state regulation (citations omitted)].)

The Clean Water Act contains specific deadlines by which point source discharges must be in compliance with water quality standards. For nonpoint sources of pollution, by contrast, the Water Board generally has broad discretion in how it chooses to implement the objective in accordance with state law. (See, e.g., Wat. Code, § 13242 [program to achieve objectives shall include a description of the nature of the actions necessary to achieve objectives, including recommendations for appropriate action by any entity, public or private, a time schedule for actions to be taken, and monitoring to determine compliance].)

There are several reasons why dams are not appropriately regulated under NPDES point source control. First, water quality problems associated with dams involve effects attributable to

[13] The Clean Water Act establishes a variety of programs and initiatives related to nonpoint sources such as section 304(f) [EPA guidelines for evaluating the nature and extent of nonpoint sources including dams, levees, channels, causeways, or flow diversion facilities], 319 [grant program for specific nonpoint source implementation projects], 208 [area-wide management plans], and 303(d) [total maximum daily loads developed for impaired water bodies where traditional controls are not sufficient to maintain standards]. However, these programs all recognize that the States have primary responsibilities with respect to the development and use of land and water resources.

the dam itself, not just effects resulting from the discharge. "[D]ams may not be amenable to the nationally uniform controls contemplated by [section] 402 because pollution problems are highly site-specific." (*National Wildlife Federation v. Gorsuch*, *supra*, 693 F.2d at p. 177, fn 61.) Also, Congress wanted to avoid interference with state management over water quantity and state allocation plans. Thus, dams were better left to regulation by the state, particularly by state agencies that have explicitly combined the two functions of regulating water quantity and quality. (*Id*. at p. 179.)

The fact that dams and reservoirs are exempted from NPDES requirements does not mean that these facilities are immune from Clean Water Act requirements. The Water Board can and does implement water quality objectives pursuant to its planning authorities and water right proceedings under state law. However, absent restraints imposed by the State Water Board itself (see Water Code section 13247, discussed below), the State Water Board has discretion to decide how to implement objectives in the context of statutory and common water rights law. This is consistent with the U.S. Supreme Court's interpretation of Clean Water Act section 101(g), which allows regulation of water users by a state to protect water quality while avoiding a fundamental interference with state water allocation authority. (*PUD No. 1 of Jefferson County v. Washington Dep't of Ecology* (1994) 511 U.S. 700, 720.) The TUCP Order temporarily changed some of the conditions of the water right permits and license for the Projects, which otherwise would have required DWR and Reclamation to fully meet water quality objectives in the Bay-Delta Plan. This was an implementation action under state law authority. The TUCP Order did not change the water quality objectives themselves in a manner inconsistent with the Clean Water Act.

The federally-promulgated water quality standards cited by CSPA et al. are not relevant to the discussion. As a component of a coordinated initiative of federal agencies, EPA promulgated criteria pursuant to Clean Water Act section 303(c)(3) and 303(c)(4) after it disapproved the State Water Board's 1991 Bay-Delta Plan. (60 Fed. Reg. 4668 (1995).) EPA subsequently approved the 1995 Bay-Delta Plan, and has committed to withdraw the standards articulated in Code of Federal Regulations, title 40, section 131.37. The Third District Appellate Court confirmed that once approved by EPA, the applicable water quality standards are those in the 1995 Bay-Delta Plan as a matter of law. (*State Water Resources Control Board Cases*, *supra*, 136 Cal.App.4th at pp. 774-775 [citing 33 U.S.C. § 1313(c)(2)(A), (c)(3)].)

Water Code Section 13247

The petitioners continue to cite the Court of Appeal's opinion in the *State Water Resources Control Board Cases*, *supra*, 136 Cal.App.4th 674, to support their argument that the TUCP Order impermissibly altered Bay-Delta water quality objectives. In that case, the Court found that Water Code section 13247 "compelled" the Water Board to implement a pulse flow objective on the San Joaquin River at Vernalis, rather than the alternate, experimental flow objective approved in D-1641. (*Id.* at p. 730.) This was because Water Code section 13247 requires state agencies to comply with water quality control plans, and the program of implementation contained in the 1995 Bay-Delta Plan provided only for the full implementation of the Vernalis pulse flow objective in a water right proceeding. (*Id.* at p. 728.) "The guiding principle is that the Board's power to act in a water rights proceeding commenced to implement a water quality control plan is constrained by the terms of the plan it is implementing." (*Id.* at p. 729.)

The Water Board agrees that, absent the emergency proclamation, Water Code section 13247 requires state agencies, including the State Water Board, to comply with water quality control plans unless otherwise directed or authorized by statute. In addition, the Bay-Delta Plan, as currently drafted, does not provide sufficient flexibility in the program of implementation to adequately respond to the extended drought conditions facing California.

To address this problem, Governor Brown suspended Water Code section 13247 as applied to certain actions, including changes to D-1641 requirements that were approved by the TUCP Order, pursuant to the California Emergency Services Act (Gov. Code, § 8550 et seq.). The Bay-Delta Plan implementation provisions are state law regulations and subject to modification by the Governor in response to emergencies. (Gov. Code, § 8567, subd. (a) [Governor may make, amend, and rescind orders and regulations that have the force and effect of law].) Accordingly, Water Code section 13247 does not apply to the TUCP Orders, and the holding in the *State Water Resources Control Board Cases* is inapplicable as a result.

RTD and CSPA et al.'s argument that the Governor lacks authority to "suspend a EPA-approved water quality objective on the grounds that he has declared an emergency water shortage" simply ignores the point discussed above, which is that the implementation of Clean Water Act objectives through the regulation of nonpoint sources (which includes water diversions) occurs

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pursuant to state law. The Governor has authority to modify the application of state law under the emergency conditions that are present here.

Antidegradation Analysis

CSPA et al. also argued that the Water Board violated state and federal antidegradation requirements by lowering standards in a manner that did not protect the fisheries beneficial use. CSPA et al. complained that the TUCP Order did not contain any analysis of impacts to beneficial uses and the "trade-offs or costs" between water allocations and "benefits of weakening water quality standards." We disagree. The TUCP Order did not violate the antidegradation standard and an additional analysis was not required.

The federal antidegradation policy is designed to protect existing uses and the level of water quality necessary to protect existing uses, and provide protection for higher quality and outstanding national water resources. (40 C.F.R. 131.12) It establishes a three-part test for determining when increases in pollutant loadings or other adverse changes in surface water quality may be permitted:

> (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
>
> (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.
>
> (3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(40 C.F.R. §131.12(a).)

The state antidegradation policy, State Water Board Resolution 68-16 "Statement of Policy with Respect to Maintaining High Quality of Waters in California" provides in part: "Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies." State Water Board Resolution 68-16 incorporates the federal antidegradation policy where it is applicable under federal law. (State Water Board Order WQ 1986-17, p. 19.)

The antidegradation policy does not absolutely prohibit any changes in water quality. Rather, any reductions in water quality will depend upon the conditions existing in the specific waters affected, and the benefits of the proposed action. This site-specific balancing is consistent with the scheme established under the Porter-Cologne Water Quality Control Act for setting water quality objectives when issuing waste discharge requirements, setting cleanup levels in cleanup and abatement orders, and other actions.

The Water Board has not violated the antidegradation standard. When water quality is not better than objectives, the federal antidegradation policy requires that existing instream uses and the level of water quality necessary to protect the instream uses be maintained and protected. (40 C.F.R. § 131.12(a)(1).) The Water Board has complied with this requirement. The TUCP Orders balanced competing demands based on the information available at the time, and provided reasonable protection to beneficial uses given the amount of water available. In hindsight, temperature control in the Sacramento River was not satisfactory, but this was not the result of the changes approved by the TUCP Order; rather, elevated temperatures resulted from a Temperature Management Plan that proved to be inadequate. Additional controls will be necessary to ensure adequate temperature control on the Sacramento should the drought persist for a fifth year. Accordingly, this order imposes more stringent planning requirements for 2016.

4.5.2 Executive Director's Authority to Impose Conditions of Approval

The Exchange Contractors et al. contended that the Executive Director did not have authority to impose conditions of approval in the February 3 TUCP Order that restricted exports or the use of water conserved as a result of the changes approved. As mentioned in section 4.3, above,

the Exchange Contractors et al. argued that the State Water Board must conduct a separate proceeding, and hold an evidentiary hearing, before making changes to the water rights for the Projects. Similarly, SLDMWA et al. contended that Condition 3 of the February 3 TUCP Order was contrary to law because it provided that the Executive Director would determine the use of water conserved as a result of changes approved by the Order. SLDMWA et al. argued that Condition 3 impermissibly expanded the Executive Director's authority in contravention of "numerous laws, regulations, and contractual obligations" that authorize DWR and Reclamation to operate the Projects. The Northern California Water Association (NCWA), which represents Sacramento River settlement contractors, advanced substantially the same argument in an objection filed on February 13, 2015.

NCWA and Feather River settlement contractors (Western Canal Water District, Biggs-West Gridley Water District, Butte Water District, Richvale Irrigation District, and Sutter Extension Water District) also filed objections to the July 3 TUCP Order that took issue with the Executive Director's authority to impose a condition requiring Reclamation to prepare and implement a TMP. NCWA and the Feather River contractors asserted that, before imposing such a condition, the Executive Director was required to make the four findings set forth in Water Code section 1435, including findings that the TMP would not cause injury to other lawful users of water or have an unreasonable effect on fish and wildlife. NCWA also stated that a reduction in releases from Keswick Dam pursuant to the TMP could cause injury to the settlement contractors, who hold water rights that are senior to Reclamation. Similarly, the Feather River settlement contractors asserted that they could be injured by the TMP because restrictions on CVP operations place greater responsibility on Oroville Reservoir to meet Delta water quality requirements and other inbasin uses, thereby reducing the amount of water available from Lake Oroville to meet the needs of DWR's contractors. Both NCWA and the Feather River settlement contractors stated further that reducing deliveries to them would have an unreasonable effect on fish and wildlife by reducing rice acreage, which provides habitat for waterfowl, the giant garter snake, and other species.

In Order WR 2014-0029, the State Water Board rejected similar arguments that the Executive Director lacked authority to impose conditions of approval of the 2014 TUCP. (See Order WR 2014-0029, pp. 21-22, 46-47.) If brief, the Executive Director had authority to impose conditions of approval to the extent necessary to support the findings that were required to be made in order to approve the TUCP. In particular, the conditions restricting exports and requiring a TMP to be implemented were necessary to ensure that the changes to Delta outflow and other water

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quality requirements would be in the public interest and would not result in unreasonable impacts to fish and wildlife. In addition, Reclamation had an independent obligation to prepare a TMP in accordance with Order WR 90-5. Pursuant to that Order, Reclamation is required to maintain a daily average temperature of 56 degrees Fahrenheit at Red Bluff Diversion Dam during periods when higher temperatures would be detrimental to the fishery, and to prepare an operations plan that identifies an alternative compliance location if factors beyond Reclamation's reasonable control preclude Reclamation from meeting the temperature requirement at Red Bluff Diversion Dam. (Order WR 90-5, pp. 54-55.)

The argument that Water Code section 1435 required the Executive Director to make certain findings concerning the effects of the TMP also lacks merit. Water Code section 1435 requires certain findings to be made with respect to the changes proposed by a temporary, urgency change petition, not with respect to any conditions of approval. Moreover, NCWA's and the Feather River settlement contractors' claim that the TMP could cause injury to them was unsupported. As explained in Order WR 2014-0029, Project contractors do not have a legally protected interest in more water than Reclamation and DWR can deliver consistent with the conditions of their water right permits. (Order WR 2014-0029, pp. 21-22, citing *State Water Resources Control Board Cases*, *supra*, 136 Cal.App.4th at p. 806, fn. 54.) Accordingly, the contractors were not entitled to more water under their contracts than Reclamation and DWR could deliver to them consistent with the TMP and other conditions of approval, which became conditions of Project permits during the effective period of the TUCP Orders. In addition, the contractors did not provide any evidence that the TMP could cause injury to their senior water rights by reducing the natural or abandoned flows to which they may have been entitled under those claims of right. Finally, we find that any impacts to fish and wildlife attributable to a reduction in rice acreage were not unreasonable in light of the paramount need to protect endangered winter-run Chinook salmon from extinction.

4.5.3 Consistency of the TUCP Orders with the Public Trust and Reasonable Use Doctrines

CSPA et al. and RTD contended that the TUCP Orders did not properly balance flows required to protect fishery resources against agricultural and other consumptive uses in violation of the public trust and reasonable use doctrines. CSPA et al. faulted the TUCP Orders for failing to balance water supplies for low value crops like pasture and alfalfa with critically depressed public trust resources hovering on the brink of extinction. Petitioners argued that the balancing of competing demands effectuated by the TUCP Orders was invalid because it was not

supported by detailed information concerning which crops provide important employment and economic benefits, and which crops do not, how much water was reasonably required to meet demands for agricultural, municipal, and industrial uses, how much water was needed to meet health and safety needs, and whether the Project supplies had been managed properly or not. Similarly, petitioners argued that the use of water for flood irrigation in the Sacramento Valley and irrigation of drainage impaired lands in the western San Joaquin Valley was unreasonable during the drought. Sequoia ForestKeeper and Wasteful, UnReasonable Use submitted several objections that included similar arguments, including an extensive argument that the use of water for livestock feed crop production during the drought was unreasonable.

Essentially, petitioners argued that they would have balanced competing demands differently, but it does not follow that the balancing effectuated by the TUCP Orders violated the public trust and reasonable use doctrines. The public trust doctrine requires the State Water Board to protect public trust resources to the extent feasible and consistent with the public interest. (*State Water Resources Control Board Cases*, *supra*, 136 Cal.App.4th at p. 778.) Under the public trust doctrine, the Board has considerable discretion to balance competing demands for water to protect fish and wildlife and to serve municipal, industrial, and agricultural uses. (*Ibid.*) Article X, section 2 of the California Constitution and Water Code section 100 prohibit the waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. What constitutes a reasonable water use depends on the entire circumstances presented and varies as conditions change. (*Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463, 1479-1480.)

For the reasons discussed in sections 4.1 and 4.4, above, we affirm that the TUCP Orders achieved a reasonable balance of competing demands during the drought emergency, based on the information available at the time, consistent with the public trust and reasonable use doctrines. Given the exigencies of the drought, it was not possible during the TUCP proceeding to conduct a detailed analysis of the reasonableness of particular agricultural practices, taking into consideration the relative values and impacts of particular agricultural uses, different contractual priorities, and all other relevant factors. Similarly, we disagree with the argument that more detailed information concerning the economic value of crops and reasonable water demands for agricultural, municipal, and industrial purposes was necessary in order to balance competing demands for purposes of acting on the TUCP.

4.5.4 Consistency of the TUCP Orders with Endangered Species Act Requirements

CSPA et al. argued that the TUCP was contrary to CESA and the federal ESA because it would not afford adequate protection for fisheries and would cause increased jeopardy for listed species. CSPA et al. made these arguments notwithstanding the letters of concurrence from the fisheries agencies, finding the TUCP actions consistent with existing Biological Opinions. CSPA et al. included specific and detailed comments regarding why the decisions made by the fisheries agencies were wrong.

In the face of this drought, the fisheries agencies and the State Water Board have coordinated with DWR and Reclamation to allow a number of adjustments to biological opinion and water right requirements in order to increase diversions from the Delta and conserve water in storage so that more water can be delivered to farms and communities. All of the proposed changes are likely to have a negative effective on fish and wildlife. While agencies try, to the extent possible, to work collaboratively, each agency is ultimately responsible for the statutes and laws it has authority and responsibility to administer.

CSPA et al.'s comments regarding the inadequacy of the fisheries agencies' concurrence determinations were misplaced. Pursuant to section 7 of the ESA, Reclamation obtained the concurrence of USFWS that the changes proposed in the TUCP would not result in any additional adverse effects on delta smelt or its critical habitat beyond those analyzed in the 2008 Biological Opinion on the Long-Term Operational Criteria and Plan for coordination of the CVP and SWP (USFWS BO). Similarly, Reclamation obtained NMFS's concurrence that the effects of the proposed actions on Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, North American green-sturgeon, and killer whales are within what was analyzed in the NMFS BO, and that the proposed actions are not likely to jeopardize the continued existence of those species, or destroy or adversely modify their critical habitat. In addition, DWR obtained confirmation from CDFW that DWR could continue to rely upon existing CESA coverage under the consistency determinations for delta smelt and salmon and the incidental take permit for longfin smelt.

These determinations were obligations of the agencies charged with the responsibility to implement section 7 of the ESA and the relevant provisions of CESA. (See 16 U.S.C. § 1536(a) [ESA imposes an affirmative obligation on all federal agencies to utilize their authorities in furtherance of the purposes of the Act]; see generally *Nat'l Ass'n of Home Builders v. Defs. of*

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Wildlife, (2007) 551 U.S. 644, 652 [detailing ESA section 7 obligations].) The State Water Board will defer to the fisheries agencies' implementation of the federal ESA and CESA.

4.5.5 Consistency of the TUCP Orders with Salmon Doubling Requirements

In their August 3, 2015 petition, CSPA et al. argued that the TUCP would lead to a violation of the doubling standard for salmon contained in the Central Valley Project Improvement Act (CVPIA) (Pub.L. No. 102-575 (Oct. 30, 1992) 106 Stat. 4600) and the narrative salmon protection objective contained in the Bay-Delta Plan. Similarly, RTD argued that the TUCP Order was inconsistent with state and federal legislative goals to double salmon populations.

Contrary to these arguments, neither the CVPIA nor the Bay-Delta Plan contains a self-executing "doubling standard," and the TUCP Orders are consistent with applicable salmon doubling requirements. Section 3406(b)(1) of the CVPIA directs the Secretary of Interior to develop and implement a program to ensure, by the year 2002, that the natural production of anadromous fish in Central Valley rivers and streams are sustainable at levels at least twice the levels attained during the period of 1967-1991. The Secretary established the Anadromous Fish Restoration Program to satisfy this requirement. The TUCP Orders did not relieve Reclamation of its obligations under the CVPIA, and CSPA et al. have not provided any information indicating that the changes approved by the TUCP Orders will impair implementation of the Anadromous Fish Restoration Program.

Consistent with the goal articulated in the CVPIA, the Bay-Delta Plan contains the following narrative objective for salmon protection: "Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991 . . . ." (Bay-Delta Plan, p. 14, table 3.). This objective, like all water quality objectives, is to be achieved in accordance with the program of implementation contained in the Bay-Delta Plan. The program of implementation provides that the narrative objective for salmon protection will be implemented at least in part through the implementation of numeric flow-dependent objectives, and may require other parties to implement other non-flow measures. (*Id.* at p. 33.) Although the TUCP Orders approved temporary changes to the requirement that Reclamation and DWR meet some numeric flow-dependent objectives, these changes were permissible. As discussed above, Water Code section 13247 ordinarily would require the State Water Board to fully implement the numeric flow-dependent objectives as specified in the program of implementation, but the

Governor has temporarily suspended section 13247 in order to allow the State Water Board greater flexibility to respond to the drought emergency.

4.5.6 Consistency of the TUCP Orders with the Delta Reform Act

RTD alleged that the TUCP was contrary to three policies set forth in the Delta Reform Act of 2009: (1) the policy of achieving the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem (Wat. Code, § 85054); (2) the policy of reducing reliance on the Delta in meeting California's future water supply needs by investing in improved regional supplies, conservation, and water use efficiency (Wat. Code, § 85021); and (3) the policy that reasonable use and public trust doctrines are the foundation of state water management policy and are particularly important as applied to the Delta (Wat. Code, § 85023).

We disagree that the TUCP Orders were inconsistent with any of these policies. As to the coequal goals, the purpose of the changes approved by the TUCP Orders was to improve water supply reliability during the drought emergency. Although the TUCP Orders relaxed requirements that serve to protect the Delta ecosystem, approval of these changes on a temporary basis during a drought emergency was not inconsistent with the long-term goal of protecting, restoring, and enhancing the Delta ecosystem. As to the second policy cited by RTD, the TUCP Orders had no bearing on any efforts to reduce reliance on the Delta by improving regional supplies, conservation, and water use efficiency. Finally, the TUCP Orders were consistent with the public trust and waste and unreasonable use doctrines, as explained in section 4.5.3, above.

4.5.7 Delegated Authority of the Executive Director to Act on the TUCP

The Exchange Contractors et al. and the San Joaquin River Tributaries Authority (SJTA) continued to argue, as they did in 2014, that the Executive Director did not have delegated authority to act on the TUCP. These arguments remain unpersuasive. State Water Board Order WR 2014-0029 contains a detailed and thorough analysis supporting the delegation of authority to the Executive Director to act on a TUCP. In summary, State Water Board Resolution 2012-0029 delegates to the Board Members individually and to the Executive Director the authority to hold a hearing, if necessary, and act on a temporary urgency change petition. (Resolution 2012-0029, ¶¶ 2.2, 4.4.1.)[14] The authority to act on temporary urgency

[14] The Deputy Director for Water Rights may act on a temporary urgency change petition if there are no objections to the petition. (Resolution 2012-0029, ¶ 4.4.1.)

change petitions is also included in the delegation of authority to the Executive Director in State Water Board Resolution 2012-0061. In Order WR 2014-0029, the State Water Board validated the Executive Director's 2014 TUCP Orders, and confirmed that the Executive Director has delegated authority to take action on the TUCP in the future. (Order WR 2014-0029 at pp. 42-43.)

SJTA argues that section 8 of Resolution 2012-0061 delegates to the Executive Director only the authority to execute ministerial duties. As we explained in 2014, the authority derived from Resolution 2012-0061 is under the more general delegation to conduct and supervise the activities of the State Water Board that are not specifically exempted. (Order WR 2014-0029 at p. 43.) In 2014, we confirmed that an action on temporary urgency change petitions is within the delegation to the Executive Director made by Resolution 2012-0029.

The Exchange Contractors et al. insisted that no statute authorizes the delegation of the Board's authority because Water Code section 175 provides for specific expertise from various Board members. This argument is off point and ignores Water Code section 1435, subdivision (d), which expressly provides that the Board may delegate to any officer or employee of the Board all or any of its functions under the chapter governing temporary urgency changes. (See also Wat. Code, § 7.)

The delegation of authority is further supported and consistent with Water Code provisions allowing petitions for reconsideration and requiring exhaustion of administrative remedies. (See Wat. Code, §§ 1122; 1126 [Except in cases where the decision or order is issued under authority delegated to an officer or employee of the board, reconsideration before the board is not an administrative remedy that is required to be exhausted before filing a petition for writ of mandate].) As we found in 2014, by this order on reconsideration, the State Water Board ratifies the Executive Director's TUCP Orders and confirms that his actions were pursuant to lawful delegation of authority by the State Water Board.

The parties cited Water Code section 183 for the argument that the Water Board may not delegate authority to the Executive Director to take action on a TUCP. Action on the TUCP was taken pursuant to Water Code section 1435, not Water Code section 183. Water Code section 183 is a general statute authorizing the Board to hold any hearing and conduct any investigations in any part of the state necessary to carry out its powers. Under the statute, a

hearing may be conducted by an individual Board member but any final action shall be taken by the majority of all the members of the Board. The requirement for a majority vote applies to hearings or investigations conducted by an individual Board member. Nothing in this statute supports the suggestion that the agency cannot take any action without approval by a majority of all Board members. Such a reading is contrary to Water Code sections 7 and 1435, subdivision (d).

SJTA also argued that because the TUCP Order "amounts to a revision of water quality objectives and the Bay Delta Plan" it must be decided upon by the State Water Board as a whole. As discussed in section 4.5.1, however, the TUCP Orders did not change water quality objectives.

4.5.8 Requirement for an Evidentiary Hearing on the TUCP

Several petitioners (Exchange Contractors et al., Friant, and CSPA et al.) called for a hearing on various issues, including export constraints, constraints on the use of conserved water, and the adequacy of the drought contingency plan, and to present evidence of alleged violations of various environmental laws. In addition, SDWA argued that an evidentiary hearing was required in order to allow interested parties to see, comment on, or dispute the underlying facts upon which the TUCP Order was based.

In Order WR 2014-0029, the State Water Board analyzed whether an evidentiary hearing on the 2014 TUCP was legally required. (Order WR 2014-0029, pp. 45-47.) The Board's analysis is equally applicable this year, and is incorporated herein by reference. In summary, the Water Code did not require an evidentiary hearing to be held on the TUCP. (See Wat. Code, § 1438, subd. (e).) In addition, constitutional due process requirements did not necessitate an evidentiary hearing because no person was deprived of a property interest as a result of the TUCP Orders. DWR, Reclamation, and their contractors were not deprived of a property interest because DWR and Reclamation chose to operate the Projects in accordance with the TUCP Orders, notwithstanding the export constraints and other conditions of approval, because the changes approved by the TUCP Orders allowed DWR and Reclamation to conserve a significant amount of Project water. No third party water right holders were deprived of a property interest because the orders included conditions designed to ensure that the changes to D-1641 requirements would not injure other lawful users of water.

In the Order WR 2014-0029, the State Water Board also gave three reasons why an evidentiary hearing was not warranted. First, there was not enough time to hold an evidentiary hearing and take prompt action on the TUCP in response to drought emergency conditions. Second, interested persons were afforded notice and an opportunity to submit objections and participate in public workshops. Third, an adequate record to support the TUCP Orders was developed through written submissions and public workshops. All three reasons remain valid this year, and for those reasons the decision not to hold an evidentiary hearing on the 2015 TUCP was appropriate.

5.0 CONCLUSIONS

For the forgoing reasons, the State Water Board concludes that the Executive Director's February 3, 2015 TUCP Order and subsequent modifications to that Order and the Executive Director's approval of the TMP were consistent with applicable law and supported by substantial evidence available at the time. Accordingly, the petitions to reconsider the Executive Director's TUCP Orders are largely denied. The petitions for reconsideration requesting additional planning and implementation activities are granted in part for the reasons discussed above. The State Water Board finds that it is appropriate to extend the TUCP Order for 180 days and to include the following conditions in the Order in order to ensure adequate measures are taken to prepare for and respond to future drought conditions. Specifically, this Order requires:

- Appropriate representatives from DWR and Reclamation with necessary information on current and potential future operations and necessary decision making authority to consult with the State Water Board and fisheries agencies on a regular basis regarding Project operations during the drought to protect all beneficial uses of water;
- Overall drought contingency planning, including: a margin of safety for fish and wildlife protection informed by the fisheries agencies to prevent continued catastrophic fisheries declines; provisions for salinity control and minimal health and safety water supply needs; specific modeling, monitoring, evaluation and reporting to assess and document the effects of drought operations; and evaluation of operations under 2014 and 2015 hydrologies to determine what water quality and flows measures could have been maintained with minimum storage levels;
- Provisions to address Sacramento River temperature management concerns, including: measures that will ensure protection of winter-run Chinook salmon in 2016; a rigorous plan for conducting and evaluating temperature monitoring and modeling that ensures

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timely, accurate and consistent information; and evaluation of temperature control issues that occurred in 2015;

- A plan for operations of Folsom Reservoir that provides for the protection of municipal water supplies for hundreds of thousands of municipal users in the greater Sacramento area and fisheries dependent on Folsom Reservoir, including a minimum end of October 2016 storage level of at least 200 TAF to ensure adequate supplies for municipal uses going into the 2017 water year; and
- A plan to reasonably protect fish and wildlife on the Stanislaus River in 2016, including identification of needed storage and flow levels for the protection of fish and wildlife and how those conditions will be achieved.

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Corrected - January 19, 2016*

ORDER

IT IS HEREBY ORDERED that, the Executive Director's February 3, 2015 TUCP Order and subsequent modifications to that Order are affirmed and the July 3, 2015 Order is renewed for 180 days to the extent it continues to be applicable. The petitions for reconsideration are denied in part and granted in part. Specifically, the conditions set forth below are added to DWR's and USBR's water rights to prepare for a potential future drought year.

NOW, THEREFORE, IT IS ORDERED that the following conditions are added to Permits 16478, 16479, 16481, 16482 and 16483 (Applications 5630, 14443, 14445A, 17512 and 17514A, respectively) of the Department of Water Resources (DWR) for the State Water Project (SWP) and License 1986 and Permits 11315, 11316, 11885, 11886, 11887, 11967, 11968, 11969, 11970, 11971, 11972, 11973, 12364, 12721, 12722, 12723, 12725, 12726, 12727, 12860, 15735, 16597, 20245, and 16600 (Applications 23, 234, 1465, 5638, 13370, 13371, 5628, 15374, 15375, 15376, 16767, 16768, 17374, 17376, 5626, 9363, 9364, 9366, 9367, 9368, 15764, 22316, 14858A, 14858B, and 19304, respectively) of the United States Bureau of Reclamation (Reclamation) for the Central Valley Project (CVP). This Order expires June 12, 2016. All other terms and conditions of the subject license and permits, including those added by the State Water Resources Control Board (State Water Board) in Revised Decision 1641 (Decision 1641) shall remain in effect.

1. As long as the current drought emergency continues or until the expiration of this Order, appropriate representatives with necessary information on current and potential future operations and necessary decision making authority from DWR and Reclamation shall continue to consult on a regular basis with designated representatives from the State Water Board, Department of Fish and Wildlife, National Marine Fisheries Service and U.S Fish and Wildlife Service (fisheries agencies) concerning current conditions and potential changes to State Water Project (SWP) and Central Valley Project (CVP) operations to meet health and safety requirements and to reasonably protect all beneficial uses of water.

2. In consultation with the fisheries agencies and State Water Board staff, DWR and Reclamation shall develop a February through October 2016 drought contingency plan

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for operations of the SWP and CVP in the event that water supplies remain inadequate to satisfy DWR's and Reclamation's water right permit and license requirements and other SWP and CVP purposes. Reclamation and DWR shall engage a wide range of stakeholders in developing the plan. In order to prevent continued catastrophic fisheries declines, the plan shall identify proposed operations for the reasonable protection of fish and wildlife beneficial uses including a margin of safety for that protection. The fisheries agencies are specifically requested to provide information and advice to DWR, Reclamation and the State Water Board to inform not only Endangered Species Act take and jeopardy issues, but also what measures are needed during drought conditions to reasonably protect fish and wildlife. DWR and Reclamation shall submit the plan to the Executive Director for approval by January 15, 2016, and shall review the plan monthly and update it as necessary based on changed circumstances. Following submittal, the plan and any updates to the plan will be posted on the State Water Board's website for public review. The Executive Director will consider public comments that may be submitted when determining whether to take any action based on the plan or whether to request additional information. The plan shall include the following:

a. Identification of the biological and other justifications for the plan informed by modeling studies of potential operations under 2014 and 2015 hydrologic scenarios assuming no modifications to water quality and flow requirements and limited modifications (in order to allow minimum health and safety diversions, salinity control and to provide minimum cold water pool storage levels). Specific modeling parameters shall be identified in consultation with the State Water Board and fisheries agencies staff.

b. Identification of planned minimum and maximum monthly flow and minimum monthly storage conditions that will provide Delta salinity control, fishery protection, and supplies for municipal water users using 50, 90, and 99 percent exceedance probabilities for assumed hydrology or for repeat of the hydrology in 2014 and 2015, and any other information that may be requested by the Executive Director or his designee.

c. Specific proposed monitoring, evaluation and reporting provisions to assess and document the effects of drought operations, including proposed water quality,

biologic, and hydrologic parameters, time frames for that monitoring and assessment work and responsible entities who will conduct the work.

3. Pursuant to the requirements of this Order and State Water Board Order WR 90-5, Reclamation, in consultation with the fisheries agencies and State Water Board staff, shall take the following actions:

    a. Prepare a management plan for the Sacramento River for the 2016 winter-run Chinook salmon spawning and rearing period that ensures the protection of the 2016 cohort of winter-run Chinook salmon and does not result in indirect impacts to other salmonids species in the Sacramento or Trinity River basins. The plan shall be submitted by March 15, 2016, to the Executive Director for approval. Reclamation shall engage a wide range of stakeholders in developing the plan, and the plan shall be subject to a workshop before the Board no later than March 31, 2016. Reclamation shall make any changes to the plan that the Executive Director requires and shall implement the plan upon approval by the Executive Director. The plan shall be informed by the modeling and monitoring specified below. The plan shall include minimum monthly storage conditions, maximum instantaneous and monthly flow conditions, flow ramping criteria, and criteria for coordinated operations with federal facilities that affect the Trinity River and Clear Creek. The plan shall ensure that CVP operations will not result in redd dewatering, stranding, or temperature impacts to winter-run Chinook salmon or indirect impacts to other salmonids in the Sacramento or Trinity rivers or Clear Creek. Among other provisions, the plan shall provide for a minimum end of October 2016 storage level in Shasta Reservoir. As a planning target, the plan shall provide for at least 1.6 million acre-feet for an end of October 2016 storage level, but the plan may provide for another carryover target or other operational parameters that will ensure that daily average temperatures do not exceed 56 degrees Fahrenheit at the designated Sacramento River compliance location during periods when higher temperatures will be detrimental to the fishery. Any alternative carryover target or operational parameters will be required to be based on and supported by significant and compelling scientific information indicating that the plan will meet the temperature and other criteria identified above, including the averaging period for the temperature target and

the location for that target. Reclamation shall reevaluate the plan on at least a monthly basis or more often as conditions warrant. Reclamation shall immediately update the plan as conditions change or upon the request of the fisheries agencies or State Water Board staff.

b. For the remainder of the drought emergency, meet regularly with the Sacramento River Temperature Task Group (SRTTG) to discuss operations and options for reducing or avoiding redd dewatering, stranding and temperature impacts to winter-run Chinook salmon and other salmonids in the Sacramento and Trinity rivers and Clear Creek. Reclamation shall confer on recommendations from the SRTTG at the Real Time Drought Operations Management Team meeting and other applicable CVP and SWP operational decision-making meetings.

c. Conduct all necessary modeling, monitoring, reporting and coordination to facilitate and inform planning and real-time operations, including:

    i. Conduct reservoir temperature profile monitoring in Shasta, Trinity and Whiskeytown Reservoirs every two weeks starting in mid-February of 2016 and provide the results of that monitoring along with associated isothermobaths to the State Water Board and fisheries agencies within 2 working days from the date the measurement was taken.

    ii. Provide temperature modeling runs for the 2016 temperature control season within 7 working days of each reservoir profile using the latest monthly hydrologic forecast, the new reservoir profile and input assumptions agreed to by the fisheries agencies and State Water Board staff. The temperature modeling runs shall be conducted in accordance with an approved temperature modeling plan, described below. The results of all runs shall be compared to temperature modeling conducted by NMFS with its RAFT model, and any discrepancies shall be evaluated and addressed as appropriate.

    iii. Prepare a plan for approval by the Executive Director by February 1, 2016, for conducting temperature modeling to inform CVP operations

associated with the Sacramento River. The plan shall provide for accurate, timely, transparent, consistent and comparable temperature modeling during the temperature control season. The plan shall provide for a shared internet location where temperature modeling information can be accessed and archived. The plan shall specify the information that will be provided with the model runs, including but not limited to: identification of the model run date; all clearly labeled input and output files in consistent digital format agreed to by the fisheries agencies and State Water Board staff; Keswick and Clear Creek flow release level (if static), or time series, as appropriate; the meteorological assumptions used for the run; temperature control gate operations; regular time series of thermal profiles at Shasta Dam (hourly or daily); inflow and temperature at Spring Creek (hourly or daily); titles or notes that explain the temperature target of the run, and at what location; other notes that describe if the run was done to target a specific temperature based on the other run assumptions or if the meteorological conditions were simply imposed on another run; and any other information requested by the fisheries agencies or State Water Board staff.

iv. Submit an evaluation of 2015 temperature management operations to the Executive Director and fisheries agencies by February 1, 2016, documenting and evaluating reasons for and remedies to temperature control issues that occurred this season including the following issues:

1. Reservoir profile measurement reporting errors between February and May of 2015;

2. Temperature exceedances and flow fluctuations during the temperature control season; and

3. Temperature modeling discrepancies on the Sacramento River, Trinity River and Clear Creek.

4. In coordination with the American River water supply providers, the Water Forum, and the fisheries agencies, Reclamation shall develop a plan for operations of Folsom

Reservoir that provides for the reasonable protection of municipal water supplies and fisheries dependent on Folsom Reservoir. The plan shall include a minimum end of October 2016 storage level of at least 200 thousand acre-feet (TAF) to ensure adequate supplies for municipal uses going into the 2017 water year. The plan shall include minimum monthly storage levels and appropriate constraints on flow releases to achieve at least 200 TAF of storage at the end of October 2016. The plan shall be submitted to the Executive Director for approval by February 1, 2016, and shall be implemented by Reclamation with any changes directed by the Executive Director.

5. In consultation with the fisheries agencies and State Water Board staff, Reclamation shall prepare a plan to reasonably protect fish and wildlife on the Stanislaus River in 2016. The plan shall identify needed storage and flow levels for the protection of fish and wildlife throughout 2016 to ensure adequate temperature and water quality conditions for salmonid species inhabiting the Stanislaus River, including how those conditions will be achieved. The plan shall be submitted to the Executive Director for approval by February 15, 2016. Reclamation shall implement the approved plan and any changes directed by the Executive Director necessary to reasonably protect fish and wildlife.

6. The State Water Board may renew, modify, or revoke this Order, if warranted, based on the circumstances.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on December 15, 2015.

AYE:	Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore Board Member Dorene D'Adamo
NAY:	None
ABSENT:	Chair Felicia Marcus
ABSTAIN:	None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

*Corrects a version prematurely certified, that did not include changes adopted by the board at its December 15, 2015 board meeting.

Corrected - January 19, 2016*

Attachment 1

Table 1
Water Quality Objectives For Municipal and Industrial Beneficial Uses

COMPLIANCE LOCATIONS	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT)	WATER YEAR TYPE [2]	TIME PERIOD	VALUE
Contra Costa Canal at Pumping Plant #1	*C-5 (CHCCC06)*	*Chloride (Cl^-)*	*Maximum mean daily 150 mg/L Cl^- for at least the number of days shown during the calendar year. Must be provided in intervals of not less than two weeks duration. (Percentage of calendar year shown in parenthesis)*			*No. of days each calendar year ≤150 mg/L Cl^-*
-or-						
San Joaquin River at Antioch Water Works Intake	*D12 (near) (RSAN007)*			*W*		*240 (66%)*
				AN		*190 (52%)*
				BN		*175 (48%)*
				D		*165 (45%)*
				C		*155 (42%)*
Contra Costa Canal at Pumping Plant #1	*C-5 (CHCCC06)*	*Chloride (Cl^-)*	*Maximum mean daily (mg/L)*	*All*	*Oct-Sep*	*250*
-and-						
West Canal at mouth of Clifton Court Forebay	*C-9 (CHWST0)*					
-and-						
Delta-Mendota Canal at Tracy Pumping Plant	*DMC-1 CHDMC004*					
-and-						
Barker Slough at North Bay Aqueduct Intake	*--- (SLSAR3)*					
-and-						
Cache Slough at City of Vallejo Intake [3]	*C-19 (SLCCH16)*					

Table 1 Footnotes:

[1] River Kilometer Index station number.

[2] The Sacramento Valley 40-30-30 water year hydrologic classification index (see Figure 2) applies for determinations of water year type.

[3] Cache Slough objective to be effective only when water is being diverted from this location.

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Table 2
Water Quality Objectives For Agricultural Beneficial Uses

COMPLIANCE LOCATIONS	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
WESTERN DELTA						
Sacramento River at Emmaton	*D-22 (RSAC092)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*		*0.45 EC April 1 to date shown*	*EC from date shown to Aug 15 [4]*
				W	*Aug 15*	*----*
				AN	*Jul 1*	*0.63*
				BN	*Jun 20*	*1.14*
				D	*Jun 15*	*1.67*
				C	*----*	*2.78*
San Joaquin River at Jersey Point	*D-15 (RSAN018)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*		*0.45 EC April 1 to date shown*	*EC from date shown to Aug 15 [4]*
				W	*Aug 15*	*----*
				AN	*Aug 15*	*----*
				BN	*Jun 20*	*0.74*
				D	*Jun 15*	*1.35*
				C	*----*	*2.20*
INTERIOR DELTA						
South Fork Mokelumne River at Terminous	*C-13 (RSMKL08)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*		*0.45 EC April 1 to date shown*	*EC from date shown to Aug 15 [4]*
				W	*Aug 15*	*----*
				AN	*Aug 15*	*----*
				BN	*Aug 15*	*----*
				D	*Aug 15*	*----*
				C	*----*	*0.54*
San Joaquin River at San Andreas Landing	*C-4 (RSAN032)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC (mmhos/cm)*		*0.45 EC April 1 to date shown*	*EC from date shown to Aug 15 [4]*
				W	*Aug 15*	*----*
				AN	*Aug 15*	*----*
				BN	*Aug 15*	*----*
				D	*Jun 25*	*0.58*
				C	*----*	*0.87*
SOUTHERN DELTA						
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Electrical Conductivity (EC)*	*Maximum 30-day running average of mean daily EC (mmhos/cm)*	*All*	*Apr-Aug*	*0.7*
					Sep-Mar	*1.0*
-and-						
San Joaquin River at Brandt Bridge site	*C-6 (RSAN073)*					
-and-						
Old River near Middle River	*C-8 (ROLD69)*					
-and-						
Old River at Tracy Road Bridge	*P-12 (ROLD59)*					
EXPORT AREA						
West Canal at mouth of Clifton Court Forebay	*C-9 (CHWST0)*	*Electrical Conductivity (EC)*	*Maximum monthly average of mean daily EC (mmhos/cm)*	*All*	*Oct-Sep*	*1.0*
-and-						
Delta-Mendota Canal at Tracy Pumping Plant	*DMC-1 (CHDMC004)*					

Table 2 Footnotes:

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. The averaging period commences with the first day of the time period for the applicable objective. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 water year hydrologic classification index (see Figure 2) applies for determinations of water year type.

[4] When no date is shown, EC limit continues from April 1.

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Table 3
WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

COMPLIANCE LOCATIONS	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DISSOLVED OXYGEN						
San Joaquin River between Turner Cut & Stockton	*(RSAN050-RSAN061)*	*Dissolved Oxygen (DO)*	*Minimum DO (mg/L)*	*All*	*Sep-Nov*	*6.0*
SALMON PROTECTION						
			narrative	*Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law.*		
SAN JOAQUIN RIVER SALINITY						
San Joaquin River at and between Jersey Point and Prisoners Point [4]	*D-15 (RSAN018)* ***-and-*** *D-29 (RSAN038)*	*Electrical Conductivity (EC)*	*Maximum 14-day running average of mean daily EC(mmhos/cm)*	*W,AN,BN, D*	*Apr-May*	*0.44 [5]*
EASTERN SUISUN MARSH SALINITY[6]						
Sacramento River at Collinsville ***-and-*** *Montezuma Slough at National Steel* ***-and-*** *Montezuma Slough near Beldon Landing*	*C-2 (RSAC081)* *S-64 (SLMZU25)* *S-49 (SLMZU11)*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location*	*All*	*Oct* *Nov-Dec* *Jan* *Feb-Mar* *Apr-May*	*19.0* *15.5* *12.5* *8.0* *11.0*
WESTERN SUISUN MARSH SALINITY[6]						
Chadbourne Slough at Sunrise Duck Club ***-and-*** *Suisun Slough, 300 feet south of Volanti Slough* ***-and-*** *Cordelia Slough at Ibis Club* ***-and-*** *Goodyear Slough at Morrow Island Clubhouse* ***-and-*** *Water supply intakes for waterfowl management areas on Van Sickle and Chipps islands*	*S-21 (SLCBN1)* *S-42 (SLSUS12)* *S-97 (SLCRD06)* *S-35 (SLGYR03)* *No locations specified*	*Electrical Conductivity (EC)*	*Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location*	*All but deficiency period* *Deficiency period [7]*	*Oct* *Nov* *Dec* *Jan* *Feb-Mar* *Apr-May* *Oct* *Nov* *Dec-Mar* *Apr* *May*	*19.0* *16.5* *15.5* *12.5* *8.0* *11.0* *19.0* *16.5* *15.6* *14.0* *12.5*
BRACKISH TIDAL MARSHES OF SUISUN BAY						
			narrative	*Water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh throughout all elevations of the tidal marshes bordering Suisun Bay shall be maintained. Water quality conditions shall be maintained so that none of the following occurs: (a) loss of diversity; (b) conversion of brackish marsh to salt marsh; (c) for animals, decreased population abundance of those species vulnerable to increased mortality and loss of habitat from increased water salinity; or (d) for plants, significant reduction in stature or percent cover from increased water or soil salinity or other water quality parameters.*		

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Table 3 (continued)
WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

COMPLIANCE LOCATIONS	INTERAGENCY STATION NUMBER (RKI [1])	PARAMETER	DESCRIPTION (UNIT) [2]	WATER YEAR TYPE [3]	TIME PERIOD	VALUE
DELTA OUTFLOW						
		Net Delta Outflow Index (NDOI) [8]	*Minimum monthly average [9] NDOI(cfs)*	*All*	*Jan*	*4,500 [10]*
				All	*Feb-Jun*	*[11]*
				W,AN	*Jul*	*8,000*
				BN		*6,500*
				D		*5,000*
				C		*4,000*
				W,AN,BN	*Aug*	*4,000*
				D		*3,500*
				C		*3,000*
				All	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
RIVER FLOWS						
Sacramento River at Rio Vista	*D-24 (RSAC101)*	*Flow rate*	*Minimum monthly average [12] flow rate (cfs)*	*All*	*Sep*	*3,000*
				W,AN,BN,D	*Oct*	*4,000*
				C		*3,000*
				W,AN,BN,D	*Nov-Dec*	*4,500*
				C		*3,500*
San Joaquin River at Airport Way Bridge, Vernalis	*C-10 (RSAN112)*	*Flow rate*	*Minimum monthly average [13] flow rate (cfs) [14]*	*W,AN*	*Feb-Apr 14*	*2,130 or 3,420*
				BN,D	*and*	*1,420 or 2,280*
				C	*May 16-Jun*	*710 or 1,140*
				W	*Apr 15-*	*7,330 or 8,620*
				AN	*May 15 [15]*	*5,730 or 7,020*
				BN		*4,620 or 5,480*
				D		*4,020 or 4,880*
				C		*3,110 or 3,540*
				All	*Oct*	*1,000 [16]*
EXPORT LIMITS						
		Combined export rate [17]	*Maximum 3-day running average (cfs)*	*All*	*Apr 15- May 15 [18]*	*[19]*
				All	*Feb-Jun*	*35% Delta inflow [22]*
			Maximum percent of Delta inflow diverted [20] [21]	*All*	*Jul-Jan*	*65% Delta inflow*
DELTA CROSS CHANNEL GATES CLOSURE						
Delta Cross Channel at Walnut Grove	*—*	*Closure of gates*	*Closed gates*	*All*	*Nov-Jan*	*[23]*
					Feb-May 20	*----*
					May 21- Jun 15	*[24]*

Table 3 Footnotes:

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. The averaging period commences with the first day of the time period of the applicable objective. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 Water Year Hydrologic Classification Index (see Figure 2) applies unless otherwise specified.

[4] Compliance will be determined at Jersey Point (station D15) and Prisoners Point (station D29).

[5] This standard does not apply in May when the best available May estimate of the Sacramento River Index for the water year is less than 8.1 MAF at the 90% exceedance level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the California Department of Water Resources' (DWR) Bulletin 120 for the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total unimpaired inflow to Oroville Reservoir; Yuba River at Smartville; and American River, total unimpaired inflow to Folsom Reservoir.]

[6] An exceedance of any of these objectives at a time when it is established through certification by the entity operating the Suisun Marsh Salinity Control Gates that the Gates are being operated to the maximum extent shall not be considered a violation of the objective.

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[7] *A deficiency period is: (1) the second consecutive dry water year following a critical year; (2) a dry water year following a year in which the Sacramento River Index (described in footnote 5) was less than 11.35; or (3) a critical water year following a dry or critical water year. The determination of a deficiency period is made using the prior year's final Water Year Type determination and a forecast of the current year's Water Year Type; and remains in effect until a subsequent water year is other than a Dry or Critical water year as announced on May 31 by DWR and U.S. Bureau of Reclamation (USBR) as the final water year determination.*

[8] *Net Delta Outflow Index (NDOI) is defined in Figure 4.*

[9] *For the May-January objectives, if the value is less than or equal to 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the value; if the value is greater than 5,000 cfs, the 7-day running average shall not be less than 80% of the value.*

[10] *The objective is increased to 6,000 cfs if the best available estimate of the Eight River Index for December is greater than 800 TAF. [Note: The Eight River Index refers to the sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.]*

[11] *The minimum daily Delta outflow shall be 7,100 cfs for this period, calculated as a 3-day running average. This requirement is also met if either the daily average or 14-day running average EC at the confluence of the Sacramento and the San Joaquin rivers is less than or equal to 2.64 mmhos/cm (Collinsville station C2). If the best available estimate of the Eight River Index (described in footnote 10) for January is more than 900 TAF, the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the best available estimate of the Eight River Index for January is between 650 TAF and 900 TAF, the Executive Director of the State Water Board shall decide whether this requirement applies. If the best available estimate of the Eight River Index for February is less than 500 TAF, the standard may be further relaxed in March upon the request of the DWR and the USBR, subject to the approval of the Executive Director of the State Water Board. The standard does not apply in May and June if the best available May estimate of the Sacramento River Index (described in footnote 5) for the water year is less than 8.1 MAF at the 90% exceedance level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and June. Additional Delta outflow objectives are contained in Table 4.*

[12] *The 7-day running average shall not be less than 1,000 cfs below the monthly objective.*

[13] *Partial months are averaged for that period. For example, the flow rate for April 1-14 would be averaged over 14 days. The 7-day running average shall not be less than 20% below the flow rate objective, with the exception of the April 15-May 15 pulse flow period when this restriction does not apply.*

[14] *The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see Figure 3) at the 75% exceedance level. The higher flow objective applies when the 2-ppt isohaline (measured as 2.64 mmhos/cm surface salinity) is required to be at or west of Chipps Island.*

[15] *This time period may be varied based on real-time monitoring. One pulse, or two separate pulses of combined duration equal to the single pulse, should be scheduled to coincide with fish migration in San Joaquin River tributaries and the Delta. The USBR will schedule the time period of the pulse or pulses in consultation with the USFWS, the NOAA Fisheries, and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement. The schedule is subject to the approval of the Executive Director of the State Water Board.*

[16] *Plus up to an additional 28 TAF pulse/attraction flow during all water year types. The amount of additional water will be limited to that amount necessary to provide a monthly average flow of 2,000 cfs. The additional 28 TAF is not required in a critical year following a critical year. The pulse flow will be scheduled by the DWR and the USBR in consultation with the USFWS, the NOAA Fisheries and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.*

[17] *Combined export rate for this objective is defined as the Clifton Court Forebay inflow rate (minus actual Byron-Bethany Irrigation District diversions from Clifton Court Forebay) and the export rate of the Tracy pumping plant.*

[18] *This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse flow described in footnote 15. The DWR and the USBR, in consultation with the USFWS, the NOAA Fisheries and the DFG, will determine the time period for this 31-day export limit. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.*

[19] *Maximum export rate is 1,500 cfs or 100% of the 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. Variations to this maximum export rate may be authorized if agreed to by the USFWS, the NOAA Fisheries and the DFG. This flexibility is intended to result in no net water supply cost annually within the limits of the water quality and operational requirements of this plan. Variations may result from recommendations of agencies for protection of fish resources, including actions taken pursuant to the State and federal Endangered Species Act. Any variations will be effective immediately upon notice to the Executive Director of the State Water Board. If the Executive Director does not object to the variations within 10 days, the variations will remain in effect. The Executive Director of the State Water Board is also authorized to grant short-term exemptions to export limits for the purpose of facilitating a study of the feasibility of recirculating export water into the San Joaquin River to meet flow objectives.*

[20] *Percent of Delta inflow diverted is defined in Figure 4. For the calculation of maximum percent Delta inflow diverted, the export rate is a 3-day running average and the Delta inflow is a 14-day running average, except when the Central Valley Project or the State Water Project (SWP) is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.*

[21] *The percent Delta inflow diverted values can be varied either up or down. Variations are authorized subject to the process described in footnote 19.*

[22] *If the best available estimate of the Eight River Index (described in footnote 10) for January is less than or equal to 1.0 MAF, the export limit for February is 45% of Delta inflow. If the best available estimate of the Eight River Index for January is greater than 1.5 MAF, the February export limit is 35% of Delta inflow. If the best available estimate of the Eight River Index for January is between 1.0 MAF and 1.5 MAF, the DWR and the USBR will set the export limit for February within the range of 35% to 45%, after consultation with the USFWS, the NOAA Fisheries and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.*

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[23] For the November-January period, close Delta Cross Channel gates for a total of up to 45 days. The USBR will determine the timing and duration of the gate closure after consultation with the USFWS, the NOAA Fisheries and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement.

[24] For the May 21-June 15 period, close the Delta Cross Channel gates for a total of 14 days. The USBR will determine the timing and duration of the gate closure after consultation with the USFWS, the NOAA Fisheries and the DFG. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy the consultation requirement. Gate closures shall be based on the need for the protection of fish. The process for approval of variations shall be similar to that described in footnote 19.

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FIGURE 1

Sacramento Valley Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

INDEX = 0.4 * X + 0.3 * Y + 0.3 * Z

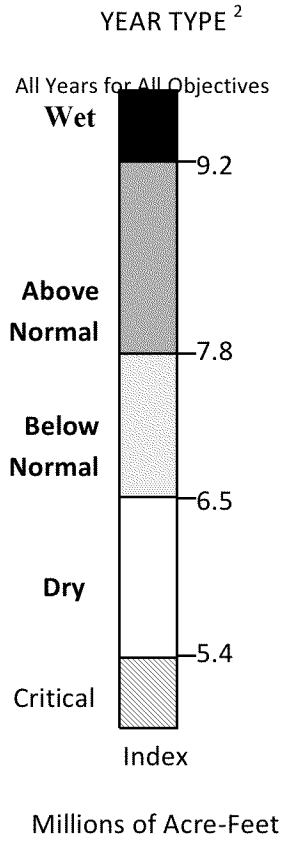
Where:

X = Current year's April – July Sacramento Valley unimpaired runoff

Y = Current October – March Sacramento Valley unimpaired runoff

Z = Previous year's index[1]

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.



Classification	Index Millions of Acre-Feet (MAF)
Wet.....	Equal to or greater than 9.2
Above Normal.....	Greater than 7.8 and less than 9.2
Below Normal.....	Equal to or less than 7.8 and greater than 6.5
Dry.....	Equal to or less than 6.5 and greater than 5.4
Critical.....	Equal to or less than 5.4

1 A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

2 The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the curr ent water year is available.

*Corrects a version prematurely certified, that did not include changes adopted by the board at its December 15, 2015 board meeting.

Corrected - January 19, 2016*

FIGURE 2

San Joaquin Valley Water Year Hydrologic Classification

Year classification shall be determined by computation of the following equation:

INDEX = 0.6 * X + 0.2 * Y + 0.2 * Z

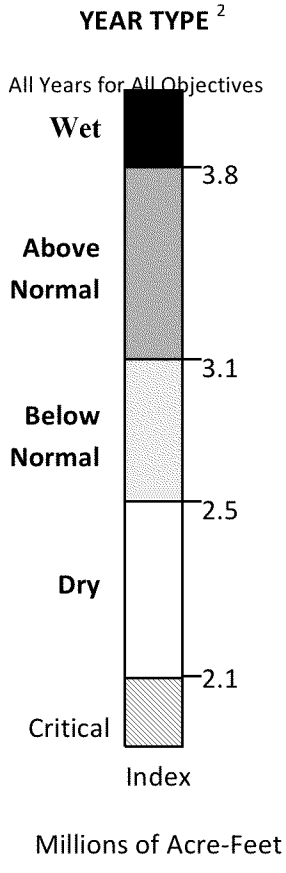
Where: X = Current year's April – July San Joaquin Valley unimpaired runoff

Y = Current October – March San Joaquin Valley unimpaired runoff

Z = Previous year's index[1]

The San Joaquin Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Stanislaus River, total flow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total flow to Exchequer Reservoir; San Joaquin River, total inflow to Millerton Lake. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet (MAF)
Wet.....	Equal to or greater than 3.8
Above Normal.....	Greater than 3.1 and less than 3.8
Below Normal.....	Equal to or less than 3.1 and greater than 2.5
Dry.....	Equal to or less than 2.5 and greater than 2.1
Critical.....	Equal to or less than 2.1



1 A cap of 4.5 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

2 The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

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FIGURE 3

NDOI and PERCENT INFLOW DIVERTED [1]

The NDOI and the percent inflow diverted, as described in this figure, shall be computed daily by the DWR and the USBR using the following formulas (all flows are in cfs):

NDOI = DELTA INFLOW - NET DELTA CONSUMPTIVE USE - DELTA EXPORTS

PERCENT INFLOW DIVERTED = (CCF + TPP) ÷ DELTA INFLOW

where *DELTA INFLOW = SAC + SRTP + YOLO + EAST + MISC + SJR*

SAC = Sacramento River at Freeport mean daily flow for the previous day; the 25-hour tidal cycle measurements from 12:00 midnight to 1:00 a.m. may be used instead.
SRTP = Sacramento Regional Treatment Plant average daily discharge for the previous week.
YOLO = Yolo Bypass mean daily flow for the previous day, which is equal to the flows from the Sacramento Weir, Fremont Weir, Cache Creek at Rumsey, and the South Fork of Putah Creek.
EAST = Eastside Streams mean daily flow for the previous day from the Mokelumne River at Woodbridge, Cosumnes River at Michigan Bar, and Calaveras River at Bellota.
MISC = Combined mean daily flow for the previous day of Bear Creek, Dry Creek, Stockton Diverting Canal, French Camp Slough, Marsh Creek, and Morrison Creek.
SJR = San Joaquin River flow at Vernalis, mean daily flow for the previous day.

where *NET DELTA CONSUMPTIVE USE = GDEPL - PREC*

GDEPL = Delta gross channel depletion for the previous day based on water year type using the DWR's latest Delta land use study.[2]
PREC = Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where *DELTA EXPORTS* [3] *= CCF + TPP + CCC + NBA*

CCF = Clifton Court Forebay inflow for the current day.[4]
TPP = Tracy Pumping Plant pumping for the current day.
CCC = Contra Costa Canal pumping for the current day.
NBA = North Bay Aqueduct pumping for the current day.

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1 Not all of the Delta tributary streams are gaged and telemetered. When appropriate, other methods of estimating stream flows, such as correlations with precipitation or runoff from nearby streams, may be used instead.

2 If up to date channel depletion estimates are available they shall be used. If these estimates are not a vailable, DAYFLOW channel depletion estimates shall be used.

3 The term "Delta Exports" is used only to calculate the NDOI. It is not intended to distinguish among the listed diversions w ith respect to eligibility for protection under the area of origin provisions of the California Water Code.

4 Actual Byron-Bethany Irrigation District withdrawals from Clifton Court Forebay shall be subtracted from Clifton Court Forebay inflow. (Byron-Bethany Irrigation District water use is incorporated into the GDEPL term.)

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Table 4. Number of Days When Maximum Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location

Number of Days When Maximum Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location [a]																	
PMI[b] (TAF)	Chipps Island (Chipps Island Station D10)					PMI[b] (TAF)	Port Chicago (Port Chicago Station C14) [d]					PMI[b] (TAF)	Port Chicago (Port Chicago Station C14)[d]				
	FEB	MAR	APR	MAY	JUN		FEB	MAR	APR	MAY	JUN		FEB	MAR	APR	MAY	JUN
≤ 500	0	0	0	0	0	0	0	0	0	0	0	5250	27	29	25	26	6
750	0	0	0	0	0	250	1	0	0	0	0	5500	27	29	26	28	9
1000	28[c]	12	2	0	0	500	4	1	0	0	0	5750	27	29	27	28	13
1250	28	31	6	0	0	750	8	2	0	0	0	6000	27	29	27	29	16
1500	28	31	13	0	0	1000	12	4	0	0	0	6250	27	30	27	29	19
1750	28	31	20	0	0	1250	15	6	1	0	0	6500	27	30	28	30	22
2000	28	31	25	1	0	1500	18	9	1	0	0	6750	27	30	28	30	24
2250	28	31	27	3	0	1750	20	12	2	0	0	7000	27	30	28	30	26
2500	28	31	29	11	1	2000	21	15	4	0	0	7250	27	30	28	30	27
2750	28	31	29	20	2	2250	22	17	5	1	0	7500	27	30	29	30	28
3000	28	31	30	27	4	2500	23	19	8	1	0	7750	27	30	29	31	28
3250	28	31	30	29	8	2750	24	21	10	2	0	8000	27	30	29	31	29
3500	28	31	30	30	13	3000	25	23	12	4	0	8250	28	30	29	31	29
3750	28	31	30	31	18	3250	25	24	14	6	0	8500	28	30	29	31	29
4000	28	31	30	31	23	3500	25	25	16	9	0	8750	28	30	29	31	30
4250	28	31	30	31	25	3750	26	26	18	12	0	9000	28	30	29	31	30
4500	28	31	30	31	27	4000	26	27	20	15	0	9250	28	30	29	31	30
4750	28	31	30	31	28	4250	26	27	21	18	1	9500	28	31	29	31	30
5000	28	31	30	31	29	4500	26	28	23	21	2	9750	28	31	29	31	30
5250	28	31	30	31	29	4750	27	28	24	23	3	10000	28	31	30	31	30
≤ 5500	28	31	30	31	30	5000	27	28	25	25	4	>10000	28	31	30	31	30

[a] The requirement for number of days the maximum daily average EC (EC) of 2.64 mmhos per centimeter (mmhos/cm) must be maintained at Chipps Island and Port Chicago can also be met with maximum 14 -day running average EC of 2.64 mmhos/cm, or 3-day running average NDOIs of 11,400 cfs and 29,200 cfs, respectively. If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month. The number of days for values of the PMI between those specified in this table shall be determined by linear interpolation.

[b] PMI is the best available estimate of the previous month's Eight River Index. (Refer to Footnote 10 for Table 3 for a de scription of the Eight River Index.)

[c] When the PMI is between 800 TAF and 1000 TAF, the number of days the maximum daily average EC of 2.64 mmhos/cm (or maximum 14-day running average EC of 2.64 mmhos/cm, or 3 -day running average NDOI of 11,400 cfs) must be maintained at Chipps Island in February is determined by linear interpolation between 0 and 28 days.

[d] This standard applies only in months when the average EC at Port Chicago during the 14 days immediately prior to the first day of the month is less than or equal to 2.64 mmhos/cm.

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